Diabetes Knowledge and Dietary Adherence among Type 2 Diabetic Patients in selected Hospitals in Ibadan, Oyo State

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ABSTRACT

Background: *Dietary Counselling is the cornerstone and the first recommendation in the management of diabetes mellitus. Therefore, this study aimed to assess the diabetic knowledge and level of adherence to dietary counselling among type II diabetic patients in selected hospitals in Ibadan, Oyo State.*

Methods: *This study was cross-sectional in design and was carried out among 150 type 2 diabetes patients selected using a multi-stage sampling technique. The socio-demographic and economic characteristics of the respondents were collected using a structured interviewer-administered questionnaire. Diabetes knowledge was assessed through the use of a 24-item version of the Diabetes knowledge questionnaire and respondents that scored between 0-8 were graded as those with poor diabetes knowledge, those that scored between 9-16 were graded as those with moderate diabetes knowledge and those who scored between 17-24 were graded as those who have adequate diabetes knowledge. while a perceived dietary adherence questionnaire assessed their adherence to dietary counseling. SPSS version 20 was used to analyze all data. Significant association was set at $p < 0.05$.*

Results: *The mean age of the respondents was 59.9±9.3 years. Most of the respondents 126 (84.0%) had moderate diabetic knowledge. One hundred and Sixteen (77.3%) of the patients moderately adhered to the dietary counseling. There was a significant association between diabetes knowledge and dietary adherence ($p = 0.043$), diabetes knowledge, and educational status at ($p = 0.036$). The results also shows that there was a significant association between dietary adherence and religion of the respondents ($p = 0.035$), dietary adherence, and occupation of the respondents ($p = 0.005$).*

Conclusion: *This study concludes that most of the respondents had moderate diabetes knowledge and moderate adherence to dietary counseling.*

Keywords: Diabetes mellitus, Dietary Counselling, Diabetes Knowledge, Dietary Adherence.

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INTRODUCTION

Diabetes mellitus is a metabolic disorder resulting from a defect in insulin secretion, insulin action, or both. The main indication of diabetes mellitus is hyperglycemia in the blood which is due to inappropriate pancreatic insulin secretion or insulin resistance by target cells (1,2). It is frequently associated with a high disease burden and it is a global public health issue, with a prevalence of 3.0% across the six geographical zones of Nigeria (2, 3). Diabetes mellitus occurs throughout the world, but type 2 diabetes mellitus is more common in developing countries (3). American Diabetes Association (ADA) noted that in developing and developed countries the most common type of diabetes is type 2 diabetes mellitus accounting for 90-95% of all diabetes-which occurs in adults (5). Globally, type 2 diabetes mellitus is considered one of the most common diseases and the etiology of type 2 diabetes mellitus is complex and is associated with some non-modifiable risk factors such as age, genetic, race, and ethnicity and modifiable

risk factors such as diet, physical activity and smoking (6).

Dietary counselling is a as the keystone of type 2 diabetes mellitus management, usually recommended as the first step and it is considered one of the most challenging aspects of diabetes management (2). The International Diabetes Federation (IDF) recommends that patients maintain a healthy body weight, perform regular physical activity for at least 30 min and moderate-intensity activity on most days, eat a healthy diet, and avoid sugar, saturated fats intake, and tobacco use to prevent complications of type 2 diabetes mellitus (7). Limiting carbohydrate intake has favorable effects on body weight, body mass index (BMI), abdominal circumference, systolic blood pressure, diastolic blood pressure, triglyceride level, fasting blood glucose level, insulin level, high-density lipoprotein cholesterol level, and C-reactive protein level (8).

Poor diabetes knowledge has been independently associated with poor glycemic control and causes high rates of diabetic retinopathy, a chronic potentially blinding condition (9). Some factors have been associated with poor diabetes knowledge which include; low level of education, old age, low income, short diabetes duration, and lack of English language fluency; of all these low educational level has consistently appeared as an independent risk factor for limited diabetes knowledge (10-12). Low diabetes knowledge limits a patient's involvement in the management of the disease condition (13).

The importance of self-glucose monitoring is known to the majority of persons living with type 2 diabetes mellitus even though this knowledge does not necessarily translate into implementation and a significant proportion of people living with type 2 diabetes fails to achieve glycemic goals (2,11). It has also been noted that lack of appetite for recommended diets, cost of recommended diet, social economic status, and time required to cook healthy food, appear to be obstacles influencing adherence to recommended dietary foods for type 2 diabetes mellitus (3,10).

Non-adherence in people with type 2 diabetes mellitus has been identified as high in both developed and developing countries (3).

Therefore, the aim of this study was to assess the diabetes knowledge and level of adherence to dietary recommendations among type 2 diabetes patients in selected hospitals in Ibadan, Oyo State.

MATERIALS AND METHOD

Study Area

This study was carried out in three hospitals in Ibadan, the capital city of Oyo state, Nigeria, located on seven hills (average elevation 700 feet) about 100 miles (160 km) from the Atlantic coast. It is one of the most populous cities in the country. These include University College Hospital, Adeoyo Hospital, and Jericho Hospital Ibadan. University College Hospital is a Federal Teaching Hospital attached to the University of Ibadan and was established in 1953 in its present site. Adeoyo Hospital is a General Hospital established in 1928 and Jericho Specialist Hospital is located at Jericho Idi-Ishin, Ibadan.

Study Design

A descriptive cross-sectional design was used in this study.

Study Population

The study population consisted of type 2 diabetes mellitus outpatients.

Sample Size

The sample size (N) calculation for this study was done using the formula

$$N = \frac{Z^2 \times P \times Q}{D^2} \qquad (14)$$

Where;

N= estimated sample size

Z= Standard normal deviate at a confidence level of more than 95% (1.96)

P= Prevalence of Diabetes Mellitus (5%= 0.05) (15)

D= Margin error, (5%) set at +0.05

$$N = \frac{(1.96)^2 \times 0.05 \times 0.95}{(0.05)^2}$$

$$N = \frac{3.8416 \times 0.009495}{0.0025}$$

$$N = 72.99$$

A total of 150 respondents were recruited for this study.

Study Period

Three (3) months.

Sampling Technique and Procedure

Multistage sampling method was used for this study.

Stage 1

Out of the nine (9) Government Secondary

Hospitals in Ibadan, two (2) were chosen through simple random sampling, and University College Hospital, Ibadan Oyo State which is the only Government Tertiary Hospital was also selected.
The selected Hospitals were University College Hospital (UCH), Ibadan, Oyo State, Adeoyo Ring Road State Hospital, Ibadan, Oyo State, Jericho Specialist Hospital, Ibadan Oyo State.

Stage 2
Fifty (50) respondents were selected equally at the at the diabetic out-patient clinic in the three selected hospitals through simple random sampling technique as it ensures a balanced representation from each selected hospital. minimizes the risk of biased results and provides a fair representation of the diabetic out-patient population in the three hospitals.

Inclusion criteria
A respondent was considered eligible for inclusion if he or she was older than 18 years of age and had a clinical diagnosis of type 2 diabetes mellitus for at least one year.

Exclusion criteria
Pregnant, disabled or patients with other complications, i.e., acute renal failure, severe heart disease, seizure etc. and also those on insulin were excluded from the study.

Method of Data Collection
Socio-demographic and economic characteristics: A structured questionnaire was used to collect data on the socio-demographic and economic characteristics of the respondents such as age, marital status, sex, tribe, religion etc.

Diabetes knowledge: This was assessed with an unmodified 24-item version of the Diabetes Knowledge Questionnaire (DKQ-24) which was developed for use with people living with type II diabetes. The diabetes knowledge questionnaire designed by Starr Country Diabetes Education Study was used to assess general diabetes knowledge and had three response options 'yes', 'no', and don't know (16). One point was awarded for each correct option and no point for the incorrect option. Its scoring involves summing up the points obtained by each respondent. A higher score reflects better disease knowledge. The diabetes knowledge index was graded according to a study conducted in Nairobi City, Kenya (17). Thus, respondents that scored between 0-8 were graded as those with poor diabetes knowledge, those that scored between 9-16 were graded as those with moderate diabetes knowledge and those who scored between 17-24 were graded as those who have adequate diabetes knowledge.
Level of Adherence to Dietary Counselling Assessment: This was assessed using an unmodified validated 9-item Perceived dietary adherence questionnaire (PDAQ) (18). The response was based on a seven-point summative scale to answer the question phrased as "On how many of the last 7 days did you ...?". Higher scores reflect higher adherence except for questions 4 and 9, which reflect unhealthy choices (foods high in sugar or fat). For these items, higher scores reflect lower adherence, therefore, for computing a total PDAQ score, the scores for these questions were inverted. The maximum score for dietary adherence was 63. The dietary adherence score was graded based on a similar study that was conducted in diabetic clinics in Shiraz, Iran (19). Thus, respondents that scored between 0-24 were graded as those with poor dietary adherence, those that scored between 25-44 were graded as those with moderate dietary adherence and those with 45-63 were graded as those with adequate dietary adherence.

Ethical Considerations
Ethical approval (Ethical number UI/EC/21/0175) was obtained from Health Research Ethics Committee (HREC), College of Medicine, University of Ibadan, Oyo State. Written informed consent was obtained from the respondents prior to the study.

Statistical Analysis
A Statistical Product and Service Solution (SPSS) Windows software version 20.0 was used for data analysis. Categorical data such as religion, ethnicity, sex, educational status, occupation and monthly income were summarized into frequency and percentage while continuous data such as age were expressed as mean and standard deviation.
Inferential statistics such as Chi-square test was used to determine the association between variables such as dietary adherence and socio-demographic and economic characteristics of the respondents and also diabetes knowledge and socio-demographic and economic characteristics of the respondents. Correlation analysis was used to determine the association between diabetes knowledge and socio-demographic and economic characteristics of the respondents and also diabetes knowledge and dietary adherence. Significant association was set at P-value <0.05.

RESULTS

Table 1 shows the mean age of the respondents was 59.9±9.3 years, and most of the respondents were females 62.0% while male was 38.0%). Most of the respondents were Christian 59.3%, Muslims 40.7% and most of the respondents were from Yoruba tribe 91.3%as against Igbo 0.7%, Hausa 2.7%, others 5.3%.

Table 2: Affirmative Responses to Diabetes Knowledge Questions

Table 2 shows the affirmative responses to the diabetes knowledge questions that was assessed. It revealed that only 8.0% of the respondents knew that too much sugar and other sweet food isn't the cause of diabetes. Majority (93.3%) of the respondent agreed that the way they prepare their food is as important as the food they eat, and most of the respondents (92.0%) accepted that a fasting blood level of 210mg/dL was too high.

Table 1: Socio demographic and economic characteristics of the Respondents

Variables	Frequency (n=150)	Percent (%)
Age		
40 -50	23	15.3
51 – 60	55	36.7
61 – 70	51	34.0
71 – 80	18	12.0
81 – 90	3	2.0
Sex		
Male	57	38.0
Female	93	62.0
Religion		
Islam	61	40.7
Christianity	89	59.3
Ethnicity		
Yoruba	137	91.3
Igbo	1	0.7
Hausa	4	2.7
Others	8	5.3
Religion		
Islam	61	40.7
Christianity	89	59.3
Educational Status		
Primary	40	26.7
Secondary	47	31.3
Tertiary	60	40.0
No formal education	3	2.0
Occupation		
Trader	82	54.7
Civil Servant	47	31.3
Artisan	3	2.0
Others	18	12.0
Monthly Income (Naira)		
Less than 30,000	53	35.3
31,000 – 50,000	56	37.3
51,000 – 100,000	36	24.0
100,000 and above	5	3.3

Mean Age = 59.9±9.3

Figure 1 shows the diabetes knowledge and the level of adherence to dietary counseling among the respondents. Most of the respondents 84.0% had moderate diabetes knowledge and majority 77.3% of the patients moderately adhered to the dietary counseling.

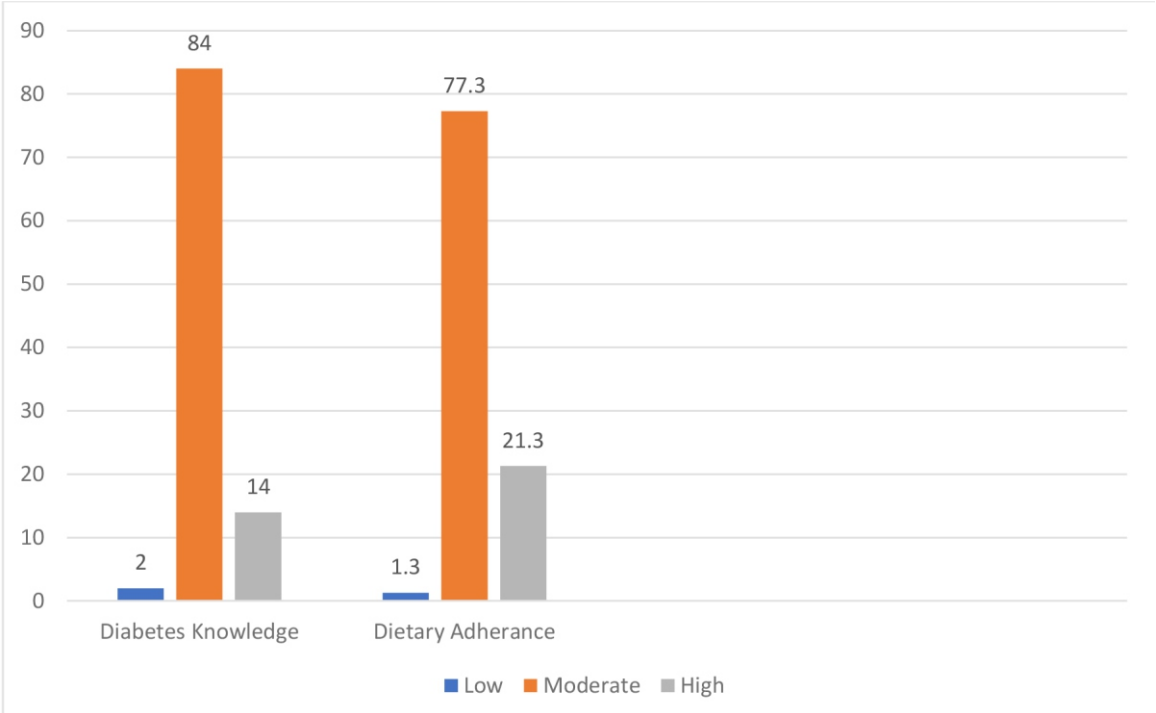

Figure 1: Level of Diabetes Knowledge and Dietary Adherence of the Respondents

Table 2: Affirmative responses of Diabetes Knowledge

Affirmative Responses of Diabetes Knowledge	Frequency (% of total responses)
Too much sugar and other sweet foods is a cause of diabetes	12(8.0)
Cause of diabetes is lack of effective insulin in the body	136(90.7)
Diabetes is caused by failure of the kidney to keep sugar out of the urine	59(39.3)
Kidney produces insulin	113(75.3)
In untreated diabetes, the amount of sugar in the blood usually increases	136(90.7)
If I am diabetic, my children have a higher chance of being diabetic	114(76.0)
Diabetes can be cured	51(34.0)
A fasting blood level of 210 mg/dL is too high	138(92.0)
The best way to check my diabetes is by testing my urine	73(48.7)
Regular exercises will increase the need for insulin or other diabetic medicine	67(44.7)
There are two main types of diabetes: type 1 (insulin-dependent) and type 2 (non-insulin dependent)	142(94.7)
An insulin reaction is caused by too much food	39(26.0)
Medication is more important than diet and exercise to control diabetes	65(43.3)
Cuts and abrasions on diabetics heal more slowly	123(82.0)
Diabetics should take extra care when cutting their toenails	136(90.7)
Diabetes often causes poor circulation	141(94.0)
A person with diabetes should cleanse a cut with iodine and alcohol	49(32.7)
The way I prepare my food is as important as the foods I eat	140(93.3)
Diabetes can damage my kidney	97(64.7)
Diabetes can cause loss of feelings in my hands, finger and feet	136(90.7)
Shaking and sweating are signs of high blood pressure	20(13.3)
Frequent urination and thirst are signs of low blood sugar	84(56.0)
Tight elastic hose or socks are not bad for diabetes	26(17.3)
A diabetic diet consists mostly of special foods	110(73.3)

Table 3: Frequency of Adherence to Dietary Counselling Among Type 2 Diabetes Patients

Table 3 reveals the frequency of adherence to dietary counselling among type 2 diabetes patients. A very low proportion (19.3%) adhered to a healthy eating plan daily and only 26.0% of the respondents took fruits and vegetable daily. Majority (79.3%) of the respondents do not consume foods that are high in sugar. Approximately 6.0% of respondents claimed they spaced their carbohydrate intake appropriately throughout the day which indicates that most respondents did not.

Table 4 also shows the relationship between diabetes knowledge, dietary adherence and the socio-demographic and economic characteristics of the respondents. It was revealed that there was a significant association between educational status and diabetes knowledge at (P= 0.036) and also between dietary adherence and religion of the respondents at (P= 0.035).

DISCUSSION

The mean age of the respondents in this study was 59.9±9.3 years and majority of the respondents were females. A similar study carried out among the Dutch population revealed that the mean age of the respondents was 56±7.5 years and were mostly females (20). Most of the respondents were of Yoruba ethnicity and this is because the study was carried out in Ibadan, a city in the South-Western region of Nigeria which contains predominately a Yoruba-speaking population.

Only 14% of the respondents had adequate knowledge of the disease condition, which is limited and there is a need to provide interventions that will help to improve the understanding of the disease condition as having poor knowledge of the disease condition will lead to non-adherence to dietary counseling and this can cause increased morbidity and mortality. A study carried out in Northern Ethiopia noted that 13% of the respondents had adequate knowledge and only 16.6% of the respondents had adequate knowledge of the disease condition in Eastern Ethiopia (3,21). It was also revealed in a study conducted in India that only 18% of the respondents had adequate diabetes knowledge and in Nepal, only 12.3% were reported to have adequate knowledge of the disease condition which is also low, as a larger number of the respondents had just average knowledge (22,23). It was slightly higher in Lagos, Nigeria as 37% of the respondents were reported to have adequate diabetes knowledge (24). The difference in results of the studies may be due to the differences in educational level and level of diabetes knowledge among diabetic patients. Patient knowledge is very important as this will improve the management of diabetes. Lack of diabetes knowledge among diabetic patient have adverse effects on their capabilities to control diabetes.

A significant association was observed between diabetes knowledge and the educational status of the respondents (P= 0.036) which may imply that an

Table 3: Frequency of Adherence to Dietary Counselling Among Type 2 Diabetes Patients

	0 days	1 days	2 days	3 days	4 days	5 days	6 days	7 days
Healthy Eating plan	1(0.7)	8(5.3)	11(7.3)	9(6.0)	9(6.0)	47(31.3)	45(30.0)	29(19.3)
Intake of Fruits and Vegetables	2(1.3)	2(1.3)	9(6.0)	19(12.7)	25(16.7)	32(21.3)	22(14.7)	39(26.0)
Intake of Carbohydrate-containing foods with a low glycemic index	2(1.3)	8(5.3)	24(16.0)	40(26.7)	52(34.7)	12(8.0)	8(5.3)	4(2.7)
Intake of Foods High in Fibre	11(7.3)	9(6.0)	21(14.0)	50(33.3)	33(22.0)	18(12.0)	4(2.7)	4(2.7)
Spacing of Carbohydrates Evenly Throughout the Day	1(0.7)	5(3.3)	12(8.0)	43(28.7)	35(23.3)	34(22.7)	11(7.3)	9(6.0)
Intake of Fish or Other Foods High in Omega-3 Fats	5(3.3)	2(1.3)	5(3.3)	4(2.7)	10(6.7)	35(23.3)	51(34.0)	38(25.3)
Intake of Foods containing Canola, Walnut, Olive Flax Oils	76(50.7)	40(26.7)	10(6.7)	11(7.3)	5(3.3)	1(0.7)	3(2.0)	4(2.7)
Intake of Foods High in Fat	71(47.3)	42(28.0)	24(16.0)	8(5.3)	2(1.3)	0(0.0)	0(0.0)	3(2.0)
Intake of Foods High in Sugar	119(79.3)	25(16.7)	2(1.3)	3(2.0)	1(0.7)	0(0.0)	0(0.0)	0(0.0)

Table 4a: Diabetes knowledge, Dietary Adherence and Socio-demographic and economic characteristics of the Respondents

Diabetes Knowledge and Socio-demographic and economic characteristics of the Respondents	Poor (n=3) n(%)	Moderate (n=126) n(%)	Adequate (n=21) n(%)	X	p-value
Sex					
Male	1(1.8)	48(84.2)	8(14.0)	0.028	0.986
Female	2(2.2)	78(83.9)	13(14.0)		
Ethnicity					
Yoruba	3(2.2)	117(85.4)	17(12.4)	7.840	0.250
Igbo	0(0.0)	0(0.0)	1(100.0)		
Hausa	0(0.0)	3(75.0)	1(25.0)		
Others	0(0.0)	6(75.0)	2(25.0)		
Religion					
Islam	1(1.6)	55(90.2)	5(8.2)	3.005	0.223
Christianity	2(2.2)	71(79.8)	16(18.0)		
Educational status					
Primary	0(0.0)	38(95.0)	2(5.0)	13.513	*0.036
Secondary	1(2.1)	41(87.2)	5(10.6)		
Tertiary	2(5.0)	46(76.7)	12(20.0)		
No formal education	0(0.0)	1(33.3)	2(66.7)		
Occupation					
Trader	1(1.2)	69(84.1)	12(14.6)	2.641	0.852
Civil servant	2(4.3)	38(80.9)	7(14.9)		
Artisan	0(0.0)	3(100.0)	0(0.0)		
Others	0(0.0)	16(88.9)	2(11.1)		
Monthly income (Naira)					
Less than 30,000	0(0.0)	48(90.6)	5(9.4)	7.670	0.263
31,000 – 50,000	2(3.6)	47(83.9)	7(12.5)		
51,000 – 100,000	1(2.8)	26(72.2)	9(25.0)		
100,000 and above	0(0.0)	5(100)	0(0.0)		

X = chi-square value * - significant at P<0.05

increase in the educational level of the respondents might have a significant increase in their knowledge of the disease condition. A higher educational level is likely to improve diabetes knowledge and the outcome. Intervention programs targeted at improving diabetes knowledge both in the clinical and community settings can be developed and implemented.

In a study conducted in Gujarat, there was moderate knowledge about diabetes among the respondents and it was reported that this might have occurred as a result of lower education level among the respondents as majority of the respondents were illiterates (25). Also, in a study conducted in Pakistan, it was reported that there was a significant association between diabetes knowledge and the educational status of the respondents (P= 0.004) as disease knowledge was higher among respondents with tertiary level of education as shown from the study (26).

Studies has shown that the provision of nutrition education can improve diabetes knowledge and dietary practices in patients with type 2 diabetesand also better knowledge of diabetes can improve glycemic control and treatment satisfaction (27). The knowledge not only enhances the self-care behaviors of diabetes mellitus patients but it enables them to effectively adhere to their treatments (28). Improving the knowledge of diabetic patients regarding dietary recommendations with a special focus on patients who have low educational levels is very important (3).

This study shows that only 21.3% of the respondents

Table 4b: Diabetes knowledge, Dietary Adherence and Socio-demographic and economic characteristics of the Respondents

Dietary Adherence and Socio-demographic and economic characteristics of the Respondents	Poor (n=3) n(%)	Moderate (n=126) n(%)	Adequate (n=21) n(%)	X	p-value
Sex					
Male	2(3.5)	44(77.2)	11(19.3)	3.442	0.179
Female	0(0.0)	72(77.4)	21(22.6)		
Ethnicity					
Yoruba	2(1.5)	108(78.8)	27(19.7)	9.795	0.134
Igbo	0(0.0)	1(100.0)	0(0.0)		
Hausa	0(0.0)	4(100.0)	0(0.0)		
Others	0(0.0)	3(100.0)	5(62.5)		
Religion					
Islam	2(3.3)	51(83.6)	8(13.1)	6.696	*0.035
Christianity	0(0.0)	65(73.0)	24(27.0)		
Educational status					
Primary	0(0.0)	29(72.5)	11(27.5)	5.005	0.543
Secondary	1(2.1)	40(85.1)	6(12.8)		
Tertiary	1(1.7)	44(73.3)	15(25.0)		
No formal education	0(.0)	3(100.0)	0(0.0)		
Occupation					
Trader	0(0.0)	68(82.9)	14(17.1)	18.690	*0.005
Civil servant	0(0.0)	33(70.2)	14(29.8)		
Artisan	0(0.0)	3(100.0)	0(0.0)		
Others	2(11.1)	12(66.7)	4(22.2)		
Monthly income (Naira)					
Less than 30,000	0(0.0)	39(73.6)	14(26.4)	10.878	0.092
31,000 – 50,000	2(3.6)	47(83.9)	7(12.5)		
51,000– 100,000	0(0.0)	28(77.8)	8(22.2)		
100,000 and above	0(0.0)	2(40.0)	3(60.0)		

X = chi-square value * - significant at P<0.05

Table 4: Relationship between Diabetes Knowledge, Dietary adherence and Socio-demographic and economic characteristics of the Respondents.

Variable	R	R^2	p-value
Diabetes Knowledge * Age	0.016	0.012	0.847
Diabetes Knowledge * Household size	-0.009	0.009	0.915
Diabetes Knowledge * Number of Children	0.116	0.026	0.157
Diabetes Knowledge * Dietary Adherence	0.166	0.003	**0.043

** - significant at P<0.05 R = Pearson correlation value R2 =Coefficient of determination.

had adequate adherence to dietary counseling, which suggests that a considerable portion of the diabetic out-patient population may not be effectively following the dietary recommendations provided during counseling sessions. Non-adherence to dietary counseling can worsen the state of health of the patients and cause complications. Dietary counseling is meant to help to reduce the rate of morbidity of people but where there is non-adherence to dietary counseling there is increased morbidity and mortality from non-adherence. The poor adherence could be attributed to the poor knowledge displayed by the patient on diabetes knowledge. It was noted in a study carried out in Northern Ethiopia that only 25.7% of the respondents had adequate adherence to dietary counseling and 36.5% of respondents in Punjab, Pakistan adhered adequately to dietary counseling (3, 29).

Also, in Eastern Ethiopia, it was revealed that 37.5% of the respondents showed adequate adherence, 32.7% of the respondents in Komotini, Greece adequately adhered to their dietary goals and in a study conducted in 2020 in India, it was revealed that 34% of respondents had adequate adherence to dietary counseling (8,22,30). However, the adherence level was slightly higher in Addis Ababa, Ethiopia where 48.6% of the respondents had adequate adherence to dietary counseling (31). A study conducted in Abeokuta; Nigeria also revealed that only 40.7% of respondents adhered adequately to dietary regimens (32). The adherence level of a study conducted in Delta State revealed that 67.4% of respondents had adequate adherence to dietary treatment. An increase in patient adherence to dietary counseling will help reduce morbidity and mortality, as this will help the patients to maintain their normal glucose levels and prevent complications (33).

There was a positive significant correlation (P= 0.043) between dietary adherence and diabetes knowledge. This may suggest that an increase in diabetes knowledge among the respondents may cause an increase in dietary adherence to dietary counseling. A similar study that was conducted in Thai revealed that there was no significant association between diabetes knowledge and dietary adherence implying that dietary adherence did not depend on the level of knowledge (34).

This study shows a significant association between dietary adherence and occupation (P= 0.005). In a study conducted in Yemen, there was a significant association between dietary adherence and occupation (P = 0.012), it was noted that most of the employed respondents adhered when compared to the manual workers, housewives, and the unemployed as it was revealed that most of the employed respondents were educated and they understood the importance of adhering to the recommended diet (35). There was also a significant association between dietary adherence and occupation among respondents in Gondar, Ethiopia (P= 0.04) as most of the civil servants were found to adhere adequately to dietary recommendations when compared with their counterparts and this was said to be because most of the civil servants were educated (36). In another study in Canada (37), a significant association was found between dietary adherence and occupation (P= 0.035).

This study also found a significant association between dietary adherence and religion (P= 0.035). The level of adherence was higher among Christians. It was reported in a study that was carried out in America that there was no significant association between dietary adherence and religion (P = 0.165), but it was noted that most of the Christians had higher adherence when compared to the Muslims which is in line with his study as most of the respondents that was accessed were Christians (30).

CONCLUSION

This study reveals that the level of diabetes knowledge among type 2 diabetes patients was relatively moderate and the level of adherence to dietary counseling was also relatively moderate.

There should be an improvement in diabetes knowledge and this can be done through effective nutrition education as having proper knowledge of the disease condition may improve adherence to dietary counseling. Dietitians at the clinic should ensure personalized medical nutrition therapy and also put in place individual uniqueness and differences.

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Conflict of Interest

The authors declare no conflict of interest.

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