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Dietary Knowledge, Attitude and Adherence among Diabetic Patients attending Outpatient Clinics in Selected Hospitals in Benin Metropolis

By

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Abstract

Diet is a crucial aspect of diabetes management and healthy eating is one of the main focus in preventing type 2 diabetes mellitus. Despite the growing evidence supporting the role of dietary approaches in diabetes management, studies indicate low adherence to dietary recommendations among diabetic patients. In Nigeria, research indicates low adherence to dietary recommendations and inadequate intake of macronutrients, fruits and vegetables among diabetic patients. This study aimed to assess the dietary knowledge attitude and adherence among diabetic patients attending outpatient clinics in Faith Mediplex and Edo Specialist hospitals in Benin City, Edo State. A descriptive cross-sectional study design was used among 203 type 2 diabetic patients with systematic random sampling. Quantitative data was collected using a self- administered questionnaire and analyzed using Statistical Package for Social Sciences (SPSS) version 20. The findings revealed that dietary knowledge among diabetic patients was poor. Although their attitudes were positive, however, they had poor dietary adherence regarding diabetic dietary management. Findings also revealed major factors affecting adherence to dietary management among diabetic patients attending outpatient clinics in hospitals in Benin City such as food preferences, income, financial constraints, inadequate knowledge and medication. This study highlighted the importance of proper health education to improve dietary knowledge and practices that change patient outcomes and therefore recommended the conduct of regular workshops and seminars, health professionals training and retraining, improved access to health care facilities and community engagement programmes focusing on promoting healthier lifestyles, exercise and dietary improvements.

Keywords: Diabetes; Diabetes Mellitus; Type 2 Diabetes; Dietary Adherence

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INTRODUCTION

Background

Diabetes mellitus is a chronic metabolic disorder characterized by elevated levels of blood glucose. There are several types of diabetes with etiology involving complex interactions between genetic, environmental and lifestyle factors. However, this study is limited to type 2 diabetes with multiple genetic variants influencing insulin resistance, beta cell function and other metabolic pathways 1 which is now increasing among the world population and has become a public health challenge. Type 2 diabetes mellitus (T2DM) is the most prevalent form and typically occurs when the body develops resistance to insulin or does not produce enough insulin2. The global prevalence of diabetes mellitus (DM) has increased from 4.8% in 1980 to 8.5% in 2014. As at 2019, the estimated global prevalence was 9.3% 3; 4. According to 5 in 2019, there were 422 million people worldwide living with diabetes and 1.5 million deaths, primarily in low- and middle-income countries. In sub-Saharan Africa, approximately 20 million people are estimated to have diabetes, with 62% undiagnosed. By 2035, this number is projected to rise to 41.4 million 6. Nigeria has the highest number of people with diabetes in sub-Saharan Africa, with an estimated 3.9 million individuals affected. Although the prevalence varies across different regions, the national estimate indicates a prevalence of 6.8% among adults over the age of 40 7.

The management of diet in patients with type 2 diabetes is crucial for their care. In Nigeria, many individuals with diabetes lack sufficient knowledge, a positive attitude and satisfactory adherence to diabetes management 8 and enhancing dietary knowledge is a significant factor in improving dietary patterns within our society. Research 9 has shown that knowledge of diet can positively influence the unfavorable dietary patterns observed in diabetic patients. A positive attitude towards dietary management can contribute to better blood sugar control 10. Following the recommended diet prescribed by expert dieticians can prevent further complications of diabetes 11. Understanding the importance of knowledge, attitude and adherence to diet is essential due to its relevance internationally. Any organization can achieve optimal productivity by improving the knowledge, attitude and adherence levels of dietary habits among diabetics. In healthcare settings, poor Knowledge, attitude and adherence can negatively impact patient care and organizational outcomes 12. When managing patients with type 2 diabetes, it is necessary to consider lifestyle changes, including dietary patterns, which are influenced by an individual's attitude, knowledge and adherence.

Therefore, it is crucial to identify risk factors effectively before managing type 2 diabetes to ensure appropriate treatment 13. According to 14, individuals diagnosed with diabetes should be aware of their nutrition. Carbohydrates should account for 45 to 65 percent of daily calorie intake from sources such as fruits, green leafy vegetables, whole grains and beans. Fats should make up 25 to 35 percent of daily calories and nonfat or low-fat dairy products should be chosen over whole milk. Protein should constitute 12 to 20 percent of daily calories. However, this may vary depending on the individual's health requirements 15. Dietary knowledge plays a crucial role in promoting awareness in public health. Knowledge of healthy diet and food safety can predispose individuals to adopt healthy dietary patterns and eating routines among diabetics 16. It is important to prioritize self-care by acquiring dietary knowledge and implementing it effectively to maintain physical health and activity levels and foster a health-conscious population 17.

Numerous studies 18; 19; 20 have demonstrated that an appropriate dietary pattern is fundamental in treating diabetic patients. However, adherence to a healthy lifestyle and dietary changes can be challenging. A study conducted in Egypt by 21 found that only 41.7 percent of diabetic patients adhered well to dietary instructions. 22 defines adherence as the extent to which an individual agrees with dietary recommendations provided by healthcare providers. Effective adherence to a dietary pattern is strongly associated with a healthy diet. Attitude towards dietary adherence is linked to

achieving glycemic control and adhering to recommended diet plays an integral role in improving diabetic outcomes.

A study by 23, conducted among Bachelor of Science in Nursing (BSCN) students, aimed to identify the knowledge, attitude, and adherence related to diet among diabetic patients in Pakistan. The study revealed a deficit in knowledge and poor adherence to a diabetic diet for maintaining normal blood glucose levels. There is a significant need to increase awareness regarding the importance of diet, improved adherence, and change attitude in diabetic patients 24. Although adopting healthy dietary habit is crucial for achieving and maintaining optimal metabolic outcomes by maintaining normal blood glucose levels and improving lipid profiles, which ultimately reduce the risks and complications associated with diabetes, the significance is evident across societies.

Despite the growing evidence supporting the role of dietary approaches in diabetic management, these researchers observed low adherence to dietary recommendations among diabetic patients attending outpatient clinics in Benin City, Nigeria with existing deficits and misconceptions regarding diabetic diet that negate glycemic and other metabolic outcomes. Therefore, they decided to assess the dietary knowledge, attitude and adherence among diabetic patients attending outpatient clinics in hospitals in Benin City and proffer recommendations.

Objectives of the study

The purpose of this study was to assess the dietary knowledge attitude and adherence among diabetic patients attending outpatient clinics in Faith Mediplex and Edo Specialist hospitals both in Benin City, Nigeria. Specifically, the study sort

1. To assess the dietary knowledge management among the diabetic patients attending outpatient clinics in hospitals in Benin City.

2. To assess the attitude towards dietary management among diabetic patients attending outpatient clinics in hospitals in Benin City.

3. To ascertain the level of adherence regarding dietary management among diabetic patients attending outpatient clinics in hospitals in Benin City.

4. To determine factors affecting adherence to dietary management among diabetic patients attending outpatient clinics in hospital in Benin City

Research Questions

1. What is the level of dietary knowledge management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?

2. What is the attitude towards dietary management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?

3. What is the level of adherence regarding dietary management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?

4. What are the factors affecting adherence to dietary management among diabetic patients attending outpatient clinics in selected hospital in Benin City?

Research Hypotheses

1. There is no significant relationship between the dietary knowledge management about diabetes mellitus and the attitude among diabetic patients attending outpatient clinics in selected hospitals in

Benin City.

2. There is significant difference in dietary knowledge management of diabetic mellitus among diabetic patients attending outpatient clinics in selected hospitals in Benin City.

3. There is no significant difference in the level of adherence to dietary management regimen among the diabetic patients attending outpatient units of selected hospitals in Benin City.

4. There is no significant difference in the factors affecting adherence to dietary management among the diabetic patients attending outpatient units of selected hospitals in Benin City.

Research Design

Research design refers to the overall strategy that outlines the approach, methods and procedures used to conduct a research study 25. It serves as a blueprint for the research process, helping researchers to gather and analyze data systematically to answer research questions or test hypotheses 26. The research design for this study was a descriptive survey design used to gather information and describe the characteristics, behaviours, attitudes or opinions of a specific group of individuals or a population 27; 28. It aims to provide a snapshot of the current state of affairs by collecting data without manipulating variables or attempting to establish causal relationships 29. Descriptive surveys are commonly used in social sciences, market research and various professional fields to gain comprehensive understanding of a particular phenomenon 30.

Research Setting

This research was carried out among diabetic patients attending outpatient clinics in Faith Mediplex and Edo Specialist Hospitals both in Benin metropolis.

Study Population

All diabetic patients attending outpatient clinics in Faith Mediplex and Edo Specialist Hospitals in Benin City within 6 months (January to June, 2023) of the study period served as the study population as shown in the table below:

S/N	Month	Faith Mediplex Hospital	Edo Specialist Hospital	Total
1	January	25	78	103
2	February	18	60	78
3	March	30	45	75
4	April	12	82	94
5	May	15	35	50
6	June	12	52	64
	Total	**112**	**352**	**464**

Sampling Size Calculation

The sample size of this study is 215. This was computed from the population value using Taro Yameni's formula (1967). The computation is given below:

$$\frac{N}{1+N\,(0.05)^2}$$

Where e = sampling error 0.05

1 = constant

N = population

$$n = \frac{464}{1+464(0.05)^2}$$

$$=214.8$$

Based on the calculation above, approximately 215 patients with 5% level of significance formed the sample size. However, 10% attrition was added, making a total sample size of 237. This was selected in proportion to the total strength in each of the two selected hospitals using convenience simple random sampling technique to give every subject an equal chance of selection. However, only two hundred and three (203) respondents returned their questionnaire, giving a response rate of 94.0%.

Distribution of Organisation employees by population and sample size

Hospital	**Population**	**%**	**Proportionate Sample Allocation**
Faith Mediplex Hospital	112	25.62%	52
Edo Specialist Hospital	352	74.38%	151
Total	**464**	**100%**	**203**

Source: Author's computation, 2023

Instrument of Data Collection

The researchers used a self-developed questionnaire as instrument of data collection consisting of 5 sections.

Section A: consisted of socio demographic characteristics of respondents.

Section B: consisted of 12 objective questions on Dietary knowledge management among the diabetic patients.

Section C: consisted of 10 questions on Attitude towards dietary management among diabetic patients.

Section D: consisted of 10 questions on Level of adherence regarding dietary management among diabetic patients.

Section E: consisted of 10 questions on factors affecting adherence to dietary management among diabetic patients.

Validity of the instrument

The validity of the instrument was ensured using face and content validity by giving the instrument to two experts in field of measurement and effecting their observations before developing the final copy of the instrument.

Reliability of the instrument

The reliability of the instrument was ensured using split half reliability test by administering the instrument to 10% of the sample size of diabetic patients in another hospital of same setting, St. Philomena Hospital, Benin City. The data generated was analyzed using Cronbach alpha, considered reliable if greater than 0.5.

Method of Data Collection

The questionnaire was divided into five sections, A to E was prepared and administered with the instruction to tick the right answer from the boxes provided.

Method of Data Analysis

A manual of field operation was prepared to explain how entries were made, key information met, questionnaires administered and the variables coded. Processing of the data included sorting, cleaning and coding of the questionnaire. Serial numbers were written on each questionnaire for easy identification and recall of any instruments that might be missing or not properly answered. A coding scheme guide was developed after carefully reviewing the respondents' responses. Appropriate scoring was done and data was coded. Data entry was done using Statistical Package for Social Science Software (SPSS INC, Chicago IL Version 20). Quantitative data was analysed using descriptive statistics, Chi square test and logistic regression model with level of significance set at 5%. The questionnaire was stored in a place safe from destruction by either water or fire and unauthorized person was not allowed to have access to the research instruments.

Ethical Consideration

A letter was obtained from Benson Idahosa University, Department of Nursing Sciences as introduction for Ethical approval obtained from Benson Idahosa University Ethical Committee to ensure this research conformed with the generally acceptable scientific principles and international ethical guidelines required in human subject research. Informed consent was obtained, giving the respondents opportunity to ask questions and voluntarily agree to participate without any form of coercion or pressure, ensuring they understood the study purpose, procedures, potential risks and benefits. Confidentiality of collected information was guaranteed as names of respondents were not requested as researchers have an ethical responsibility to safeguard participants' privacy by ensuring that their data is collected, stored and reported in a way that prevents the identification of individual participants. Confidentiality helps create trust between researchers and participants, encouraging honest and open responses. Researchers must ensure that participants have the cognitive and emotional capacity to make decisions about their involvement. Data encryption and secure storage by limiting access to only authorized personnel.

Results

Analysis of Socio-Demographic Characteristics of the Respondents

Socio-Demographic Characteristics of the Respondents

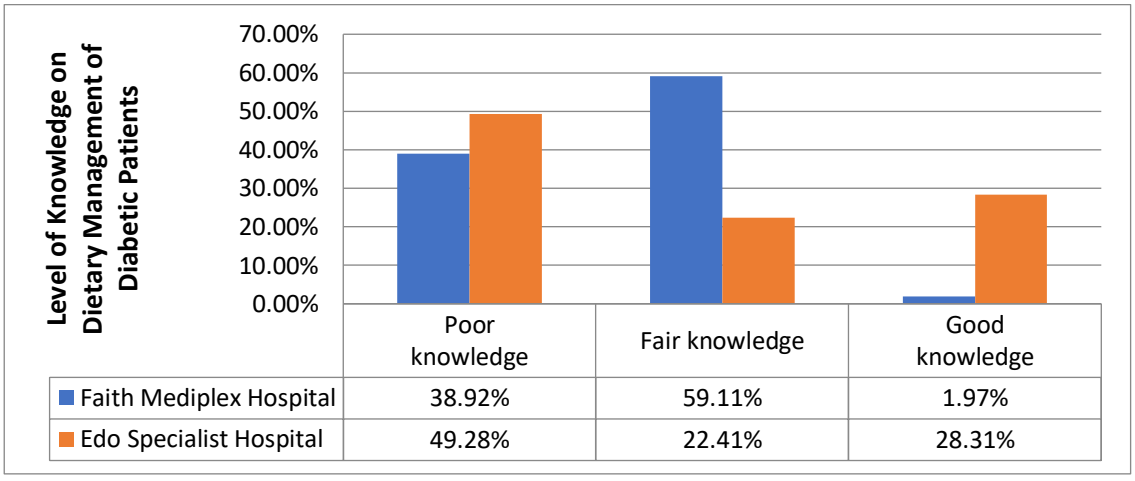
Socio-Demographic Characteristic	Frequency (Count)	Percentage (%)	Mean ± S.D
Gender			
Male	114	56.16%	
Female	89	43.84%	
Total	203	100	
Age Group (in years)			
41-50	140	68.97%	
Above 50	63	31.03%	. = 40.6± 15.4
Total	203	100%	
Marital Status			
Single	30	14.78%	
Married	70	34.48%	
Divorced	58	28.57%	
Others	45	22.17%	
Total	203	100%	
Religion			
Christianity	129	63.55%	
Muslim	48	23.65%	
Others	26	12.80%	
Total	203	100%	

Level of Education

Primary	30	14.78%
Secondary	70	34.48%
Tertiary	53	26.11%
Others	50	24.63%
Total	203	100%
Occupation		
Government employee	27	13.30%
Non-government employee	57	28.08%
Self-employed	53	26.11%
Student	23	11.33%
Unemployed	43	21.18%
Total	203	100%
Employment Status		
Farming/animal husbandry	30	14.78%
Trading	55	27.09%
Civil servant	63	31.03%
Artisan	12	5.92%
Unemployed	43	21.18%
Total	203	100%

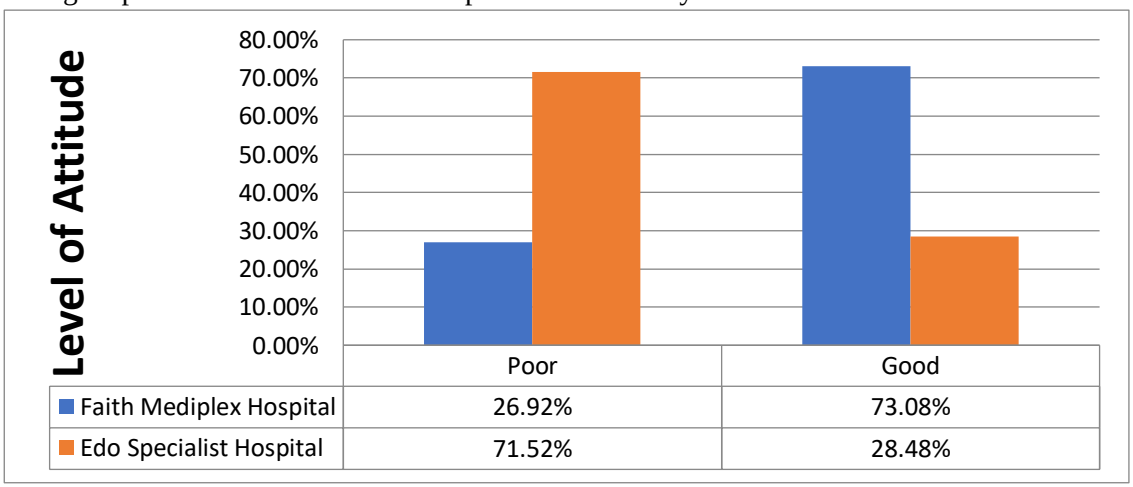
Analysis of Research Questions

Research Question 1: What is the dietary knowledge management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?



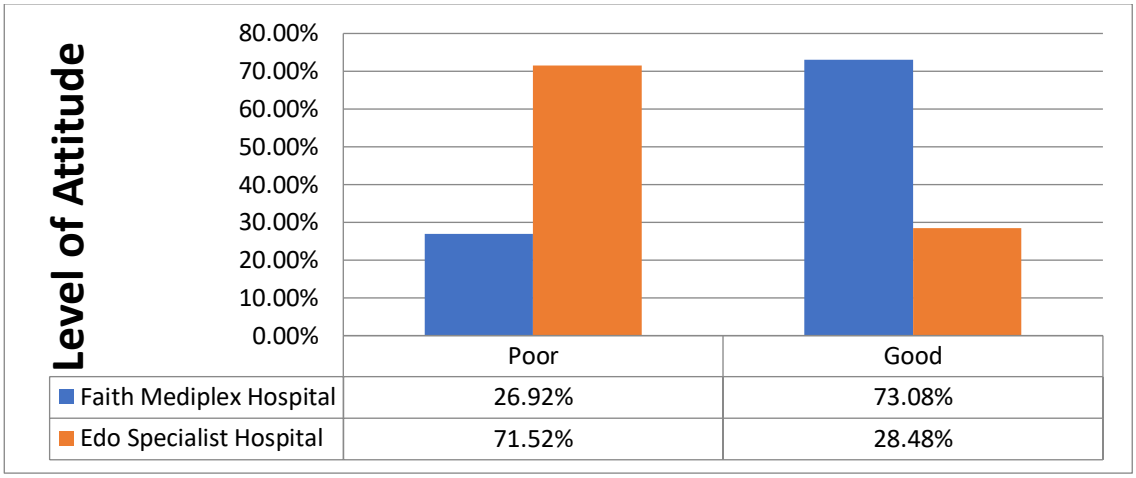
Classification of Level of Knowledge on Dietary Management of Diabetic

Research Question 2: What is the attitude towards dietary management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?



Level of attitude towards dietary management among diabetic patients

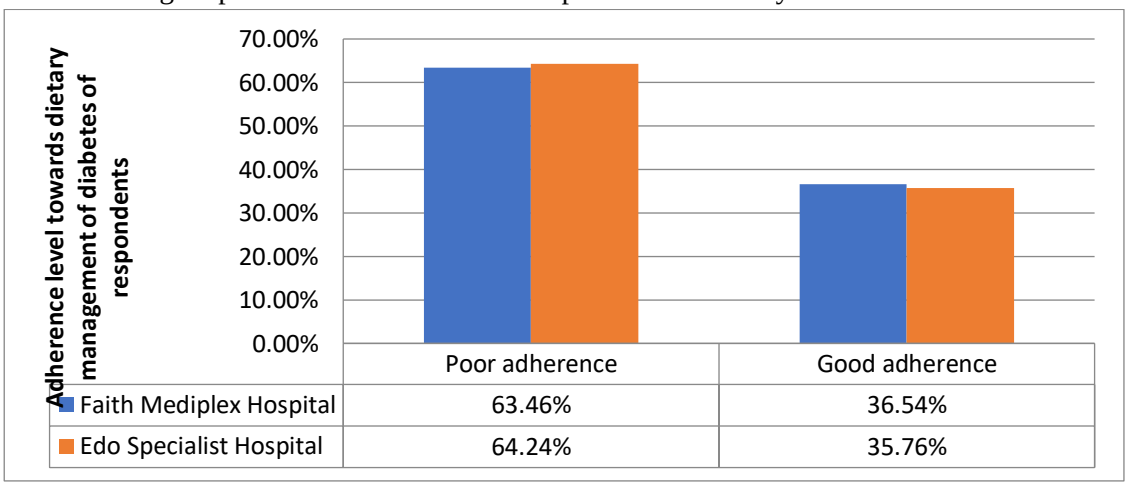
Research Question 3: What is the level of adherence regarding dietary management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?



	Poor	Good
Faith Mediplex Hospital	26.92%	73.08%
Edo Specialist Hospital	71.52%	28.48%

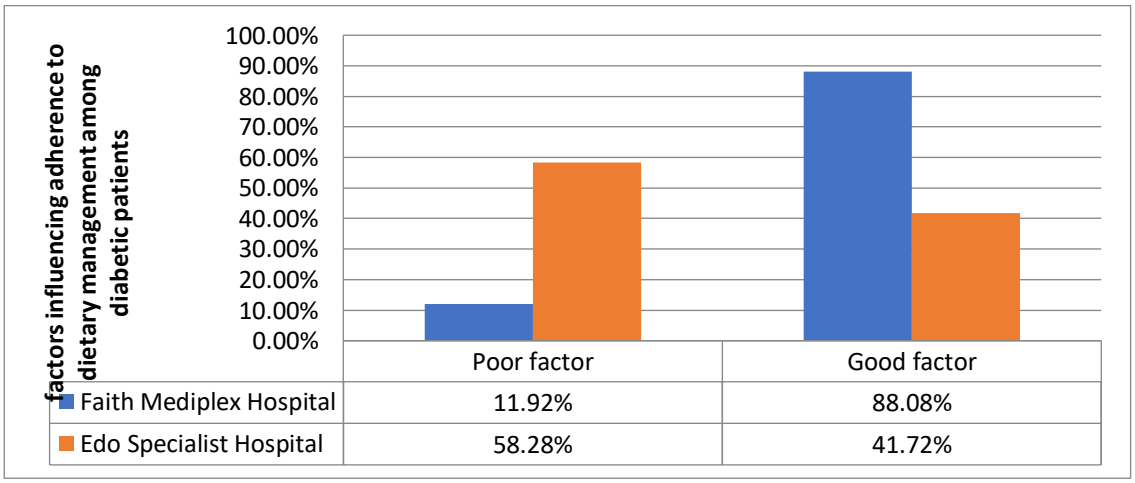
Level of attitude towards dietary management among diabetic patients

Research Question 4: What is the level of adherence regarding dietary management among diabetic patients attending outpatient clinics in selected hospitals in Benin City?



	Poor adherence	Good adherence
Faith Mediplex Hospital	63.46%	36.54%
Edo Specialist Hospital	64.24%	35.76%

Adherence level towards dietary management of diabetes of respondents.



	Poor factor	Good factor
Faith Mediplex Hospital	11.92%	88.08%
Edo Specialist Hospital	58.28%	41.72%

Overall factors influencing adherence to dietary management among diabetic patients

Test of Hypotheses

Hypothesis One

There is no significant relationship between the dietary knowledge management about diabetes mellitus and the attitude among diabetic patients attending outpatient clinics in selected hospitals in Benin City.

Hypothesis one was tested using the Chi-Square test of Association as presented in Table below:

Relationship between respondent's level of dietary knowledge management and attitude among diabetic patients attending outpatient clinics in selected hospitals in Benin City.

Variable	Knowledge of Dietary Management			Total	χ^2
	Poor	Fair	Good		
Attitude					
Poor	79	43	0	122	0.000
Good	0	77	4	81	

Hypothesis two

There is no significant difference in dietary knowledge management of diabetic mellitus among diabetic patients attending outpatient clinics in selected hospitals in Benin City.

Difference in knowledge of dietary knowledge management of diabetic mellitus between respondents of Faith Mediplex hospital and Edo Specialist hospital, Benin City.

	Hospital	Mean	Std. Deviation	F	t	Sig
Knowledge level	Faith Mediplex Hospital	1.63	.525			
				1.204	31.293	0.000
	Edo Specialist Hospital	1.79	.856			

Hypothesis three

There is no significant difference in the level of adherence to dietary management regimen among the diabetic patients attending outpatient clinics in selected hospitals in Benin City.

Difference in adherence level of dietary knowledge management of diabetic mellitus between respondents of Faith Mediplex hospital and Edo Specialist hospital, Benin City.

	Hospital	Mean	Std. Deviation	F	t	Sig.
Adherence	Faith Mediplex Hospital	1.37	.486			
				0.039	1.00	0.844
	Edo Specialist Hospital	1.36	.481			

Hypothesis four

There is no significant difference in the factors affecting adherence to dietary management among the diabetic patients attending outpatient clinics in selected hospitals in Benin City.

Difference in the factors affecting adherence to dietary management among the diabetic patients attending outpatient clinics in selected hospitals in Benin City.

	Hospital	Mean	Std. Deviation	F	t	Sig.
Factor	Faith Mediplex Hospital	1.65	.480	4.147	2.996	0.043
	Edo Specialist Hospital	1.42	.495			

Discussion of Findings

The first finding of this study revealed that majority of the respondents had poor knowledge of dietary management of diabetic patients. This is in line with the study conducted by 31 who revealed that majority of the patients had poor knowledge. Additionally, 32 reported that majority of the patients do not understand the value of blood glucose control while others were not knowledgeable about diabetes. This finding is in consonance with that of 33 in Nairobi, Kenya, which revealed that less than half of respondents were able to correctly define diabetes mellitus as a disease characterised by high blood sugar level as against various opinions by other respondents. These findings indicated that quite a high percentage of the respondents were not knowledgeable about diabetes which by implication will reduce compliance to dietary management. Similarly, 34, Kano, Nigeria reported that knowledge of diabetic patients about dietary management was low. Similar findings were reported by 35, who showed that only 38% of the clients had adequate knowledge of dietary management which prompted their compliance while 62% of the clients did not properly understand. The low level of knowledge recorded in this index study is highly associated with socio-demographic characteristics such as educational level, level of income and religion as majority had only secondary school education. This means they are not well read and cannot source for information themselves which suggests that knowledge about dietary management were not well communicated.

The second finding of this study showed that majority of respondents had positive dietary attitude. This was similar to a study by 36 on type II diabetic patients in Northwest Ethiopia where majority of the respondents had a positive attitude towards lifestyle modification using healthy diet. However, this finding did not agree with the study by 37 which showed a poor attitude among the respondents.

The third finding from the study revealed that majority had poor adherence level. This finding is similar to that of 38 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 39 found from their study that discovered high level of self-care behaviour among the research population when assessing the predictors of adherence to self-care behaviours among diabetics. 40 reported that diabetics did not adhere to recommended diet, self-monitoring of blood glucose and prescribed medication. This shows a substantial low level of adherence to self-care practices which is in contrast with findings from the study. 41 also corroborated the findings from the study which revealed that diabetic patients showed low 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 diabetic 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 adherence to diet.

The fourth finding from the study revealed that the significant factors influencing adherence to dietary management were: the challenge of consistently adhering to diet due to conflicting food preferences and cravings; lack of social support and understanding from family and friends; limited access to affordable diabetic-friendly food options; misinformation and conflicting advice; emotional

factors such as stress, depression and anxiety; busy lifestyles and time constraints; the perception that dietary restrictions are too restrictive or difficult to follow; lack of clear communication and guidance from healthcare providers; patients' personal beliefs and financial constraints.

Additionally, 42 highlighted numerous factors affecting adherence to dietary management such as experience and skill, motivation, cultural beliefs and values, confidence, habits, functional and cognitive abilities, support from others, and access to care. Furthermore, 43 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.

This finding was consistent with the study findings by 44, which showed a significant positive relationship between good dietary practice and self-efficacy. This expression can be explained by the fact that therapy for patients with diabetes requires lifestyle changes but faces difficulties at the beginning. To overcome these difficulties, they need to convince themselves, practice and have high self-efficacy. Diabetic patients with low self-efficacy were stopped by obstacles and difficult situations and began to focus on the negative consequences of the disease rather than following recommended self-care practices 45. Thus, individual dietary choices are influenced by personal priorities, confidence, and self-determination. This study found that patients who received information on diabetes diet from healthcare professionals were 2.9 times more likely to have good dietary practices compared to those who received information from other sources. The result of this study was consistent with the study findings by 46, which showed that patients who had received healthcare professionals' instructions or advice regarding diet had good dietary practices compared to those who had not received dietary advice from healthcare professionals. This evidence might be explained by the fact that the information disseminated by healthcare professionals was appropriate, trustworthy, and scientific, which is vital and the first step to making healthy dietary choices. A large proportion of diabetic patients in this study, 60.8%, did not receive nutritional education on diabetes diets at the hospital, which may have prevented them from receiving diabetes diet information from healthcare professionals. This could have an impact on the healthy dietary practices of patients in the study area. The finding of this study showed that, good dietary practice was 2.3 times more likely higher among diabetic patients who made complete dietary changes after diagnosis of DM compared to those who did not change their dietary habits. Thus, patients who made complete dietary habit change after diagnosis of DM had good dietary practice.

Limitations of the Study

The small nature of the sample size and its representativeness makes the findings ungeneralizable to the entire population.

Suggestions for Further Studies

A longitudinal study is advocated to track changes in diabetes dietary management, prevalence, awareness levels and treatment outcomes over an extended period to compare dietary management strategies and prevalence between different communities to identify regional disparities and best practices.

Conclusion:

Diabetes, one of the major health problems worldwide can be effectively managed by good self-care practices like dietary regulation, medication adherence, exercise, blood glucose monitoring and foot care. High level of dietary management and adherence have a positive impact on the achievement of

glycemic goal among diabetic patients. Therefore, this study investigated the dietary knowledge, attitude and adherence among diabetic patients attending outpatient clinics in Faith Mediplex and Edo Specialist hospitals in Benin City. The findings revealed poor level of dietary management and self-care practices, positive attitude and poor level of adherence. Significant factors identified from the study include cost of treating diabetes. Good relationship between patient and the healthcare team helps to maintain good self-management. Level of education and good family/ social support greatly influence self-care management. Other factors include, age, complexity and time-consuming nature of some of the self-care practices and religion. It is therefore concluded that diabetic patients can be motivated to adhere to dietary management by continuously reinforcing the importance of these activities by health care providers.

Recommendations

The authors recommend the conduct of regular workshops and seminars in the community by the state government to enhance awareness, dietary management, its risks and preventive measures.

The state government should also improve access to healthcare facilities, especially in rural areas to ensure timely diagnosis, treatment and monitoring of dietary management. Training and retraining programmes should be provided for healthcare professionals on diabetes management especially diet, patient education and counseling techniques. Community engagement programmes focusing on promoting healthier lifestyles, exercise and dietary improvements should be implemented and encouraged.

Conflict of Interest

The authors declare no conflict of interest.

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