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Health Promoting Dietary Practices among Diabetics Attending Tertiary Hospitals in Imo East Senatorial District of Imo State, Nigeria

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Abstract

The study examined the extent of adoption of health promoting dietary practices among diabetes attending tertiary hospitals in Imo State, Nigeria. Three research questions and three hypotheses guided the study. The descriptive research design was used. The population for the study comprised all the registered diabetics attending tertiary hospitals in Imo East senatorial district, Imo State. A sample of 391 diabetics was used for the study. Questionnaire was used for data collection. Means, standard deviation, t-test and Analysis of Variance were used for data analysis. Findings of the study show, among others, that most diabetics read food labels before buying and consuming them. There were significant differences in the health promoting dietary practices of various occupational and educational levels. The study recommends that families should adopt healthy dietary habits.

Keywords: Diabetes, Diabetics, Diet, Practices, Health

Introduction

Diabetes mellitus or simply diabetes is a chronic and potentially disabling medical condition affecting millions of people worldwide. Diabetes is increasing rapidly in every part of the world, to the extent that it has now assumed epidemic proportions (Organization for Economic Co-operation and Development-OECD, 2011). Worldwide, an estimated 387 million adults are living with diabetes, and this number is projected to increase to 592 million by 2035 (International Diabetes Foundation – IDF, 2014). The increased cases of diabetes have resulted in millions of deaths. Diabetes resulted in 1.5 million deaths worldwide in 2012, making it the eighth leading cause of death (World Health Organisation – WHO, 2013). A recent report by WHO (2014) indicated that diabetes has tripled in the last two decades globally with the highest prevalence rates found in developing countries such as Nigeria. It is projected to rise to 552 million worldwide by the year 2030,

representing more than 54 per cent increase in less than 20 years. Therefore it is not surprising that it has been reported that diabetes is associated with high morbidity and mortality, with more than five million Nigerians affected (Diabetes Association of Nigeria-DAN, 2013).

Diabetes has emerged as a major and growing health problem in Nigeria. Diabetes is a chronic condition of impaired carbohydrate, protein, and fat metabolism that results from insufficient secretion of insulin (Ene, 2009). The condition develops over time. In this study, diabetes refers to chronic metabolic disorder characterised by chronic high blood sugar, caused by an absolute or relative insulin deficiency or defective action or both resulting in disorders of carbohydrates, proteins and fat metabolism. Diabetes is asymptomatic and can cause many complications if not managed well.

Among the various types of diabetes, type 2 diabetes is most prevalent as well as preventable. Vos and Flaxman (2012) estimated that type 2 diabetes make up about 90 per cent of the global burden of the disease. Operationally, type 2 diabetes is a chronic metabolic disease characterised by high blood sugar (glucose) levels that result from defects in insulin secretion, or action or both. Type 2 diabetes is associated with many debilitating complications. Some of the complications include blindness, kidney disease, heart disease, cardiovascular accident (stroke), limb amputation and other significant health problems (IDF, 2006). With diabetes, life expectancy is significantly reduced. Among the hidden impacts of diabetes is the loss of productivity from disability, sickness, premature retirement, and premature death. Studies has associated type 2 diabetes with dementia, acute hyperglycaemic and hypoglycaemic events and vascular complications that may lead to vision loss, renal failure, foot ulcers and amputation, myocardial infarction, stroke, cardiovascular death, increased risk of cognitive decline, physical disability, falls and fractures, and other conditions associated with geriatric syndromes (Fasanmade, Odeniyi, and Ogbera, 2008; Christian and Stewart, 2010; and Li, Zhang, Wang, An, Gong, and Gregg, 2014). These complications, which are common and can profoundly affect quality of life, will challenge clinicians, health care systems, and public health organizations to identify effective ways of optimizing quality of life among diabetics

Evidences in literature (DAN, 2013 and American Diabetes Association, 2014) show that much progress has been made in recent years worldwide, but there is still room for improvement in tackling the growing number of diabetic cases in Nigeria, especially Imo East senatorial district. Successful control of type 2 diabetes will significantly contribute to the prevention of other chronic diseases such as coronary heart disease,

hypertension, osteoporosis and other cardiovascular diseases. This is due to their shared risk factors, underlying determinants and opportunities for intervention. To prevent or delay the onset of type 2 diabetes, Health promoting dietary practices must be recognised as a cornerstone in a global response to the disease burden.

Health promotion is the process of helping people to take control over their lives so that they can choose options that are health promoting rather than those that are health risking (WHO, 2005). Health promotion seeks the development of community and individual measures which can help people to develop lifestyles that can maintain and enhance the state of their well-being. The focus of health promotion is to prevent diseases, improve health, and enhance human potential through evidence-based interventions and research. Health promotion that aims at preventing people from developing diabetes encourages healthy lifestyle with dietary considerations being paramount. In this study, health promotion is the process of helping diabetics in Imo East senatorial district to take control over their diabetic condition through good dietary practices.

A healthy lifestyle is characterised by balanced diet, moderate exercise, avoidance of tobacco and alcohol. Studies had identified that good dietary practices can prevent or delay the onset of type 2 diabetes in people at high risk (Salas-Salvado, Martinez-Gonzalez, Bullo and Ros, 2011; Katz, and Meller, 2014; Li, Qu, Zhang, Chattopadhyay, Gregg, Albright, Hopkins, and Pronk, 2015; and Pronk and Remington, 2015). These good dietary practices are termed health promoting dietary practices in line with managing diabetes and other chronic conditions (McGuire, 2011).

Health promoting dietary practices is a veritable way of diabetes prevention and treatment through dieting. Health promoting dietary practices contributes to the prevention of a variety of diseases as well as enhancing a positive feeling of wellness and vitality. Contextually, health promoting dietary practices is the efforts and processes employed by the diabetics at individual, organizational and community levels to enhance control of their health over diabetes through diet. Dietary practices encompass all the efforts of diabetics to eat right. Eating right for diabetics is tantamount to eating foods that have direct positive impact on their condition. Diabetics must be encouraged to eat more fibre by eating more whole-grain foods, fruits and vegetables (Hagobian and Phelan, 2013).

Addressing the health promoting dietary practices of diabetics attending tertiary hospitals in Imo East senatorial district is as important as reducing the mortality and morbidity of diabetes and its complications. The findings will expose the dietary practices, thereby providing ample opportunities for redress among the

diabetics, care-givers, health educators and people at risk.

Purpose of the Study

The major purpose of this study was to find out the health promoting dietary practices of diabetics attending tertiary hospitals in Imo East senatorial district of Imo State. Specifically, the study determined the health promoting dietary practices of diabetics based on their:

1. age;
2. gender;
3. occupation; and
4. level of education.

Research Questions

Four research questions guided the study.

What are the health promoting dietary practices of diabetics by:

1. gender?
2. age?
3. occupation?
4. level of education?

Hypotheses

Four null hypotheses were tested at P ≤.05 level of significance. There are no significant difference in the mean responses of the diabetics on health promoting dietary practices adopted (p.0.05) based on their: gender, age, occupation and educational level.

Methodology

***Design of the study*:** The study adopted the descriptive survey research design.

Area of the study: The study was conducted in Imo East Senatorial District. Imo East senatorial district has two tertiary health facilities where diabetics meet weekly to receive care in great numbers.

***Population for the Study*:** The population for the study comprised of 17,076 registered diabetics attending tertiary hospitals in Imo East senatorial district, Imo State. Data were obtained from the Health Records Department, FMC, Owerri, 2014 and Health Records, Umuguma, 2014). Registered diabetics that attend FMC, Owerri from January 2013 till September 2014 were 12,865, while Specialist Hospital, Umuguma comprised of 4211 registered diabetics as at September, 2014. Though the population kept changing as people stop attending hospital, new people register, and some die as a result of the complications.

***Sample for the study*:** The sample for the study consisted of 391 diabetics. The proportionate sampling technique was used to draw the sample from the hospitals based on their population. This ensured proper representation of the hospitals. Then, systematic random sampling was used to select the respondents using their daily attendance register. This technique was employed consecutively for four weeks to ensure that every diabetic has the chance of being sampled. Already sampled persons after the first week were invalidated when sampled the second time.

***Instrument for Data Collection*:** Questionnaire was used for data collection. It consisted of two sections (A & B). Section A was on selected demographic variables for the study (gender, age, occupation and level of education), while section B consisted of questions on some health promoting dietary practices for diabetics. Five experts validated the instrument. Three experts came from Human Kinetics and Health Education, University of Nigeria Nsukka; two came from Federal Medical Centre. The experts' constructive criticisms, corrections and suggestions were used to modify and improve the instruments before it was used for the present study. A split half method using the Spearman's Brown correlation formulas was used to correlate the data generated. The reliability index of .84 was obtained, and adjudged reliable for embarking on the study.

***Method of Data Collection*:** Four hundred (400) copies of the questionnaire were administered by the researcher to the respondents by hand. Out of the 400 copies of the questionnaire that were administered, 387 were properly and duly filled out, and were used for data analysis. This yielded a return rate of 96.75 per cent.

Method of Data Analysis: Data were analyzed using means and standard deviations for the research questions. The t-test and Analysis of Variance (ANOVA) statistics were used to test the hypotheses at .05 level of significance.

Findings of the Study

Table 1: Mean responses and t-test analysis of the differences in the mean health promoting dietary practices of male and female diabetics.

Item No.	Health Promoting Dietary Practices	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_g$	SD_1	SD_2	t-test	p	Remark	
									$\bar{x}g$	t-test
	Most diabetics:									
1	Read food labels before you purchase and consume them.	3.7	3.8	3.8	1.4	1.2	-.497	.004	A	S
2	Give up your favourite foods such as banga soup, fufu, etc because of diabetes.	3.5	3.5	3.5	1.3	1.4	.055	.144	A	NS
3	Seek expert nutritional advice from nutritionists and dieticians.	3.8	3.6	3.7	1.2	1.4	1.393	.002	A	S
4	Abide by the prescribed diets and food menu.	3.9	3.7	3.8	1.1	1.3	1.621	.001	A	S
5	Eat fruits and vegetables.	3.8	3.8	3.8	1.2	1.1	-.460	.358	A	NS

6	Eat whole foods such as whole grain and bread.	3.3	3.4	3.3	1.2	1.2	-.838	.894	A	NS
7	Avoid fried foods.	3.0	2.4	2.7	1.4	1.4	3.477	.780	A	NS
8	Avoid ice creams, chocolates and pastas.	2.3	2.4	2.4	1.5	1.5	-.670	.314	D	NS
9	Avoid adding raw salt to meals after cooking.	2.1	2.1	2.1	1.2	1.3	-480	.225	D	NS

$\bar{x}1$= mean for males; $\bar{x}2$ = mean for females; $\bar{x}g$ = grand mean; SD_1 = standard deviation for males; SD_2 = standard deviation for females; Number of males = 168; females = 219; Total = 387

Table 1 shows the grand mean health promoting dietary practices on all the items. All the items had means above the criterion mean of 2.5 with exception of items 8 and 9. This implies that the diabetics adopt all the health promoting dietary practices. The table also shows that significant differences exist in male and female diabetics adoption of health promoting dietary practices with regard to most diabetics read food labels before buying and consuming them, seeking expert nutritional advice from professionals and abiding by the prescribed diets and food menu. While the male diabetics avoided fried foods ($\bar{x}$ = 3.0), female diabetics did not avoid it ($\bar{x}$ =2.4).

Table 2: Analysis of Variance (ANOVA) of the mean responses of the Health Promoting Dietary Practices of Diabetics by Age

Item No.	**Health Promoting Dietary Practices**	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_g$	**F-cal**	**p**	**Remark**	
								$\bar{x}_g$	F-cal
	Most diabetics:								
1	Read food labels before you purchase and consume them.	3.9	3.9	3.4	3.8	5.820	.003	A	S
2	Give up your favourite foods such as banga soup, fufu, etc because of diabetes.	3.6	3.5	3.5	3.5	.233	.792	A	NS
3	Seek expert nutritional advice from nutritionists and dieticians.	3.5	3.9	3.7	3.7	1.863	.157	A	NS
4	Abide by the prescribed diets and food menu.	3.6	3.8	3.9	3.8	1.905	.150	A	NS
5	Eat fruits and vegetables.	3.9	3.6	3.9	3.8	3.370	.035	A	S
6	Eat whole foods such as whole grain and bread.	3.4	3.2	3.4	3.3	1.170	.312	A	NS
7	Avoid fried foods.	3.3	2.3	2.6	2.7	20.596	.000	A	S
8	Avoid ice creams, chocolates and pastas .	3.1	2.0	2.0	2.4	23.941	.000	D	S

9	Avoid adding raw salt to meals after cooking.	2.3	1.8	2.1	2.1	5.627	.004	D	S

$\bar{x}_1$= mean for diabetics aged 13-30 years; $\bar{x}_2$= mean for diabetics aged 31-49 years; $\bar{x}_3$= mean for diabetics aged 50 years and above; $\bar{x}_g$ = grand mean; Number of diabetics aged 13-30 years = 127; diabetics aged 31-49 years = 141; diabetics aged ≥50 years = 119; Total = 387

Table 2 reveals that the diabetics agree with items 1-7 and disagreed with items 8 and 9 because their means are below the criterion mean (2.5). Table 2 also reveals that significant differences exist in diabetics of all age's adoption of health promoting dietary practices in five out of nine statements. The table further shows that most diabetics aged 13 – 30 years avoid ice cream and chocolates ($\bar{x}$ = 3.1) while most diabetics of other ages did not (31 -49 years = $\bar{x}$ = 20; ≥ 50 years = $\bar{x}$ =20).

Table 3: Analysis of Variance (ANOVA) of the mean responses of the Health Promoting Dietary Practices of Diabetics by Occupation.

Item No.	**Health Promoting Dietary Practices**	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_4$	$\bar{x}_g$	**F-cal**	**p**	**Remark**	
									$\bar{x}_g$	F-cal
	Most diabetics:									
1	Read food labels before you purchase and consume them.	3.4	3.8	3.8	4.1	3.8	5.869	.001	A	S
2	Give up your favourite foods such as banga soup, fufu, etc because of diabetes.	3.1	3.7	3.5	3.6	3.6	4.138	.007	A	S
3	Seek expert nutritional advice from nutritionists and dieticians.	3.4	3.7	3.7	3.7	3.6	4.991	.002	A	S
4	Abide by the prescribed diets and food menu.	3.5	3.6	3.8	3.7	3.7	11.63	.000	A	S
5	Eat fruits and vegetables.	3.6	3.9	3.8	3.7	3.8	6.740	.000	A	S
6	Eat whole foods such as whole grain and bread.	3.4	3.2	3.3	3.3	3.3	.417	.741	A	NS
7	Avoid fried foods.	2.8	2.4	2.7	2.8	2.7	1.580	.194	A	NS
8	Avoid ice creams, chocolates and pastas.	2.2	1.7	2.4	2.6	2.2	13.21	.000	D	S
9	Avoid adding raw salt to meals after cooking.	1.7	2.1	2.1	2.0	2.0	10.83	.000	D	S

$\bar{x}_1$= mean for diabetic civil servants; $\bar{x}_2$= mean for diabetic business/traders; $\bar{x}_3$ = mean for diabetic artisans; $\bar{x}_4$= mean for unemployed/retired diabetics; $\bar{x}_g$ = grand mean;

Number of diabetic civil servants = 88; diabetic business/traders = 90; diabetic artisans = 60; unemployed/retired diabetics = 149; Total = 387

Table 3 reveals that the respondents agree with all the item statements except items 8 and 9. The table also shows that significant differences exist in health promoting dietary practices in seven out of the nine statements. The differences are with regard to most diabetics reading food labels, giving up their favourite foods, seeking expert nutritional advice from professionals, abiding by the prescribed diets, eating fruits and vegetables, avoiding ice cream, chocolates and pastas, and avoiding uncooked salts. While the civil servants ($\bar{x}$ = 2.2), traders/business people ($\bar{x}$ = 1.7) and artisans ($\bar{x}$ = 2.4) did not avoid ice creams, chocolate and pastas, majority of the unemployed/retirees did ($\bar{x}$ = 2.6).

Table 4: Analysis of Variance (ANOVA) of the mean responses of the Health Promoting Dietary Practices of Diabetics by Level of Education.

Item No.	Health Promoting Dietary Practices	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_g$	F-cal	p	Remark	
								$\bar{x}_g$	F-cal
	Most diabetics:								
1	Read food labels before you purchase and consume them.	3.7	3.6	4.0	3.8	.564	.569	A	NS
2	Give up your favourite foods such as banga soup, fufu, etc because of diabetes.	1.9	2.7	2.6	2.4	.816	.443	D	NS
3	Seek expert nutritional advice from nutritionists and dieticians.	2.3	3.6	3.7	3.2	5.519	.004	A	S
4	Abide by the prescribed diets and food menu.	3.5	3.2	3.9	3.5	10.579	.000	A	S
5	Eat fruits and vegetables.	3.3	3.1	3.8	3.4	2.175	.115	A	NS
6	Eat whole foods such as whole grain and bread.	3.5	3.6	3.8	3.6	4.699	.010	A	S
7	Avoid fried foods.	2.7	2.3	1.8	2.3	5.098	.007	D	S
8	Avoid ice creams, chocolates and pastas.	3.5	3.7	3.8	3.7	6.880	.001	A	S
9	Avoid adding raw salt to meals after cooking.	3.3	2.7	2.4	2.8	19.350	.000	A	S

$\bar{x}_1$= mean for diabetics whose highest educational level was pre-secondary education; $\bar{x}_2$= mean for diabetics whose highest educational level was secondary education; $\bar{x}_3$= mean for diabetics whose highest educational level was post secondary education; $\bar{x}_g$ = grand mean; Number of diabetics with pre-secondary education only = 36; diabetics with secondary education only = 105; diabetics with post secondary education = 246; Total = 387

Table 4 shows that significant differences exist among diabetics of various level of education with regards to health promoting dietary practices in six out of the nine statements. The differences are with statements that most diabetics; seek expert nutritional advice, abide by the prescribed diets and food menu, eat whole foods, avoid fried foods, avoid ice creams, chocolates and pastas, and avoid adding raw salt to meals after cooking. While the diabetics with secondary education ($\bar{x}$ = 2.7) and post-secondary education ($\bar{x}$ = 2.6) gives up their favourite dishes because of diabetes, the diabetics with only pre-secondary education did not ($\bar{x}$ = 1.9). Also, only those with only pre-secondary education ($\bar{x}$ = 2.7) agreed to avoiding fried foods, others did not (secondary education= $\bar{x}$ = 2.3; post-secondary education = $\bar{x}$ =1.8).

Discussion

Findings of this study from Table 1 show that most diabetics read food labels, abide by the prescribed diets and food menu, and eat fruits and vegetables. This explains the impact of various health talks delivered at tertiary hospitals for diabetics before giving care. Research studies have shown diabetics willingness to accept promotion programs to prevent type 2 diabetes (Li, *et al,* 2014; Balk, Earley, Raman, Avendano, Rittas and Remington, 2015). The finding of this study is therefore not surprising because it has been shown that eating right diet is an important part of maintaining good health, and can help diabetics be their best (Katz and Meller, 2014). It is also of interest to note that the male diabetics did not adopt significantly more than the female diabetics (p = .780) that most diabetics avoid fried foods. This is surprising because most female diabetics in the study did not avoid fried foods ($\bar{x}$ =2.4) whereas most male diabetics did ($\bar{x}$ = 3.0). This is supported by Samuel, Emah and Kabiru (2013) who found that females in addition to eating much oil, fried foods and fatty meat, also take more snacks and fast foods daily than males.

The result in Table 2 also shows significant differences in the item 1 (read food labels before buying and consuming them), item 5 (eat fruits and vegetables) and item 8 (avoid ice creams, chocolates and pastas). Diabetics within the age group of 13 - 30 years agreed that most diabetics avoid ice creams and chocolates more ($\bar{x}$ = 3.1) than diabetics of age groups 31 -49 ($\bar{x}$ = 2.0) and ≥ 50 years ($\bar{x}$ = 2.0). This means that diabetics within the age group of 13 – 30 years adopted dietary practices more than others. This finding is unexpected and surprising because the researcher expected the younger diabetics to be carried away with their youthfulness in dietary practices thereby bingeing in food fads and sweet foods. Studies have associated consumption of sugar-sweetened creams and drinks in excess with an increased risk of diabetes (Palmer, Boggs, Krishnan, Hu, Singer and Rosenberg, 2008;

Malik, Popkin, Bray, Després and Hu, 2010). Salas-Salvado, Martinez-Gonzalez, Bullo and Rose (2011) submitted that commercial beverages containing simple sugars such as sweetened beverages(soft drinks, non diet cola and sodas), ice creams and natural or commercial fruit juices, which are oftentimes sugar enriched, are prototypes of high glycaemic index foods that are consumed in significant amount worldwide. Observational studies have consistently shown that their consumption relates to an increased risk of diabetes after adjustment for various confounders (Odegaard, Koh, Arakawa, Yu, and Pereira, 2010; and Carter, Gray, Troughton, Khunti, and Davies, 2010).

Regarding health promoting dietary practices among various occupations, Table 3 reveal that all the occupations eat whole foods. This finding is expected owing to the fact that diabetics receive health talks about it and supported by Nield, Summerbell, Hooper, Whittaker and Moore (2008). Naglaa and Mohamed (2010) in their study concluded that health education was an effective tool that implicated reduction in random blood sugar and haemogloin Alc levels in diabetic patients. In consonance, Katz and Meller (2014) affirmed that a diet of minimally processed foods close to nature (whole foods) is decisively associated with health promotion and disease prevention and is consistent with the salient components of seemingly distinct dietary approaches.

Data in Table 4 show that most diabetics agreed to all the item statements except giving up favourite foods ($\bar{x}$ = 2.4) and avoiding fried foods ($\bar{x}$ = 2.3). Diabetics with pre-secondary education (non-educated) disagreed to giving up their favourite foods because of diabetes ($\bar{x}$ = 1.9). This is worrisome because high risk diabetics are expected to comply with all dietary regimens that are capable of reducing the risk. Large observational studies have provided conflicting results, showing both positive and negative associations of total carbohydrate intake with diabetes risk (Raina and Kenealy, 2008; Schellenberg, Dryden, Vandermeer, Ha and Korownyk, 2013). Instead, the quality of carbohydrates ingested may be of extreme importance in determining the ability to raise glucose levels, which depends to a great extent on its influence on gastrointestinal transit and the velocity of nutrient absorption, and the long-term risk of diabetes (Risérus, Willett, and Hu, 2009). Significant difference exists in the seeking expert nutritional advice of diabetics of various level of education. Most non-educated diabetics disagreed to seeking expert nutritional advice ($\bar{x}$ = 2.3).

Conclusion

Diabetics attending tertiary hospitals in Imo East senatorial district adopt health promoting dietary practices in reading food labels before buying and consuming them, seeking expert nutritional advice from professionals,

abiding by the prescribed diets and food menu, eat fruits and vegetables and eating whole foods. Therefore it is concluded that diabetics attending tertiary hospitals in Imo-East senatorial district adopt health promoting dietary practices highly. There were significant differences in the health promoting dietary practices of; male and female diabetics, various age groups and various occupations on reading food labels before buying and consuming them.

Recommendations

1. Radical health education should be mounted on the diabetics for them to see the need for avoidance of ice creams, chocolates, pastas and use of raw salt. This can be achieved through partnership and collaborations with agencies that have diet regulation and diabetes prevention as part of their mandate.
2. Health educators at the study centres should emphasize the avoidance of fried foods, especially among middle adults.
3. Extra attention should be directed towards diabetics with no formal education or only primary education to enable them key into the good dietary practices required of a diabetic.

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