Diabetic knowledge and care practices among first degree adult relatives of type 2 diabetic patients in a University Teaching Hospital, Nigeria

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Abstract

Background: Presence of DM patient in a family may be considered as risk factor for other family members especially first-degree family members. **Objective:** This study aimed to assess the knowledge and care practices of diabetic patients' first-degree relatives in a Nigeria Teaching Hospital. **Materials and Methods:** It was a descriptive cross-sectional survey using convenient sampling techniques which involved 280 participants. Data were collected using questionnaire and analyzed in SPSS version 22. **Results:** The result showed that many 112(40.0%) of them were within 28-37years of age and the mean ± SD age was (32.61 ± 6.425) years. Female were more 164(58.6%) than male 116(41.4%). Those with secondary education attainment were more 132(47.1%). Almost half 138(49.3%) were single. With respect to relationship with the diabetic patients, children were more 122(43.6%) followed by sisters 60(21.4%), mothers 38(13.6%), brothers 36(12.9%) and fathers 24(8.6%). Almost 267(95.4%) all the respondents were aware of diabetes and the major source of information was health facility 178(63.6%). Only 50(17.9%) of the respondents demonstrated good knowledge while 122(43.6%) demonstrated moderate knowledge and 108(38.5%) demonstrated low knowledge. Majority 224(80.0%) engaged in poor lifestyle practices. Therefore, diabetic patients' close family members should be included in the long-term management plan of diabetic patients by healthcare professionals.

Introduction

Diabetes mellitus (DM) describes a group of metabolic disorders characterized by high blood glucose levels. It is a chronic disease with public health concern. According to International diabetes federation, (1), about 463 million adults aged 20–79 years are living with diabetes, which represents 9.3% of the world's population in this age group. The total number is predicted to rise to 578 million (10.2%) by 2030 and to 700 million (10.9%) by 2045 (1).

It has been reported that diabetes can be controlled but diabetic knowledge has been found to be inadequate especially in developing countries where the disease is becoming more prevalent (2). Knowledge is important in early detection and prevention. Knowledge of diabetes can have significant impact on the quality of diabetic patients' life as information can inspire individual or families to assess their risk of diabetes, seek proper treatment and take charge of their diabetic condition for their lifetime. (3) Poor knowledge of diabetes, especially among high risk individuals, may be contributing to the high burden of the disease in Sub-Saharan Africa. (4)

Family history has been indicated as a main risk factor for development of diabetes. In addition, having a first-degree relative with diabetes is considered an important risk

factor to developing type 2 diabetes. First degree relatives, which include parents, offspring, and siblings are described as members to share 50% of their genes with a family member (5) This may be due to inheritance of genetic risk factors and/or a similar life style pattern among family members (6). The risk for incident diabetes is four times higher among women whose mothers had diabetes (7). Previous findings revealed that first degree relatives have six times higher risk of developing Type 1 diabetes than unrelated individuals from the general population and first degree relatives of individuals with Type 2 diabetes have three times more risk of developing the disease than persons without a positive family history of the disease (8). The estimated risk for the diagnosis of Type 2 diabetes increases approximately by 2-4 times, when either parents or both have this condition, and the chances of Type 2 diabetes in the next generation is more where the diabetic is the mother than father (9).

Modifications of simple lifestyle, such as reducing sugar intake, have been reported to be important for the reduction of diabetes mellitus incidence (1). Previous studies have shown various proportion of knowledge regarding diabetes mellitus in Kenya 27% (11) 41.9% in Malaysia [12] and in Bale Zone administrative, Ethiopia 52.5% (13). The perceived risk of developing diabetes was reported low at the community level in Ethiopia (14)

About one third of all people with diabetes do not know they have the disease, furthermore, there is paucity of studies directed towards assessment of knowledge of diabetes among first degree relative of diabetic patients in Benin metropolis. Filling this gap is the basis for embarking on this study that aimed at assessing the knowledge of diabetes among first degree relatives of diabetic patients of a tertiary hospital in south-south, Nigeria. The study was guided by the following objectives: to assess the level of knowledge of diabetes Mellitus and practice of routine healthy life style among

first degree relatives of diabetic patients of the tertiary hospital.

Materials and Methods
Descriptive cross-sectional study design was the design used in this study. This study involved only first-degree relatives of patient being managed for diabetics in four adult medical wards of the hospital Nigeria with 30 beds each. The study was carried out from February 2021 to July 2021. The study population was 290. For the purpose of this study, census sampling approach was utilized since all members of the population were studied. However, 280 questionnaires were retrieved.

Instrument for Data Collection
Data for this study were collected using structured questionnaire. The questionnaire consisted of three sections – A-C. **Section A**: It contained questions on socio-demographic characteristics of the respondents. **Section B**: assessed the respondents knowledge level of diabetes. **Section C:** assessed practice level of routine healthy lifestyle among the respondents.

The instrument was validated by was evaluated by a clinical endocrinologist and the project supervisor. The reliability was done by administering the questionnaire to 10% of the research sample size in a plot study of a similar hospital. Using a split half reliability test the data generated will be analyzed using IBM Social Science Statistical Package for Social Science) (SPSS) version 22.0 and the Cronbach's alpha value of 0.886.

Method of data collection
The questionnaires were administered by the researcher along with two research assistants that were trained for such purpose. The data were collected during visiting hours (4pm – 6pm) three times every week.

Method of Data Analysis
The raw data retrieved were analyzed using IBM, SPSS version 22.0. Descriptive data were expressed as percentages, frequency counts, and mean ± standard deviation. For

section B, < 50% = low knowledge, 50 - 70% = moderate knowledge while > 70% high knowledge. For section C, ≤ 50% = poor healthy lifestyle practice while > 50% good healthy lifestyle practices. Hypotheses were tested using Pearson chi-square statistics at 5% level of significance. $P < 0.05$ was considered the level of significance for all measured variables.

Ethical Approval: Ethical approval was obtained from the research and ethics committee of the University Benin Teaching Hospital, Benin City, Nigeria.

Results
Table 1 showed the demographic variables of the respondents. Many 112(40.0%) of them were within 28-37years of age, 102(36.4%) were above 37years while 66(23.6%) were between 18-27years. Mean ± SD age was (32.61 ± 6.425) years. Female were more 164(58.6%) than male 116(41.4%). Those with secondary education attainment were more 132(47.1%) followed by tertiary education qualification 84(30.0%) and primary qualification 42(15.0%). Only 22(7.9%) has no formal educational qualification. Almost half 138(49.3%) of the respondents were single while 128(45.7%) were married. 248(88.6%) were from monogamy family settings while 248(88.6%) were from polygamous setting. Concerning number of children, 168(60.0%) were childless, 88(31.4%) had 1-3 children while 24(8.6%) had more. Many 116(41.4%) were unemployed, 115(41.0%) were self-employed, 38(13.6%) were civil servant while 11(3.9%) were retiree. With respect to relationship with the diabetic patient, children were more 122(43.6%) followed by sisters 60(21.4%), mothers 38(13.6%), brothers 36(12.9%) and fathers 24(8.6%). Table 2 revealed the respondents knowledge scores on the different aspect of diabetes. It showed that the respondents had a mean knowledge score of (48.8%) on risk factors of diabetes, (53.9%) on symptoms of diabetes, while (62.3%) on complication of diabetes. The overall mean knowledge score

was (56.2%). Table 3 revealed that only 50(17.9%) of the respondents demonstrated good knowledge in every aspect of diabetes required in the study, 122(43.6%) demonstrated moderate knowledge while 108(38.5%) demonstrated low knowledge.
Table 4 revealed that approximately 19.97% of respondents had perception of susceptibility to developing diabetes in the future. Additionally, 62.4% of the participants correctly agreed to the statements related to the seriousness of the disease. 73.4% of the participants perceived barriers implementing lifestyle change. 75% of participants considered not having time for exercises; and 68% of the respondents complained of lack enough money and `80% of the respondents would not want know about their status. Only 56% of the participants perceived risk; 9. 1% and 34.3% were neutral or did not perceive any risks.
Table 5 showed that only 22(7.9%) of the respondents practice voluntary routine blood glucose check (random or fasting) of which only 4(1.4%) had checked in the last 3 months prior to the study. Reasons for not practicing routine blood glucose check include feeling of not being at risk 167(59.6%), not always have the time 24(8.6%) and not feeling like 67(23.9%). Only 42(15.0%) had glucometer at home for personal use, 189(65.5%) practice low sugar/sugary beverages intake, only 22 (7.9%) practice voluntary routine weight check, while many 130(46.4%) only engage in active exercise seldom.
Table 6 showed that only 56(20.0%) practices adequate routine healthy lifestyle while majority 224(80.0%) engaged in poor healthy lifestyle practices

Discussion of Findings
Diabetes mellitus (DM) is one of the serious non communicable diseases worldwide. This study evaluated knowledge of diabetes among first degree relatives of diabetic patients in a tertiary hospital, South-South, Nigeria.

The present study had more female participants than male. This finding is contrary to the previous finding which reported more male than female among diabetes mellitus family members, in suburban cities in Ethiopia (15). However, both studies shared similarity in the sense that there were more single respondents with respect to marital status, the predominated age range of the participants and proportion of secondary education qualification holders were comparable. The difference in the sex distribution in the present study may be due to the study setting. While the Ethiopia's study was community-based study, this study was an institution-based study. Being a hospital environment, it is not surprising that there were more female participants. Traditionally, female are endowed with caring and compassionate attitude therefore, they are more likely to play the role of care giver for the sick than male.

The knowledge of diabetes mellitus was poor among the respondents. Only (17.9%) of the respondents demonstrated good knowledge in every aspect (risk factors, symptoms, treatment, and complication) of diabetes. The proportion of the respondent that currently identified overweight/obesity, sedentary lifestyle and family history of diabetes as risk factor for developing the disease was lower compare to the findings in Britain. (16).

Diabetic patients' first-degree family members are expected to have more chance to be in contact with diabetes patients at least within their families, so, assumed to have better knowledge of diabetes especially the risk factors, symptoms and treatment. But the participants demonstrated poor knowledge in these areas. This shows that the participants attached less importance to the disease and such do not bother to study about disease. Thus, developing effective prevention approaches for individuals at increased diabetes, familial risk will likely require improving their knowledge about the modifiable and non-modifiable risk factors for the disease.

It is expected that having an immediate family member living with diabetes may motivate at risk family members to modify their attitudes and knowledge about the disease, thus encourage health-protective behaviors. However, only one-fifth of the participants in the present study practices adequate routine healthy lifestyle. This finding is at variance with the findings of Shiferaw et al, (17) With the low level of knowledge and risk perception, it is not surprising that majority of the participants engaged in poor practice of routine healthy lifestyle.

This present study, showed that respondents had perceived susceptibility to developing diabetes in the future. This agrees with the results in Rwanda (18) where majority of respondents felt that that they would develop diabetes. Additionally, 62.4% of the participants correctly agreed to the statements related to the seriousness of the disease. Regarding perceived severity, the result of this study reveals that diabetes Mellitus is serious, this is consistent with the study in Namibia where 71% reported Diabetes Mellitus as a serious disease (19). This may reflect that there are other diseases that take priority and are viewed as more serious. In addition, not knowing the seriousness of a condition could be due to a lack of education interventions that can assist in alerting communities about these health conditions.

Proper education about diabetes is one primary treatment approach and preventive measure. It has been opined that enhancing public knowledge about a health threat is a fundamental first step in informing discussions that promote behavior change across multiple determinants of health and aligning health policies with general public health interests (20). The finding from this study suggested that diabetic patients' first-degree family members should be included in long term management plan of diabetic patients.

Conclusion

There is poor knowledge of diabetes and practices of routine healthy lifestyle among first degree relatives of diabetic patients in University of Benin Teaching Hospital, Benin City, Edo State, Nigeria. In conclusion, educating relatives is known diabetic patients is essential to ensure healthy lifestyle and control of diabetes. There is need for clinical diabetes screening of first-degree relatives to determine family prevalence of diabetes among first degree family members of diabetic patients.

Table 1: Showing social-demographic characteristics of the respondents (n = 280)

Variable	Tenets	Frequency	Percent
Age	18-27	66	23.6
	28-37	112	40.0
	>37	102	36.4
	Mean ± SD = 32.61 ± 6.425		
Sex	Male	116	41.4
	Female	164	58.6
Level of education	None	22	7.9
	Primary	42	15.0
	Secondary	132	47.1
	Tertiary	84	30.0
Marital Status	Single	138	49.3
	Married	128	45.7
	Divorced	8	2.9
	Window	6	2.1
Number of children	Nil	168	60.0
	1-3	88	31.4
	More	24	8.6
Your relationship with the patient	Father	24	8.6
	Mother	38	13.6
	Child	122	43.6
	Brother	36	12.9
	Sister	60	21.4

Table 2: Showing the level of knowledge of diabetes among the respondents (n = 280)

Variables	Response	True(%)	False(%)
Risk factor of diabetes			
	- Excessive sugary beverages intake	152(54.3)	128(45.7)
	- Tobacco consumption (smoking)	86(30.7)	194(69.3)
	- Stress, depression and anxiety	101(36.1)	179(63.9)
	- Overweight/obesity	151(53.9)	129(46.1)
	- Sedentary lifestyle	149(53.2)	131(46.8)
	- Old Age	208(74.3)	72(25.7)
	- Male Gender	158(56.4)	122(43.6)
	- Family history of diabetes	132(47.1)	148(52.9)
	- Existing chronic health condition (e.g, hypertension)	148(52.9)	132(47.1)
	Mean percent score	**48.8%**	
Symptoms of diabetes			
	- Excessive thirst, is a symptom of diabetes	154(55.0)	126(45.0)
	- Weight loss is a symptom of diabetes.	139(49.6)	141(50.4)
	- Feeling constantly tired than usual is a symptom of diabetes	148(52.9)	132(47.1)
	- Frequent urination, especially at night, is a symptom of diabetes.	198(70.7)	82(29.3)
	- Slow healing of cuts and wounds are symptoms of diabetes.	152(54.3)	128(45.7)
	- Blurriness of vision is a symptom of diabetes.	128(45.7)	152(54.3)
	- Numbness of hands and feet is a symptom of diabetes.	138(49.3)	142(50.7)
	Mean percent score	**53.9%**	
Complications of diabetes.			
	- When diabetes is left untreated, it can lead visual impairment	156(55.7)	124(44.3)
	- Wounds in people with diabetes heal more quickly.	106(37.9)	174(62.1)*
	- Complication of diabetes may be seen in nerves.	116(41.4)	164(58.6)
	- Diabetes complications can cause cardiovascular diseases.	267(95.4)	13(4.6)
	- Diabetes complications can result in amputation.	226(80.7)	54(19.3)
	- Long term complications of diabetes cannot be prevented.	167(59.6)	113(40.4)
	- Diabetes complications can cause kidney problems.	124(44.3)	156(55.7)
	- Diabetes complications cannot affect a pregnant woman.	138(49.3)	142(50.7)
	- Diabetes can cause male sexual dysfunction.	202(72.1)	78(27.9)
	Mean percent score	**62.3%**	

Grand mean knowledge score = 56.2%

Table 3: Showing composite of knowledge of diabetes among the respondents (n = 280)

Level of knowledge	Percent score value	Frequency	Percent
Good	≥70	50	17.9
Moderate	50-69.9	122	43.6
Low	<50	108	38.5
Total		280	100.0

Table 4: Showing risk perception of diabetes mellitus among the respondents (n = 280)

Variables	Options	Agree N (%)	Neutral N (%)l	Disagree N (%)
Perception of susceptibility	I can become diabetic sometimes in my life	50 (17.8)	45 (16.1)	185 (66.1)
	Every human being has equal chances of becoming diabetic	62 (22.14)	35 (12.5)	183 (65.36)
	Average score	56 (19.97)	40 (14.3)	184 (65.73)
Perception of severity	DM becomes serious if not prevented	100 (35.72)	20 (7.14)	160 (57.14)
	I will be depressed if I develop DM	112 (40)	14 (5)	154 (55)
	DM kills fast	80 (28.57)	14 (5)	186 (66.43)
	If I develop DM, I will seek medical aid	200 (71.43)	4 (1.43)	76 (27.14)
	Average Score	123 (43.93)	13 (4.64)	144 51.43)
Beliefs	Consuming low sugar and fat meals will prevent future DM	200 (71.4)	13 (4.64)	67 (23.6)
	Regular physical exercise will be necessary to prevent DM in future	64 (23)	28 (10)	188 (67)
	Maintaining normal body weight will help control DM	78 (28)	34 (12)	168 (60)
	DM can be cured	98 (35)	70 (25)	112 (40)
	Average Score	110 (39.35)	37 (13)	133 (47.65)
Perceived Barriers	Not enough time to exercise	210 (75)	14 (5)	56 (20)
	Lack of enough money for regular check-up	190 (68)	34 (12.14)	56 (20)
	I do not want to be told that I have diabetes	224 (80)	0 (0)	56 (20)
	Average Score	208 (74.3)	16 (5.7)	56 (20)
	Composite Percentage	124(44.39%)	27(9.41%)	129(46.2%)

Table 5: Routine healthy lifestyle practice among the respondents (n = 280)

Variable	Tenets	Frequency	Percent
Do you practice voluntary routine blood glucose check (random or fasting):	Yes	22	7.9
	No	258	92.1
If yes, when last have you checked your blood glucose?	0-3months ago	4	1.4
	4-6months ago	2	0.7
	7-10months ago	10	3.6
	More than a year ago	6	2.1
If no, why?	I am not at risk	167	59.6
	I don't always have the time	24	8.6
	I just don't feel like	67	23.9
Do you have glucometer at home for personal use	Yes	42	15.0
	No	238	85.0
Do you practice low sugar/sugary beverages intake	Yes	189	65.5*
	No	91	32.5
Do you practice voluntary routine weight check:	Yes	22	7.9
	No	258	92.1
How often do you engage in active exercise?	Occasional	109	38.9
	Regularly	22	7.9*
	Seldom	130	46.4
	Never	19	6.8

Table 6: Showing level of routine healthy lifestyle practices among the respondents (n = 280)

Level of practice	Percentage score value	Frequency	Percent
Good	>50	56	20.0
Poor	≤50	224	80.0
Total		**280**	**100.0**

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