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Knowledge and Attitude towards Diabetes Mellitus among Residents of Igbo-Ora, a Rural Community in South- Western Nigeria

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ABSTRACT

Background: Diabetes mellitus is a chronic disorder that has permeated every nation of the world with about 451 million people living with it. There is poor awareness among the public about the extent to which diabetes is dilapidating to health and the available interventions for prevention. Knowledge is a critical component of behavioural change and being knowledgeable of various aspects of a disease is the first step for primary prevention and a better attitude towards the disease. This study aimed to assess the knowledge and attitude towards diabetes mellitus among residents of Igbo-Ora, a rural community in Oyo State, Southwest Nigeria.

Methods: The study was a descriptive cross-sectional survey, conducted in Igbo-Ora among adults, 18 years and above using an interviewer-administered questionnaire. The questionnaire was distributed to 344 respondents. Data were analyzed using the Epi info statistical software version 7.1.

Results: Overall, about 57% of the respondents had good knowledge about the symptoms, risk factors and complications associated with diabetes mellitus. The majority (83.7%) of the respondents knew that excessive urination is one of the symptoms. However, less than half of the respondents were aware that obesity (41.3%) and lack of physical activity (39.24%) are major risks factors. The majority (73.3%) of the respondents had a positive attitude toward diabetes mellitus prevention and control.

Conclusion: This study showed that more than half of the respondents had good knowledge about diabetes and a greater population had positive attitude towards prevention of the disease.

Keywords: Attitude, Diabetes Mellitus, Igbo-Ora, Knowledge

INTRODUCTION

Diabetes mellitus (DM) is a chronic disorder that has become a public health epidemic globally and is posing great health and socioeconomic burden to every nation. It occurs when there are increased levels of glucose in the blood basically because the body cannot produce or make use of insulin efficiently¹. The presence of excessive glucose in the blood therefore causes all kinds of ripple effects on the organs and systems of the body.

Although the World Health Organization (WHO) had predicted that there would be about 370 million people with DM in 2030, doubling the 177 million in 2000, current statistics has overtaken the prediction with 451 million people 18-99 years living with DM in 2017 and a projection of 693 million in 2045^{2,3}. It is also estimated that almost half (49.7%) of the people living with DM are undiagnosed³. Furthermore, in 2017, almost 21.3 million live births were to women associated with some form of hyperglycemia in pregnancy and 5 million deaths within the 20 - 99 age group was attributed to DM³. Africa had the lowest prevalence (4.2%) of DM in 2017 but had the highest (69.2%) undiagnosed cases³. These undiagnosed cases make progress in tackling DM difficult. A systematic review and meta-analysis has placed the prevalence of DM in Nigeria at 5.8%, which is a 2.6 fold increase from the last prevalence of 2.2% in 1992⁴. Earlier studies in several locations have

found prevalence of DM at 6.8% in Port Harcourt, 4.7% in Lagos Island and 7.2% in the urban communities of Lagos Mainland⁵. These statistics call for individual, societal and population action to curb further increase especially because DM is preventable. This increase in prevalence of diabetes is possibly due to factors such as the ageing population, unhealthy diets and sedentary lifestyles that heighten one's propensity toward obesity^{1,6}.

The risks for DM result from interactions between genetic and metabolic factors and include family history, older age, previous gestational diabetes, physical inactivity smoking overweight and obesity. Obesity and overweight mainly caused by sedentary lifestyles and intake of foods rich in carbohydrates, fats, and sugars are the strongest risk factors⁶. In Nigeria, urban dwelling, physical inactivity, older age and unhealthy diets are the leading risk factors⁴. According to the International Federation for Diabetes, "Urbanization with adoption of western lifestyles has been incriminated in the abandonment of the healthier traditional lifestyles by people in developing countries"⁷. This has resulted in overreliance on motorized transport and consumption of unhealthy diets rich in carbohydrates, fats, sugars and salts⁶. The gold standard management for DM is a healthy lifestyle, which consists basically of adoption of a healthy diet, increased physical activity, smoking cessation plan and

maintenance of a health weight.

Knowledge and awareness of these risk factors along with a positive attitude towards prevention could reduce the occurrence of the disease among populations. Various studies have reported that there is inadequate awareness and knowledge about DM⁸⁻¹⁰. A study conducted by Omobuwa and Alebiosu in Osun State, Southwest Nigeria also revealed that the knowledge and attitude toward DM is relatively poor among university students in Osun State¹¹. Knowledge is a vital instrument in fighting DM because it empowers individuals about their health conditions as well as educates them about good health seeking behaviour¹².

Many studies on DM have been carried out on different aspects and among different populations, but because of the fact that majority of cases in Africa are undiagnosed, continuous research and engagement of communities especially with regards to prevention is imperative³. This study was set to assess the knowledge of DM and attitude towards its prevention among residents of Igbo-Ora, a rural community in southwest Nigeria.

METHODS

This study was a descriptive cross sectional survey conducted in Igbo-Ora, a town in [Oyo State](#), southwest [Nigeria](#). Igbo-Ora is the administrative Headquarters of Ibarapa Central Local Government

Area of Oyo State with seven wards and an estimated population of over 100,000. The community is mainly made up of local craft men and women, farmers, traders and civil servants. It has a comprehensive hospital, several primary and secondary schools and a tertiary institution¹³.

The study was carried out using an adapted interviewer-administered questionnaire to obtain information from adults, 18 years and above, resident in Igbo-Ora town⁸. The questionnaire was peer reviewed for face and content validity. It was pre-tested among 21 selected residents from the study area, who were excluded from the study. The questionnaire had four sections. The first section was on respondents' demographic characteristics such as gender, age category, educational level and marital status. The second and the third sections were on knowledge related to DM such as causes, recognition of symptoms, risk factors and complications. The fourth section of the questionnaire assessed respondents' attitude towards DM prevention and control.

Sample size was calculated using the Cochran's formula $n = z^2pq/d^2$ for populations greater than 10,000. The sample size was calculated to be 384, however, 344 respondents participated in the study giving a response rate of 89.6%. Participants were recruited through a multistage sampling technique. Three wards were randomly selected from the seven wards in the community through balloting. From each ward, using a sampling frame of households, one household was randomly selected and then every third house was picked to recruit participants. Every eligible person in a household who agreed to participate was recruited.

Data were analyzed using Epi Info statistical software version 7.1. Frequencies, percentages, mean and standard deviation were used for general description of study data. Inferential statistics were performed to determine variables significantly associated with knowledge and attitude towards DM at a significant level of 0.05. A *P*-value less than 0.05 was considered statistically significant.

The questions on knowledge were

scored as follow: A score of 1 was allocated for every correct answer in the knowledge section while 0 score was allocated for every incorrect answer. A total of 37 knowledge questions were scored. The scores varied from 1 - 37.

Two categories of knowledge were established to determine the levels of the respondents' knowledge. Scores less than 50% were attributed as poor knowledge, while scores greater than 50% were attributed as good knowledge.

The attitude questions were scored as follows: Strongly agree = 5; Agree = 4; Don't know = 3; Disagree = 2; Strongly disagree = 1. The scores varied from 13 - 65. The scores were classified into two levels (positive attitude and negative attitude). Positive attitude: 39 - 65. Negative attitude: 13 - 38.

Ethical approval was obtained from the Health Research and Ethics Committee of the Lagos University Teaching Hospital Lagos, Nigeria (Ref: ADM/DCST/HREC/APP/1883).

RESULTS

More females (56.1%) participated in this study. The mean age of respondents was 35.8 years \pm 12.56. Majority of the respondents (78.8%) had tertiary and post-graduate education. Mean age was 35.81 \pm 12.56 (Table 1).

Table 1: Socio Demographic Characteristics of Respondents

Variable	Frequency n = 344 (%)
Gender	
Male	151 (49.9)
Female	193 (56.1)
Age category	
18-20	40 (14.5)
21-30	86 (25)
31-40	98 (28.5)
41-50	64 (18.6)
51-60	37 (10.8)
>60	9 (2.6)
Educational level	
No formal education	10 (2.9)
Primary	13 (3.8)
Secondary	60 (17.4)
Tertiary	190 (55.2)
Postgraduate	71 (23.6)
Marital status	
Single	121 (35.2)
Married	215 (62.5)
Divorced	1 (0.3)
Widowed	7 (2.0)
Occupation	
Farmer	9 (2.6)
Petty trader	48 (14.0)
Retired	7 (2.0)
Civil servant	163 (47.4)

General knowledge of DM Three hundred and nine (89.8%) respondents indicated that DM is a disease that occurs as a result of excessive sugar in the blood. Two hundred and ninety-one (84.6%) and 295 (85.8%) respondents indicated that regular blood sugar testing and deliberate eating respectively could prevent DM. Only 175 (50.9%) respondents indicated that the disease could be prevented by regular exercise (Figure 1).

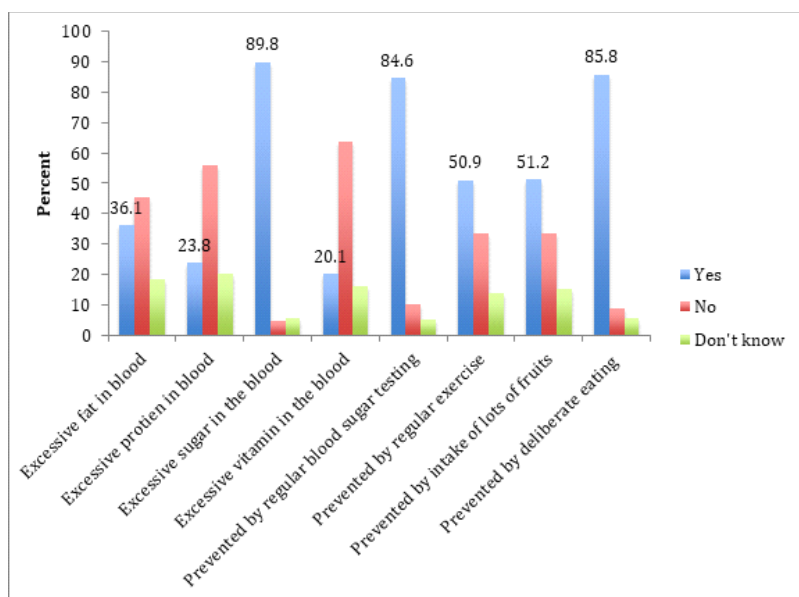


Figure 1: General Knowledge on Diabetes Mellitus

Table 2: Respondents' knowledge on symptoms, risk factors and complications of

Diabetes Mellitus

Variable (n=344)	Yes n (%)	No n (%)	Don't know n (%)
Signs and symptoms of diabetes Mellitus			
Extreme hunger	88 (25.6)	148 (43.0)	108 (31.4)
Excessive sweating	193 (56.1)	81 (23.5)	70 (20.4)
Excessive drinking of water	175 (50.9)	112 (32.6)	57 (16.5)
Excessive urination	288 (83.7)	36 (10.5)	20 (5.8)
Excessive thirst	191 (55.5)	87 (25.3)	66 (19.2)
High fever	156 (45.4)	98 (28.5)	90 (26.1)
Unexplained weight loss	251 (72.9)	45 (13.1)	48 (14.0)
Abnormal sensation of feet or hands	175 (50.9)	89 (25.9)	80 (23.2)
Diarrhoea	110 (32.0)	124 (36.0)	110 (32.0)
Risk factors of diabetes mellitus			
Drinking too much alcohol	236 (68.6)	56 (16.3)	52 (15.1)
Cigarette smoking	131 (38.1)	141 (41.0)	72 (20.9)
Drinking too much water	46 (13.4)	250 (72.7)	48 (13.9)
Taking excessive carbonated drinks	284 (82.6)	42 (12.2)	18 (5.2)
Eating excessive starchy food	262 (76.2)	59 (17.1)	23 (6.7)
Taking in excessive sugar	307 (89.2)	20 (5.8)	17 (5.0)
Eating too much fried foods	167 (48.5)	119 (34.6)	58 (16.9)
Old age	100 (29.1)	191 (55.5)	53 (15.4)
Obesity	142 (41.3)	142 (41.3)	60 (17.4)
Stress	66 (19.2)	213 (61.9)	65 (18.9)
Pregnancy	40 (11.6)	255 (74.1)	49 (14.3)
Family history of diabetes mellitus	202 (58.7)	96 (27.9)	46 (13.4)
Lack of physical exercise	135 (39.2)	155 (45.1)	54 (15.7)
Complications of uncontrolled diabetes mellitus			
Kidney problems	217 (63.1)	55 (16.0)	72 (20.9)
Hearing disorder	85 (24.7)	175 (51.9)	84 (24.4)
Eye problem	147 (42.7)	118 (34.3)	79 (23.0)
Loss of sensation in arms and legs	186 (54.1)	99 (28.8)	59 (17.1)
Stroke	181 (52.6)	95 (27.6)	68 (19.8)
Poor healing of wound	242 (70.4)	51 (14.8)	51 (14.8)
Asthma	66 (19.2)	181 (52.6)	97 (28.2)
Amputation of the leg	166 (48.3)	99 (28.8)	79 (22.9)

Knowledge of symptoms, risks and complications of diabetes

Although 288 (83.7%) and 251 (72.9%) respondents were aware that excessive urination and unexplained weight loss respectively are symptoms of DM, only 142 (41.3%) and 135 (39.2%) indicated obesity and physical inactivity respectively as risk factors. Two hundred and forty-two (70.4%) were aware that poor healing of wound is a complication (Table 2).

Using the allocated scores to each response, 196 (57%) respondents exhibited good knowledge while 148 (43%) had poor knowledge of diabetes mellitus.

Attitude towards diabetes mellitus

Two hundred and thirty seven (68.9%) respondents disagreed that DM is not a serious disease. Although 191 (55.5%) agreed that they consume fruits and vegetables every day, only 139 (40.5%) have a regular exercise program and have exercised regularly for the past 6 months (Table 3).

Table 3: Attitude of respondents towards diabetes mellitus

Variable (n=344)	Strongly agree n (%)	Agree n (%)	Don't know n (%)	Disagree n (%)	Strongly disagree n (%)
DM is not that serious	52 (15.12)	36 (10.47)	19 (5.52)	91 (26.47)	146 (42.44)
DM is contagious	31 (9.01)	66 (19.19)	59 (17.15)	80 (23.26)	108 (31.40)
DM is only common in rich people	75 (21.80)	99 (28.78)	38 (11.05)	62 (18.02)	70 (20.35)
DM is spiritual and can be cured spiritually	23 (6.69)	18 (5.23)	38 (11.05)	95 (27.62)	170 (49.42)
Only older people get DM	12 (3.49)	29 (8.43)	22 (6.40)	135 (39.24)	146 (42.44)
I consume soft drinks everyday	45 (13.08)	74 (21.51)	17 (4.94)	104 (30.23)	104 (30.23)
I consume fried food everyday	39 (11.34)	56 (16.28)	38 (11.05)	115 (33.43)	96 (27.91)
I consume fruits/vegetables daily	90 (26.16)	101 (29.36)	22 (6.40)	81 (23.55)	50 (14.53)
I currently do not exercise and do not intend to start	35 (10.17)	66 (19.19)	54 (15.70)	104 (30.23)	85 (24.71)
I currently do not exercise but I intend to start regular exercise	50 (14.53)	84 (24.42)	60 (17.44)	85 (24.71)	65 (18.90)
I currently exercise but not regularly	50 (14.53)	129(37.5)	34 (9.88)	74 (21.51)	57 (16.57)
I have started to exercise regularly	54 (15.70)	84 (24.42)	42 (12.21)	97 (28.20)	67 (19.48)
I exercise regularly and have done so for longer than 6 months	71 (20.64)	68 (19.77)	41 (11.92)	82 (23.84)	82 (23.84)

Using the allocated scores to each response, 252 (73%) respondents had positive attitude while 92 (27%) had poor attitude towards the disease.

Cross tabulation analysis between socio demographic characteristics and knowledge of DM showed no significance. However, sex ($P = 0.026$), age ($P = 0.003$) and level of education ($P = 0.003$) had significant association with attitude towards DM. More proportion (78.81%) of the male respondents had positive attitude compared to their female counterparts (68.91%). Respondents in the age category greater than 60 years had better positive attitude score (88.89%) than other age categories, and respondents with primary education all had positive attitude towards prevention of DM (Table 4).

Table 4: Cross tabulation analysis between socio demographic characteristics and attitude

Variable	Positive Attitude n= (%)	Negative attitude n (%)	Total	χ^2	P-value
Sex					
Male	119(78.81)	32(21.19)	151		
Female	133(68.91)	60(31.09)	193		
Total	252 (73.26)	92(26.74)	344	3.745	*0.026
Age category					
18-20	25(50.00)	52(50.00)	50		
21-30	63(73.26)	23(26.74)	86		
31-40	74(75.51)	24(24.49)	98		
41-50	52(81.25)	12(18.75)	64		
51-60	30(81.08)	7(19.92)	37		
>60	8(88.89)	1(11.11)	9		
Total	252(73.26)	92(26.74)	344	18.424	*0.003
Level of education					
No formal education	8(80.00)	2(20.00)	10		
Primary	13(100.00)	0(0.00)	13		
Secondary	33(55.00)	27(45.00)	60		
Tertiary	146(76.84)	44(23.16)	190		
Postgrads	52(73.24)	19(26.76)	71		
Total	252(73.26)	92(26.74)	344	16.432	*0.003
Marital status					
Single	80(66.12)	41(33.88)	121		
Married	166(77.21)	49(22.79)	215		
Divorced	1(100.00)	0(0.00)	1		
Widowed	5(71.43)	2(28.57)	7		
Total	252(73.26)	92(26.74)	344	5.241	0.155
Occupation					
Farmer	7(77.78)	2(22.22)	9		
Petty trader	41(85.41)	7(14.58)	48		
Retired	5(71.43)	2(28.57)	7		
Civil servant	124(76.07)	39(23.93)	163		
Unemployed	20(66.67)	10(33.33)	30		
Student	55(63.22)	32(36.78)	87		
Total	252(73.26)	92(26.74)	344	9.529	0.090

* Statistically significant

DISCUSSION

This study confirms that more than half of the respondents in this study have good knowledge about DM and a positive attitude towards the condition. Furthermore, while no significant relationship exists between social demographic characteristics and knowledge of DM, age category, gender and level of education have significant relationships with attitude towards DM.

The overall level of knowledge is close to findings from a study done in a rural community of non-diabetics in Ethiopia (52.5%), higher than findings from Enugu, Nigeria (34.1%) and Kenya (27.2%), but lower than findings from Onitsha, another part of Nigeria where 83.2% of the respondents had good overall knowledge of DM^{8, 14-16}. Our study showed majority of respondents knew excessive sugar in the blood could result to diabetes, unlike in Enugu where only 41.9% attributed diabetes to excessive sugar in the blood⁸. These findings show extremes of knowledge level on DM among the study populations within Nigeria. Whereas our study and that done in Onitsha were among mainly literate respondents, that of Enugu was done in a rural community with majority (82.7%) of the respondents with no formal education and primary education⁸.

Although the level of knowledge of signs and symptoms of DM in our study was good, it is unlike in

Kenya where only 29% of the respondents had good knowledge. The respondents in this study were particularly sensitive to frequent urination and unexplained weight loss. This agrees with the study in Onitsha where 89.2% and 80.4% recognized frequent urination and weight loss respectively as symptoms of DM, but contrasts findings in Enugu where only 34.8% and 14.9% recognized frequent urination and weight loss respectively as symptoms of diabetes^{8, 15}. The knowledge of symptoms could enhance early care seeking and diagnosis, which would lead to better outcome.

Dietary intake of carbonated drinks, too much sugar, and starchy foods were recognized as risk factors by majority of our study respondents and corroborates with the study in Onitsha where 72.2% attributed intake of too much sugar as a risk factor to DM¹⁵. This study population displayed low knowledge about important risk factors associated with DM such as obesity and physical activity. Although this is much higher than the Enugu study where 21.6% and 19.9% recognized obesity and physical inactivity respectively as risk factors, it is lower than findings from the Onitsha study where 69.2% and 58% indicated excess weight and lack of exercise respectively as risk factors to DM^{8, 15}. A study done among adolescents in India showed that only 5.3% and 7.3% recognized obesity and physical inactivity respectively as risk factors to

diabetes¹⁰. The ability to identify the cause and risk factors of an illness is a desirable step that could help in its prevention.

Knowledge about complications was also good with majority indicating slow healing of wounds as one. There was no statistical significant association between any of the socio-demographic variables and the level of knowledge of the respondents, which corroborates with findings in a previous study¹⁵.

Positive attitude towards prevention and control of DM found in this study is higher than found in Ethiopia (55.9%) and Kenya (41%) and it indicates a possibility of the acceptance of a DM prevention and control program if initiated in the community¹⁷. More than half of the respondents had good dietary habits and this could possibly be attributed to the fact that majority indicated poor dietary habits as a risk factor for diabetes. However, attitude towards regular physical activity was not good and could be traced to their lack of knowledge in that area. These findings is similar to findings in Osun state, Nigeria where more than half of the study population had good dietary habits but few engaged in daily physical exercise of up to 30 minutes¹¹. Although the attitude of the respondents towards physical exercise was not good, it is possible that they already unconsciously engage in physical exercise, especially walking, as a result of their occupation. However, the findings

may also suggest a gap in the promotion of physical activity as one of the primary prevention of DM by the health care planners in the community.

Study Limitation

This study did not seek to know the source of information about DM from the respondents neither were diabetic respondents excluded from the study. These limitations could have affected the respondents' knowledge and attitude towards diabetes.

Conclusion

The overall level of knowledge of diabetes mellitus in Igbo-Ora was good with majority having good attitude towards diabetes mellitus. Sex, age and level of education were significantly associated with attitude, with males, age group 31-40 and primary or no education being more likely to have positive attitudes.

Conflict of Interest

The authors declare no conflict of interest

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