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Knowledge and Attitude on Diabetes Mellitus among Residents of A Rural Community in Enugu State, Southeast, Nigeria

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Abstract

Diabetes mellitus is a clinical syndrome characterized by hyperglycaemia due to deficiency of insulin. The usual symptoms are excessive passage of urine, excessive drinking of water, excessive eating and weight loss. The disease used to be more prevalent in developed countries, but has recently become a major disease of public health importance in underdeveloped countries including Nigeria. This study was of observational, cross-sectional design conducted in January 2015 in Egede, a rural community of Enugu state, Southeast, Nigeria; with the aim of assessing the knowledge and attitude on diabetes mellitus among rural dwellers. Majority of the respondents were over 50 years of age, and poorly educated. Information was elicited from 296 respondents, using interviewer administered pre-tested questionnaire. Overall knowledge of respondents on the nutritional cause of diabetes mellitus was 34.1%, symptoms of diabetes mellitus was 18.2%, risk factors was 19.0%, while complications was 19.5%. Less than 50% of respondents (30.7%) knew that diabetes mellitus can be prevented, while the same percentage also knew that diabetes mellitus is not curable (30.7%). Only 89(30.1%) of respondents knew that diabetes mellitus can be prevented by being careful with what one eats; 59(19.9%) were aware that regular exercise can prevent diabetes mellitus, while 88(29.7%) knew that diabetes mellitus can be prevented by regular blood sugar testing. This study revealed a huge knowledge gap on diabetes mellitus, and poor attitude towards diabetes mellitus prevention. Since knowledge is a very vital instrument for fighting diabetes mellitus, it is very important for the government and communities to work assiduously towards improving the knowledge of rural dwellers on diabetes mellitus. This will enhance their ability to prevent diabetes mellitus, by willingly adopting healthy life style and diet, among other attitudes, that will ensure that the high prevalence rate in urban communities does not extend to rural communities.

Key words: Diabetes mellitus, Knowledge, Attitude, Rural Community.

Introduction

Diabetes mellitus (DM) is a clinical syndrome characterized by high blood glucose as a result of insulin deficiency; which is a hormone that controls the metabolism of glucose, fat and amino acids[1]. This health problem is clinically classified by the World Health Organization as (1) Diabetes mellitus, which is further classified as (i) Type 1 or insulin-dependent DM, (ii) Type 2 or insulin-independent DM, (iii) Malnutrition-related DM, (iv) Other types - secondary to pancreatic, hormonal, drug-induced, genetic and other abnormalities; (2) Impaired glucose tolerance, (3) Gestational DM[2]. Type 1 DM affects predominantly children and young adults less than 40 years of age, while Type 2 affects mostly the middle aged, and elderly[1]. It is currently estimated that cases of DM globally is 347 million, of which more than 90% are Type 2[3]. In Nigeria the prevalence is between 2 - 7%[4-6]. Classical symptoms of DM include; excessive drinking of water, excessive passage of urine, excessive eating, and weight loss[1]. In the Western countries, the disease is seen frequently among the elderly, while it largely affects adults between 35-64 years of age in developing countries,[7]. There is strong epidemiological evidence that this epidemic is related to changing life style such as consuming refined food in place of natural whole grain, and lack of physical exercise. Adoption of healthier diet and increasing exercise prevents persons with impaired glucose tolerance from progressing to frank DM[8]. In addition to diet and physical activity, other epidemiological determinants for DM include genetics (commoner in persons whose parents or siblings are diabetic), obesity (commoner in the obese persons), and excessive consumption of alcohol[9].

Clinically, complications of DM mainly affect the eyes, kidneys and the neurological system[1]. Most persons with diabetes in developing countries are between 45 to 64 years of age, which is a significant segment of the productive age range. In addition to this reduced productivity and declining economic growth, the disease leads to high economic burden in terms of healthcare expenditure[10]. It is believed that DM is a very common and extremely devastating chronic disease that has afflicted mankind[11]. It is only about a decade ago that the disease became a major public health problem in underdeveloped countries including Nigeria[10]. The disease is a cause for growing public health concern in underdeveloped countries, as it has been for a long time in most developed countries[12,13]. Diabetes mellitus is a silent killer, with many victims becoming aware they have the disease only when they manifest complications[14]. There is poor

awareness about the extent of the problem among the public. People are also not sufficiently aware of the available interventions for preventing diabetes mellitus and managing complications[9].

Objective: The objective of this study is to assess the knowledge and attitude on diabetes mellitus among residents of a rural community in Enugu state, South East, Nigeria.

Justification: It has been shown that the knowledge and awareness about diabetes mellitus can have positive influence on attitude and practices of patients, and that could lead to better management of diabetes and eventually good quality of life. However, there is a knowledge, attitude, and practice gap in type 2 DM management. This does not allow patients and health care professionals to implement life style changes that could reduce the morbidity and mortality associated with DM[15]. Knowledge is a vital instrument in fighting diabetes mellitus. Availability of information can assist people measure the risk of developing DM. People will also be motivated to seek proper care, and be inspired to take charge of their disease[16]. Findings from this research will reveal knowledge gap and the attitude of rural dwellers in Enugu state, South East, Nigeria towards DM prevention. This will guide the government in developing diabetes mellitus prevention programme for rural dwellers.

Materials and Methods

Study Area: Enugu state is among the 36 States that make up Nigeria. It is located in the South Eastern part of Nigeria. The state comprises 17 Local Government Areas and shares boundaries with six other states of Imo and Abia States on the south, Benue and Kogi States on the north, Anambra State on the west and Ebonyi State on the east. She has five urban towns and two hundred and two rural towns. Majority of the people that live in Enugu state are of the indigenous tribe of Igbo, but people from other tribes and nationalities also live in Enugu State[17]. The 2006 census gave the population of Enugu state as 3.26 million people[18], though this figure is estimated to have increased significantly by now. Civil servants live mainly in urban centre while the rural areas are mainly inhabited by farmers and palm wine tappers. Traders, artisans and industrialists also live in urban areas. This study was conducted in Egede, one of the twenty five rural towns in Udi Local Government Area of Enugu State, South East, Nigeria. Egede rural community has a cottage hospital and a primary health care post. These two health facilities are however minimally functional. Nigeria is broadly divided into six geo-political zones, namely; South-East, South-South, South-West, North-East, North-Central, and North-West

Study Design: Observational cross-sectional study technique was used.

Study Population: All adults that are 18 years and above, and are resident in Egede town, Udi Local Government Area of Enugu State.

Study Instruments and Data Collection: An interviewer-administered, structured questionnaire was used in collecting information from the respondents. The questionnaire was pre-tested in Iwollo rural community of Ezeagu Local Government Area, Enugu state. The information elicited were on the knowledge of the cause, symptoms, risk factors, complications, and types of DM. Information was also elicited on DM prevention. Data collection was done in January, 2015, during a well publicized and attended medical outreach programme organized by the Udi Health Workers' Association, Enugu State University Teaching Hospital, Park Lane, Enugu. Five junior resident doctors and ten Internists were trained and used in collecting information from respondents. Information was collected from two hundred and ninety six (296) respondents. Information was also collected simultaneously on another diabetes mellitus study, and studies on malaria and HIV/AIDS.

Data Analysis: Statistical Package for Social Sciences (SPSS) 20.0 for windows was used in entering and analyzing information generated. The analysis was done quantitatively only and presented in the form of tables.

Outcome Measures: The questionnaire was analyzed in terms of the number and percentage of respondents with correct knowledge on cause, types, symptoms, risk factors, and complications of diabetes mellitus. The number and percentage of those with the correct attitude towards the preventive measures were also ascertained.

Ethical Consideration: Ethical Committee of the Enugu State University of Science and Technology Teaching Hospital, Park lane, Enugu gave approval for the study. Consent was obtained from the respondents before the questionnaire was administered. The scope of the study and level of participation of respondents were explained to them. They were assured of confidentiality and the participation was voluntary.

Limitations: Greater percentage of respondents were above the age of 60 years (53.4%). Only adults that turned up for the free medical screening and treatment were interviewed. Seventy three (24.7%) of the respondents are between 50 - 59 years of age, leaving only 22% of the respondents being 18 - 49 years old. Many young men and women in the study rural community, are commercial motorcycle riders, teachers, farmers, hunters, and hairdressers. Most of them obviously felt that the medical outreach activity was for the older age group, hence they did not turn up for the exercise. This younger age group probably would have better knowledge of diabetes mellitus and better attitudes towards preventing the disease. Multistage and Stratified sampling methods could have given a more reliable finding, if used in selecting the study sample.

Results and Discussion

Two hundred and ninety six respondents participated in the study.

Demographic variables of respondents: Most of the respondents are 50 years old and above (78%). Most are females (70.3%), 82.4% are married, 53.0% had no formal education, while 70.6% are farmers. Table-1.

Table-1
Socio-Demographic data of respondents

Age range (in years)	**Frequency (N = 296)**	**Percent (100%)**
18-19	2	0.7
20-29	11	3.7
30-39	23	7.8
40-49	29	9.8
50-59	73	24.7
60-69	74	25.0
70 and above	84	28.4
Sex		
Female	208	70.3
Male	88	27.9
Marital status		
Married	244	82.4
Single	12	4.1
Divorced/Separated	3	1.0
Widowed	37	12.5
Educational Status		
No formal Education	157	53.0
Primary level of Education	88	29.7
Secondary level of Education	38	12.8
Tertiary level of Education	5	1.7
Postgraduate level of Education	8	2.7
Occupation		
Farmer	209	70.6
Petty trader	38	12.8
Artisan	17	5.7
Retired	15	5.1
Civil servant	12	4.1
Unemployed/student	5	0.7

Knowledge of respondents on the nutritional metabolic cause of diabetes mellitus: Only 41.9% of respondents correctly stated that excessive sugar in the blood was the cause of DM. On the other hand, 30.7% believed it was as a result of excessive fat, while 32.1% stated that DM results from excessive protein, and 31.8% believed DM is caused by excessive vitamins in the blood. Overall knowledge score of respondents on cause of DM is 34.1%. Table-2.

Table-2
Knowledge of respondents on nutritional metabolic cause of diabetes mellitus

Questions	**Correct response (N = 296)**	**Percent (100.0%)**
Diabetes mellitus is a disease that occurs as a result of excessive fat in the blood	91	30.7
Diabetes mellitus is a disease that occurs as a result of excessive protein in the body	95	32.1
Diabetes mellitus is a disease that occurs as a result of excessive sugar in the blood	124	41.9
Diabetes mellitus is a disease that occurs as a result of excessive vitamin in the blood	94	31.8

Total knowledge of respondents on nutritional metabolic cause of diabetes mellitus = total correct response/total possible correct response X 100% = 404/1184 X 100% = 34.1% (poor knowledge)

Knowledge of respondents on major types of diabetes mellitus: Only 9(3.0%) of respondents were aware that there are two major types of DM. Most (87.5%) stated that they do not know, 6.1% said that there is only one type, 2.4% said three types, while 1.0% said there are four types. Knowledge of respondents on the major types of DM was poor. Table-3.

Table-3
Knowledge of major types of diabetes

Variable	**Number of respondents**	**Percent (%)**
One type	18	6.1
Two type	9	3.0
Three type	7	2.4
Four type	3	1.0
Do not know	259	87.5
Total	296	100.0

Only 9 (3.0%) of respondents knew that there are two major types of diabetes mellitus (Very poor knowledge)

Knowledge of respondents on symptoms, risk factors, and complications of diabetes mellitus: Only 10.1% of respondents knew that excessive eating is a symptom of diabetes mellitus, 12.8% knew about excessive drinking of water being a symptom, 34.8% knew that excessive urination is a symptom, while 14.9% knew that weight loss is also a symptom. The following correct responses about the risk factors were recorded, (a) Drinking too much alcohol = 11.5%, (b) Frequent eating of cassava = 15.5%, (c) Frequent eating of yam = 14.5%, (d) Cigarette smoking = 17.2%, (e) Obesity = 21.6%, (f) Family history of diabetes mellitus = 17.2% (g) Lack of physical activity/exercise = 19.9%. Complications of uncontrolled DM were reported as follows; (a) Kidney problem = 20.9%, (b) Eye problem = 22.0%, (c) Problem with the nerves = 14.9%, (d) Amputation of the leg = 25.3%, (e) Infection of the female private part = 14.2%. Overall knowledge of respondents on symptoms of DM was18.2%. This indicates poor knowledge. Overall knowledge on risk factors was 19.0% (Poor knowledge). Overall knowledge on complications was 19.5% (Poor knowledge). Table-4.

Total knowledge of respondents on symptoms of diabetes mellitus = total correct response/total possible correct response X 100% = 215/1184 X 100% = 18.2% (poor knowledge). Total knowledge of respondents on risk factors for diabetes mellitus = total correct response/total possible correct response X 100% = 505/2664 X 100% = 19.0% (poor knowledge). Total knowledge of respondents on complications of diabetes mellitus = total correct response/total possible correct response X 100% = 288/1480 X 100% = 19.5% (poor knowledge)

Attitude of respondents towards diabetes mellitus prevention and cure: Ninety one (30.7%) of respondents agreed that DM can be prevented, 29(8.8%) disagreed, while 179(60.5%) were indifferent. Few(17.6%) believe that DM can be prevented by eating all types of fruits in very large quantities, 56(18.9%) disagreed, while 188(63.5%) are indifferent. DM prevention by being careful with what one eats was correctly stated by 89(30.1%) of respondents, 30(10.1%)% disagreed, while 177(59.8%) was indifferent. Majority of the respondents(62.2%) were indifferent to using regular exercise to prevent DM, 59(19.9%) agreed, while 53(17.9%) disagreed. DM being prevented through regular blood sugar testing was agreed by 88(29.7%) of respondents, 26(8.8%) disagreed, while 182(61.5%) were indifferent. Lastly, 10(3.4%) stated that DM is curable, 91 (30.7%) disagreed, while 195(65.9%) were indifferent. Table-5.

Discussion: Most of the respondents were from the older age range and had no formal education, or only primary level education. It was demonstrated in some similar studies that level of education is directly related to good knowledge of DM[19,20]. Some studies have also shown increasing age as being inversely related to knowledge of DM[21,22]. Many of the young men and women in the rural community probably considered the free medical outreach programme an exercise for the elderly and indigent, hence they stayed away. This possibly has a limiting effect on the inferences that could be made from the findings of this study.

Table-4
Knowledge of respondents on symptoms, risk factors and complications of diabetes mellitus

Question	Correct response (N = 296)	Percent (100%)
Symptoms of diabetes include		
Excessive eating	30	10.1
Excessive drinking of water	38	12.8
Excessive urination	103	34.8
Weight loss	44	14.9
Risk factors of diabetes mellitus		
Drinking too much alcohol	34	11.5
Frequently eating ground pea	74	25.0
Frequently eating cassava	46	15.5
Frequently eating yam	43	14.5
Frequently eating black beans	83	28.0
Cigarette smoking	51	17.2
Obesity	64	21.6
Family history of diabetes mellitus	51	17.2
Lack of physical activity/exercise	59	19.9
Complications of uncontrolled diabetes mellitus include		
Kidney problem	62	20.9
Eye problem	65	22.0
Nerve problem	44	14.9
Amputation of the leg	75	25.3
Infection of female private part	42	14.2

Table-5
Attitude of respondents towards diabetes mellitus prevention and cure

Comment	Agree (%)	Indifferent (%)	Disagree (%)
Diabetes mellitus can be prevented	91 (30.7)	179 (60.5)	26 (8.8)
Diabetes mellitus can be prevented by taking all types of fruits in very large quantity	52 (17.6)	188 (63.5)	56 (18.9)
Diabetes mellitus can be prevented by being careful with what one eats	89 (30.1)	177 (59.8)	30 (10.1)
Diabetes mellitus can be prevented by regular exercise	59 (19.9)	184 (62.2)	53 (17.9)
Diabetes mellitus can be prevented by regular blood sugar testing	88 (29.7)	182 (61.5)	26 (8.8)
Diabetes mellitus is curable	10 (3.4)	195 (65.9)	91 (30.7)

However, overall knowledge score on the nutritional cause of DM (34.1%) was better than 26.1% found in four Kenya community provinces in the year 2010[19]. This could have arisen from better awareness on DM created through previous medical outreach in the community, and the media. The outreach programme during which the study was conducted, was the 4th in the community within the last fifteen years. The community also has a primary, and secondary health care facilities. These facilities are also possible sources of information on DM. Recently in Debre Tabor town, Northwest Ethiopia, 41.2% of the respondents were able to identify the nutritional cause of diabetes mellitus as high level of sugar in the blood[23]. In a semi-urban Omani population, 49.9% of respondents in a knowledge and perception of diabetes study were able to state that high consumption of dietary sugar could cause DM[24]. The finding in this study of 41.9% of respondents stating that DM is an adverse health condition that results from excessive sugar in the blood, is essentially similar to the findings in Ethiopia and Omani. There is however a glaring discrepancy between this finding and an impressive 72.2% found in another recent study at Onitsha North Local Government Area, Anambra state, Nigeria. This probably is attributable to Onitsha North Local Government Area being an urban area with high number of educated people and youths[25].

Extremely few respondents (3.0%) are aware that there are two major types of DM - Insulin Dependent and Non-insulin Dependent. This could also be attributable to the low educational background and age of majority of the respondents. A good number of the respondents (34.8%), compared to responses recorded for the other diabetes mellitus symptoms agreed that excessive urination was a symptom of diabetes mellitus. This is not surprising since the disease is called "Oya mamiri" in Igbo language, literally translated to "Disease of urine". Only 10.1% of respondents in this study knew that excessive eating is a symptom of DM, while 12.8% knew that excessive drinking of water is also a symptom. The overall knowledge score of 18.2% on symptoms of DM is poor. In a similar study conducted in Kenya, 29% of all those interviewed had good knowledge of the symptoms of diabetes mellitus[19]. In Western Nepal, India, a research to assess the knowledge, attitude, and practice about diabetes, among diabetes patients, the overall knowledge of the symptoms was found to be 37.9%[26]. This relatively high score found in Nepal, India could be because the study was done among diabetic patients, who understandably would be exposed to more information on DM. However, in Ethiopia 78% and 48% of respondents respectively in a similar study stated that excessive eating and excessive drinking of water are symptoms of diabetes mellitus[23]. It is possible that some undocumented factors could have contributed to this high level of knowledge recorded in a developing country.

Indicative of the poor knowledge of those interviewed on the risk factors are the findings that only 11.5%, 15.5%, 14.5%, and 17.2% respectively, correctly stated that drinking too much alcohol, frequently eating cassava, frequently eating yam, and Cigarette smoking are risk factors for developing diabetes mellitus. A more impressive 21.6% identified obesity as one of the risk factors for developing diabetes mellitus. Significantly higher numbers of respondents in some similar studies in Anambra state Nigeria (69.2%), and Jordan (73.3%), identified obesity as a risk factor for diabetes mellitus[25,26] The overall percentage knowledge score on risk factors is 19.0%. The findings in this study, are not very far off from those in Western Nepal where 21.4% of respondents knew the importance of a well-balanced diet in preventing DM. However, only 8.8% knew the importance of a regular exercise regimen[27], while in this study, 19.9% are aware of the importance of regular exercise in preventing DM. In a study among diabetic patients in Egypt, many knew the importance of diet, while 36.4% are aware of the importance of exercise in preventing the development of DM[28]. This is in keeping with the expectation that diabetic patients ought to be exposed to more information on the disease. Total knowledge of respondents on the complications of uncontrolled DM was poor (19.5%), as shown by the correct responses given about complications involving the kidneys, eyes, nerves, female genital infections, and amputation of the leg. In Kenya, 26.6% in a similar study had correct knowledge of complications of DM[19]. In a national population-based survey in Mongolia using only respondents aged 15 to 64 years, one out of every three Mongolians were aware of complications associated with DM[20]. The better knowledge on diabetes complication in that Mongolian study when compared to this one, could be due to the exclusion of persons above 64 years of age in the Mongolian study. A more

impressive DM knowledge was found in South Africa community where 66.9% of the respondents had good knowledge of DM[16].

Very high number of respondents (60.5%) are indifferent to whether DM can be prevented or not. Only 30.7% agreed that diabetes mellitus can be prevented. Two third of respondents in a study done in Mongolia agree that diabetes mellitus can be prevented. This further demonstrates that age and level of education possibly play significant roles in DM knowledge and attitude among population. Few respondents in this study [10(3.4%)] erroneously believe that diabetes is curable, 30.7% knew that the disease is not curable, while 65.9% are indifferent. More people in Northwest Ethiopia (51.3%) knew that DM is not curable[23]. It is likely that the persons that knew that DM is not curable shall have better attitude towards consciously making effort to prevent DM disease. This could indicate that there is more awareness on DM in that part of Ethiopia where the study was carried out, than in Egede rural community, South East Nigeria.

Conclusion

Diabetes mellitus used to be a public health problem predominantly in the developed countries, but is now increasing alarmingly in underdeveloped countries including Nigeria. The disease is however significantly more in the urban areas. This study revealed a huge DM knowledge gap among rural dwellers in a rural community of Enugu state. It also revealed a poor attitude towards DM prevention. Since knowledge is the greatest weapon to fight DM[29], it is very important for the government to work assiduously towards improving the knowledge of rural dwellers on diabetes mellitus. This will enhance their ability to prevent the disease by willingly adopting healthy life style and diet, among other beneficial attitudes. Education about diabetes increases the knowledge of a population on diabetes, thus playing an important role in early detection and prevention of the disease[30]. It will certainly be beneficial for governments to embark on sustained health education campaign in the rural areas with the aim of reducing the incidence of diabetes mellitus in the population.

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