ORIGINAL ARTICLE

Healthy adolescents' knowledge of diabetes mellitus in a semi-urban community in South-South Nigeria

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ABSTRACT

Background: Diabetes mellitus has become an important public health challenge affecting both the young and adults. This study was carried out in order to determine the knowledge and awareness of diabetes mellitus among adolescents in Oghara, South-South Nigeria.

Method: This was a cross-sectional descriptive study in which a structured questionnaire on the various aspects of diabetes mellitus was administered to 250 students followed by a health educational talk on the disease. Three weeks later, the same questionnaire was re-administered to find out if the talk had made an impact.

Result: About 20% of the students could tell the cause of diabetes before the health talk and this increased to 86% after. Excessive passage of urine was the most frequent symptom of diabetes mellitus identified by the subjects but only 13% of them could identify more than one symptom of diabetes before the health awareness talk. The kidney was the most common organ identified as being affected, with the retina being the least. Majority of the respondents believed erroneously that urine sugar could be used to diagnose diabetes mellitus. The respondents were also more aware of the importance of weight reduction, exercise, insulin and oral medication, for treatment of diabetes mellitus after the health educational talk.

Conclusion: Knowledge and awareness of certain aspects of diabetes mellitus among adolescents is poor. However, adequate health education had a positive impact on their knowledge and awareness. Sustained health educational programmes in schools and communities about this condition are advocated.

Keywords: Health education, insulin, kidney, risk factors, urine sugar

INTRODUCTION

Diabetes mellitus continues to be a major threat to global public health.[1] More than 170 million people worldwide suffer from this condition and this figure is projected to more than double by the year 2030, if current trends continue.[2] In Nigeria, the national prevalence is put at about 2.2% and this continues to be on the increase.[3] Recently, there is also an alarming rise in the incidence of type 2 diabetes mellitus among children in America and other parts of the world.[4,5]

In addition, the Centre for Disease Control and Prevention in 2008 reported that children and adolescents are at risk if they are obese, insulin-resistant and have a family history of this disease.[6] Improving the knowledge of people about diabetes risk factors can improve their attitude and influence a change in their practices towards embracing healthier life styles such as eating healthy foods and engaging in physical activity.[7] Various studies conducted in many parts of the world suggest that there is a lack of public awareness and knowledge of various factors related to diabetes mellitus.[8,9]

Social representation is defined by Abric as an ensemble of opinions, beliefs and information referring to an object or situation – in this case of diabetes mellitus.[10] Therefore, the overall objective of this study is to explore the social representations of diabetes mellitus amongst healthy adolescents in Oghara, a semi-urban community in Delta State, South-South Nigeria. The specific objective is to determine the knowledge of adolescents about diabetes mellitus in terms of its meaning, origin, risk factors, prevention and treatment. This will provide data on the strategies for increasing awareness of diabetes mellitus among adolescents and adults in the community and schools.

METHODOLOGY

The study was carried out at Our Lady of Nigeria Catholic Secondary School, Oghara, a semi-urban community in Delta State, in the South-South geopolitical zone of Nigeria. The Endocrine Unit of the Department of Internal Medicine, Delta State University Teaching Hospital Oghara organized a health education programme on diabetes mellitus for the students in September 2012. Approval was granted by the school authorities and consent was taken for the study. All students in the Junior Secondary 2 & 3 classes and Senior Secondary 2 & 3 classes present during the health talk where recruited for the study.

A structured questionnaire about the cause, symptoms, risk factors, complications and treatment of diabetes mellitus was administered to each student to test the knowledge and awareness of diabetes mellitus before the commencement of the health education programme (pre-test). Three weeks later, the same questionnaire was administered to the students to test the impact of the health education programme on their knowledge and awareness.

Data was analyzed using the SPSS *version 15*. Results were expressed as mean ± standard deviation. The level of statistical significance was set at $p < 0.05$.

RESULTS

A total of 250 students filled in the questionnaire. The mean age of the respondents during the study was 12 ± 2years. Fifty (20%) students could identify that diabetes mellitus (DM) is due to insulin deficiency. However, this increased to 215 (86%) after the health education talk.

Only 28 (11%) agreed that urine sugar cannot be used to diagnose diabetes, and this increased to 138 (55%) after the talk; while 195 (78%) agreed that the young can suffer from diabetes mellitus, with this figure increasing to 225 (90%) after the talk.

In terms of symptomatology, excessive passage of urine was the most common symptom identified by 146 students representing 58.7% of the respondents. Only 32(13%) subjects could identify more than one symptom of diabetes. After health education, this increased to 170 (68%). On the knowledge of the risk factors, 55 (22%) and 68 (27%) subjects identified obesity and hypertension, respectively as risk factors for diabetes. This increased to 165 (66%) and 200 (80%) after the health talk.

For diabetic complications, 118 (47.1%) respondents had no knowledge of any diabetic complication, whereas, 60 (24%) subjects identified kidney failure as a complication and 35 (14%) identified leg ulcers as a complication. After education, the

kidney was still identified as the most common organ affected by the disease by 222 (89%) of the respondents, while 198 (79.2%) respondents identified more than one organ as being affected by diabetes mellitus.

In terms of management of the disease, 105 (42%) respondents agreed that diet is a form of management of diabetes while only 55 (22%) of the respondents agreed that insulin can be used in its treatment. However, after the talk, 225 students identified insulin therapy as a form of management, while 230 students identified more than one form of management i.e. diet, oral medication, exercise and insulin, as important in the control of the disease. Table 1 below summarises the findings with regards to diabetic knowledge and awareness of the students before and after the health education talk.

Table 1. Knowledge, awareness and impact of health education among study subjects

	Before Health Talk	After Health Talk	p-value
Recognized insulin as a cause of Type 1 DM	50(20%)	215(86%)	0.18
Identified more than one symptom of DM	33(13%)	170(68%)	0.016
Identified at least one complication of DM	132(52.9%)	223(89%)	0.008
Identified more than one risk factor of DM	63(25%)	193(77%)	0.032
Recognized that urine sugar cannot be used to diagnose diabetes	28(11%)	138(55%)	0.043
Recognized at least one Treatment modality for DM	90(36%)	230(92%)	0.064
Recognized that diabetes can be found in adolescents	195(78%)	225(90%)	0.14

DISCUSSION

Diabetes mellitus (DM) is one of the most rapidly increasing chronic diseases in the world. The need for its primary prevention has been increasingly emphasized.[11,12] However, prevention will not be attainable without adequate knowledge about the disease. Recent studies have shown that education of populations about diabetes mellitus resulted in a significant increase in knowledge about the disease.[13,14]

Diabetes mellitus is caused by the relative or absolute lack of a pancreatic hormone called insulin. In this study, only 20% of the respondents identified lack of insulin as the cause. In a similar study done in Uyo, South-South Nigeria and in Pakistan, 40% and 49% of the respondents respectively identified the cause of diabetes.[15,16] This significant higher proportion could be attributed to better educational facilities and possible better enlightenment in these more developed urban schools as compared to the schools in our study area which is a rural-semi urban settlement.

With regards to the symptomatology, majority of the respondents identified excessive passage of urine as a symptom of diabetes mellitus, which is similar to a study reported from Oman.[17] However, other symptoms were less readily identified by the respondents, with many of them identifying more than one symptom after the health awareness talk.

A close association between obesity and type 2 diabetes has been observed in both cross-sectional and prospective studies.[18,19] In our study, only 22% of the subjects identified obesity as a risk factor, but in a similar study done in Uyo, a much higher number (73%) agreed that obesity may lead to diabetes mellitus. In an Indian study, 4.6% identified obesity as a risk factor and this increased to 10.7% after health education. This variation in knowledge could partly be explained by the different family and socio-cultural environments of the respondents which could have had an influence on the pre-conceived perception of obesity-related diabetes.

In our study, most respondents erroneously agreed that urine sugar could be used to diagnose diabetes melltus which was not significantly reduced by health education. The reason for this is that the respondents live in a society where the disease is strongly

associated with sugar in the urine and so, they wrongly believed that it could be diagnosed by using urine sugar.   More intensive re-orientation and education would be needed to discard such erroneous knowledge.

Prolonged hyperglycemia damages the microvasculature of the kidney, retina and nerves and nearly half of the respondents were unaware of any complications of diabetes while 24% identified the kidney as an organ that could be affected by diabetes mellitus. This increased to 89% after health education.

Diabetic retinopathy is a known complication of diabetes mellitus with increasing morbidity. The gravity of this problem is highlighted by the finding that individuals with diabetes are 25 times more likely to become legally blind than those without diabetes. In our study, there was poor awareness of this as only 8% of respondents agreed that diabetes could affect the eyes. A study in Uyo had similar findings. This however improved after the health education talk.

In this study, 15% of the respondents reported of being aware of a family member who is diabetic. Family history is one of the most important determinants of type 2 diabetes. A positive evidence for family history of type 2 diabetes is always an indication for at least a 50% probability of diabetic risk for an individual.[19]

We did not ask about their sources of health information. Knowledge of these sources of information could have been useful in identifying the appropriate media for the delivery of health promotion intervention.

CONCLUSION
There is inadequate knowledge and awareness of diabetes mellitus amongst these adolescents which improved by health education. Knowledge about diabetes mellitus is a pre-requisite for individuals and

communities to take action to control the disease. In addition to overall health promotion in the community at large, there is a need for health professionals to become involved in developing school- and community-based programmes to promote healthy behaviours for all children as well as their families.

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