

## Knowledge and awareness of diabetes among adolescents in Port Harcourt, Nigeria

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### Abstract

Diabetes is becoming a global burden, with prevalence increasing in both children and adults. This study aimed to determine the level of awareness and basic knowledge of diabetes among adolescents in secondary schools in Port Harcourt, southern Nigeria. It was a cross-sectional study carried out in six selected schools. A structured questionnaire was used to collect information from the students on their basic knowledge of diabetes (such as cause, symptoms, and awareness of childhood diabetes). Out of 880 students interviewed, 293 (33%) identified that diabetes was a disease of high blood glucose, but only 2 (0.2%) knew that it was a disease associated with insulin deficiency. In addition, 291 (33%) stated it was a disease caused by excessive consumption of sugar. Only 37% could identify two or more symptoms of diabetes. Eleven students had a family history of diabetes, but there was no statistically significant difference in knowledge of the cause and symptoms of diabetes in those with or without a family history. Significantly more males, and students in senior classes, had better knowledge of diabetes. The commonest source of the students' knowledge of diabetes was from doctors (37%) and from teachers (33%). Awareness and knowledge of diabetes among adolescents in Port Harcourt was low, and possibly represents the knowledge of the general populace. There is a need for more education in secondary schools on diabetes in childhood by well-informed health workers and teachers.

### Introduction

There is a growing prevalence of diabetes among children and adolescents. Globally, it is estimated that the number of people with diabetes will increase from 140 million in 2002 to over 300 million in 2030.<sup>1</sup> In Nigeria, the prevalence of diabetes among children has increased over the years from 0.1/1000 to as high as 10.1/1000.<sup>2,3</sup> Several factors have accounted for this increase, includ-

ing urbanisation and adoption of a Western lifestyle, with reduced physical activity and excess caloric intake.<sup>4</sup> Several studies conducted in many parts of the world suggest that there is lack of public awareness and knowledge of various factors related to diabetes.<sup>4,6</sup>

This study therefore aimed to determine the level of awareness and knowledge of adolescents in public secondary schools on certain aspects of diabetes, in terms of meaning, cause, symptoms, and its occurrence in childhood. The data from this study will form a baseline for planning the education of adolescents (and young people and the community in general) about diabetes.

### Methods

The study was carried out among students aged 10–19 years in selected public secondary schools in Port Harcourt, Nigeria. It was part of an ongoing study on enlightenment and screening for pre-diabetes in secondary school students in the Port Harcourt Local Government Area of Rivers State, Nigeria.

A structured questionnaire was used to obtain information on basic knowledge of diabetes and awareness of diabetes in children. 'Awareness of diabetes' meant simply having heard of the disease. Knowledge of diabetes and its cause required a response that included 'high blood glucose levels' and 'deficiency of insulin'. Knowledge of at least two symptoms of diabetes required mention of polyuria, polydipsia, hyperplasia, weight loss, bedwetting, or ants gathering around urine.

Ethical clearance was obtained from the University of Port Harcourt Teaching Hospital Ethics Committee. Permission was obtained from the head teachers of the individual schools. Data were entered into an Excel spreadsheet and analysed using the Statistical Package for the Social Sciences (SPSS) version 17. Comparison of proportion was done using the Chi-square test, and statistical significance was set at  $p < 0.05$ .

### Results

Eight hundred and eighty students aged 10–19 years participated in the study. There were 577 (66%) females and 303 (34%) males. The mean age was  $15 \pm 2$  (standard deviation, SD) years. There was no statistically significant difference between the mean age of males and females. Of the 880 students, 399 (45%) were in junior secondary classes (JS1–3), while 481 (55%) were in senior secondary

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classes (SS 1–3). The sources of information on diabetes for the participants were school teacher (33%), doctor (37%), radio or television (25%), newspaper (2%), friends (1.5%), and uncertain (1.5%).

Variable	Awareness of diabetes?		Total	p value	
	Yes	No			
Gender	Male	270 (89%)	33 (11%)	303	0.004
	Female	471 (82%)	106 (18%)	577	
Class level	Junior	296 (74%)	103 (26%)	399	<0.001
	Senior	445 (92%)	36 (8%)	481	

Table 1 Relationship between gender, class level, and diabetes awareness

Table 1 shows the proportions of students who were aware of diabetes, by gender and class level. Awareness was significantly higher in males and in senior class students. Table 2 shows answers to specific diabetes-related questions. There were 33% who knew that diabetes meant an abnormally high blood glucose level, but only 2 (0.2%) were aware that it was due to deficiency of insulin. Most (99%) of those who knew that diabetes was associated with raised blood glucose thought that the cause was an excessive intake of sugar. Of the other questions, 87% knew the disease occurred in childhood, and 37% could name at least two symptoms.

	Correct	Incorrect	Don't know	Total
Knowledge of what diabetes is	293 (33%)	261 (30%)	326 (37%)	880
Knowledge of occurrence of diabetes in children	766 (87%)	106 (12%)	8 (1%)	880
Knowledge of at least two symptoms of diabetes	327 (37%)	181 (21%)	372 (42%)	880

Table 2 Aspects of knowledge of diabetes

Table 3 shows that knowledge of what diabetes is had no relationship with gender, or whether the participant had a family history of diabetes. Knowledge was, however, statistically significantly associated with senior class level. Table 4 similarly relates knowledge of diabetes symptoms with the same variables. There was no relationship with gender or family history, but again, knowledge was higher in senior class students.

## Discussion

In this study, the response of the adolescents in public secondary schools when asked about the cause of diabetes revealed a poor knowledge among this age group. Diabetes is caused by absolute or relative lack of the hormone insulin and in this study only two students knew this. This response rate is lower than the 40%<sup>4</sup> and 20%<sup>7</sup> reported among adolescents in Uyo and Oghara

respectively. The differences in the rates may be attributed to the way the questions were framed in the different studies. In this study, open-ended questions were asked with no options given whereas the other studies provided options. Also, this study and in the Oghara study<sup>7</sup> used students from both junior and senior secondary classes whereas the study in Uyo<sup>4</sup> used students from the senior secondary classes only; this difference could also have accounted for the higher rate seen in the Uyo<sup>4</sup> response.

Although most students knew that diabetes is a disease associated with increased blood glucose levels, they often believed that diabetes is caused by excessive consumption of sugar. Although this was not directly reflected in other results from Uyo,<sup>4</sup> Oghara,<sup>7</sup> and even Pakistan,<sup>8</sup> the low rate of correct responses as to the possible cause of diabetes in all these studies may reflect a misconception handed down in the general populace by uninformed educators or an impression that is left after health talks.

Identification of the symptoms of diabetes is a very important link to early diagnosis of diabetes. The symptoms are easily recognisable and with awareness should prompt early treatment seeking. In this study, it must be noted that as many as 40% of the adolescents did not know any symptoms of diabetes, or gave wrong answers. As in many other studies,<sup>4,7,8</sup> the commonest symptom mentioned was excessive passing of urine. Only 37% of students in this report could mention two or more correct symptoms of diabetes. This is, however, higher than the 13% reported in Oghara and the 29% in Uyo.<sup>4,7</sup>

Knowledge of diabetes may be determined by various factors. In this study, the knowledge of diabetes was higher in males and in students in the senior

secondary classes. This finding could be attributed to more interest in the media exhibited by males, and also to the greater exposure to informational materials of the senior secondary classes.

There is a common belief that diabetes only occurs in adults. In this study, significant numbers of the respondents were aware that diabetes occurs in children and adolescents. This was also the finding in Uyo where about 70% of respondents agreed that diabetes occurred in adolescents.<sup>4</sup> Most children and adolescents with diabetes present for the first time in diabetic ketoacidosis (DKA), and this is due to poor knowledge and awareness. In areas where the level of awareness is high, early presentation and avoidance of DKA (a major cause of mortality) may be achieved in children and adolescents with newly presenting diabetes.<sup>9,10</sup>

In this study, there was a wide range of sources of

		Knowing what diabetes is			
		Correct	Incorrect	Total	p value
Gender	Male	111 (37%)	192 (63%)	303	0.128
	Female	182 (31%)	395 (68%)	577	
Class level	Junior	87 (22%)	312 (78%)	399	<0.001
	Senior	206 (42%)	275 (57%)	481	
Family history of diabetes?	Yes	30 (31%)	68 (69%)	98	0.550
	No	263 (34%)	519 (66%)	782	

Table 3 Relationship between knowledge of diabetes and gender, class level, and family history

		Knowledge of at least two symptoms of diabetes			
		Correct	Incorrect/ don't know	Total	p value
Gender	Male	123 (41%)	180 (59%)	303	0.126
	Female	204 (35%)	373 (65%)	577	
Class level	Junior	121 (30%)	278 (70%)	399	<0.001
	Senior	206 (43%)	275 (57%)	481	
Family history of diabetes?	Yes	42 (43%)	56 (57%)	98	0.215
	No	285 (36%)	497 (64%)	782	

Table 4 Relationship between knowledge of diabetes symptoms, and gender, class level, and family history

information on diabetes. Information was received mainly from doctors and teachers. There is therefore a need to train school teachers to improve on the information they give to students. However, there is no doubt that the mass media also plays a very important role in the dissemination of information on diabetes, including to young people, who account for a large proportion of the populace. This wide and relatively easy form of knowledge dissemination should be taken advantage of by health workers to give the correct information on diabetes.

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