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The Effectiveness of Education on Awareness and Knowledge of Childhood Diabetes amongst Medical Students in Port Harcourt

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Author's contribution

Author designed the study, wrote the protocol and first draft of the manuscript literature search, managed the statistical analysis and wrote the discussion.

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ABSTRACT

Aim: To determine the awareness and knowledge of childhood diabetes amongst medical students and effectiveness of education on their knowledge.
Study Design: A cross sectional study at the department of Paediatrics and child health of the college of Health Sciences, in a Nigerian University in August 2014. All 86 fifth year medical students were eligible for the study.
Methodology: We studied 62 fifth year medical students during a block posting in Paediatrics. All Students who attended the childhood paediatric lectures completed a questionnaire before and after the lecture. Questionnaire was used to determine the awareness and knowledge of childhood diabetes amongst the students and effectiveness of education on their knowledge.
Results: A total of 62 students completed the questionnaire before and after the lecture on childhood diabetes with a response rate of 72%. Males accounted for 58.1% of the study population. Only 51.6% of the students acknowledged that diabetes can occur at any age group during childhood while 77.4% identified insulin deficiency or disorder as the cause of diabetes in children. 25 to 27% of students could not determine the cut off value of fasting and random blood glucose respectively that defines diabetes. On management practices, knowledge of diabetic

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education being the most important aspect of management of diabetes was answered correctly by only 10% while as many as 62% said insulin should be discontinued in sick diabetic children. There was a statistically significant positive impact of education on the knowledge of childhood diabetes with regards to the knowledge of age of occurrence of diabetes mellitus (P =.005), most important aspect of management of DM (P=.001), definitive diagnosis of DM (P= .02), food restriction (P=.002).

Conclusion: Knowledge of some aspects of childhood diabetes mellitus is poor amongst fifth year medical students, there was however a positive impact of education on their knowledge.

Keywords: Childhood diabetes; awareness; knowledge; medical students.

1. INTRODUCTION

Diabetes mellitus is a global public health disease with an extreme effect on the quality of life on an affected person [1]. The incidence of diabetes mellitus is rising worldwide in both children and adults. In Africa, 12.1 million people were estimated to be living with diabetes in 2010, and this is projected to increase to 23.9 million by 2030 with type 2 diabetes accounting for most cases [2]. Diabetes mellitus severely affects the quality of life of affected people especially when it is not detected early and managed adequately.

Fourty percent of people with diabetes mellitus will die from end stage renal diseases and 60% from cardiovascular complications [3]. The burden of diabetes mellitus can be drastically reduced from awareness and possession of the right knowledge amongst the general populace and health workers. Knowledge is a critical component of behavioural change. When there is awareness and correct information concerning a disease, the people develop the right attitude and are more likely to participate in preventive and control activities [4]. Education about a disease results in a significant increase in knowledge of a population which plays a vital role in future development and early prevention and detection of the disease [5]. This has accounted for the adoption of general health promotion by process of education, awareness creation as a first and a critical step in the five levels of prevention of diseases and mortality.

Health professionals including medical trainees such as medical students have a very important role in dissemination of information and health promotion about diseases in the community. Studies in the past have shown poor knowledge on diabetes amongst various categories of health workers even in medical students. This study therefore sets out to assess the level of awareness and knowledge of childhood diabetes amongst fifth year medical students and to assess the effectiveness of education on this.

2. METHODOLOGY

This was a cross-sectional descriptive study conducted in August 2014. The study population consisted of 5th year medical students of the college of health Sciences of a Nigerian University. The study was conducted at the beginning of their block posting in Paediatrics and child health and obstetrics and gynaecology.

The study population included 86 students who have qualified to undergo the paediatric posting after completing their postings in anatomy, physiology, biochemistry, pathology, pharmacology and junior surgery and medicine postings. Informed consent was obtained from the students and they were assured that the exercise would not be used for any individual appraisal.

A pretested self administered questionnaire consisting of 24 questions was designed to collect information on demographics, their knowledge and practice on childhood diabetes. The questionnaire was administered at the beginning of the scheduled lecture on childhood diabetes and the same questionnaire completed at the end of the lecture. Each student was asked to identify their questionnaire using their University assigned serial numbers or matriculation numbers. Pre lecture questionnaires were collected immediately before the lecture and questionnaires completed immediately after lectures were also collected immediately.

Only students who completed the questionnaire before the lectures and after the lectures were analysed. Data was entered into a spread sheet and analysis done using SPSS version 17, Descriptive statistics for all variables was done

and a p value <0.05 was considered as statistically significant.

3. RESULTS

A total of 62 students completed the questionnaire before and after the lecture on childhood diabetes. Twenty four students were either late for the lecture or were absent. Most of the respondents were between the ages of 18 to 25 years and have spent an average of 5 years in medical school.

Males accounted for 58.1% of the respondents. Twenty nine percent had an adult family member with diabetes and only 25.8% have seen a child with diabetes. The commonest source of information on childhood diabetes was from lectures and 19.3% from mass media.

Concerning the knowledge of the participants on childhood diabetes, 51.6% knew that diabetes mellitus can occur at any age during childhood and 90% knew the commonest type of DM in children was type 1 and 77.4% correctly identified deficiency of insulin as the cause of type 1 DM in children while 6.9% still considered it to be due to excessive intake of sugar.

Sixty three percent for fasting blood glucose and 75.8% for random blood glucose respectively could identify correct value for diagnosis of diabetes in children. 71% identified obesity as a risk factor for DM even in children.

Evaluation of knowledge of management practices revealed that only 9.68% identified diabetic education as the most important aspect of management, about 70% believed insulin is the most important aspect. Also 80% of students stated that treatment of DM in children is for life and 76% identified that oral hypoglycaemic agent is not used in the treatment of type 1 DM in children. Concerning management of diabetes mellitus in children with type 1 DM, 38.1% correctly identified that insulin therapy should not be discontinued in children when they are sick.

A significant number (70.97%) of students agreed that obesity is a risk factor for diabetes, this is because increase in BMI in the population have been shown to be associated with increase in incidence of diabetes especially type 2 DM. only 46.97% of the students correctly stated that blood sugar is used for the definitive diagnosis of diabetes.

In evaluation of the knowledge of diabetes before and after lectures, there was an increase in correct response in all categories of questions to test knowledge and practice after the lectures. Table 1. The difference in response before and after the lecture was statistically significantly different in four responses as shown in Table 1. There were 51.6% of students who identified that diabetes can occur in children from birth onwards and this increased to 91.94% after the lecture. Similarly significantly more students 9.68% increasing to 77.42% identified diabetic education as the most important aspect of management of diabetes mellitus in children. The identification of blood glucose determination as the definitive diagnosis for diabetes mellitus increased from 46.77% to 96.77%.

4. DISCUSSION

The present study has sought to determine the awareness level of 5th year medical students on childhood diabetes and the impact of learning on their knowledge. Education about diabetes resulted in a significant increase in knowledge of a population and plays a vital role in the outcome of this condition [5]. Diabetes mellitus is the commonest endocrine disease in children worldwide [6]. It affects all age groups in children. In this study only 57.61% of the students identified that diabetes can occur in children of all ages. This reflects the general knowledge in the populace where most people even health workers do not believe that diabetes can occur in childhood. This response however increased significantly to 91.94% after the lecture. In children, type 1 DM is the commonest type of DM worldwide although the epidemic of diabetes worldwide even in children is mostly related to type 2 DM [7]. In this study, a good knowledge of the commonest cause of DM in children was reported as more than 90% of the students reported this correctly before and after the lectures.

The cause of diabetes in children is due to an absolute lack of insulin seen in children with type 1 DM and due to a relative lack of insulin or insulin resistance noted mainly in type 2. The cause of diabetes mellitus has been attributed to different things, about two third of students in this study identified defiency or resistance of insulin as the cause of diabetes in children however one quarter of the students still identified other causes such as excessive consumption of sugars and increased consumption of carbohydrate. This finding has prompted initial

response given by most parents as the excessive consumption of sugar to be the cause of diabetes in their wards, also in studies done amongst University students and general population excessive consumption of sugar was mentioned as risk factors and cause of diabetes [8,9]. There was only a slight and non significant increase in the correct response given by the students before and after the lecture indicating a strongly held view that is difficult to change even amongst medical students.

Table 1. Knowledge of Diabetes mellitus in children and impact of education among students

Question	Correct response before lecture	Correct response after lecture	p-value
Age of occurrence of childhood DM	32(51.61%)	57(91.94%)	0.005
Commonest type of DM in children	56(90.32%)	61(98.39%)	0.839
The cause of type 1 DM	48(77.42%)	49(79.03%)	0.953
Correction FBS to define DM	39(62.9%)	60(96.77%)	0.148
Correct RBS to define DM	47(75.8%)	60(96.77%)	0.429
Most important aspect of management of DM	6(9.68%)	48(77.42%)	0.001
Oral hypoglycaemic drugs in treatment of type 1 DM	47(75.81%)	57(91.94%)	0.555
Obesity is a risk factor for DM in children	44(70.97%)	57(91.94%)	0.408
Definitive diagnosis of DM	29(46.77%)	60(96.77%)	0.02
Discontinue insulin in children with type 1 DM when ill	36(58.06%)	59(95.16%)	0.099
Treatment of DM is for life	50(80.65%)	61(98.39%)	0.530
Food restriction in Childhood DM	22(35.48%)	58(93.55%)	0.002
Children with DM should be allowed to exercise	55(88.71%)	57(91.94%)	0.995

Concerning the diagnosis of diabetes using fasting blood glucose level, about 35% of the students could not tell the right value to define diabetes. Similarly, 25% of the students did not know the correct value of random blood glucose which defines diabetes. This knowledge improved after the lecture in both responses with more than 90% of the students answering correctly in both. Also about half of the respondents could not identify that blood glucose is used to make a definitive diagnosis of diabetes in children. Some students believed that the definitive diagnosis of diabetes can only be made by pancreatic biopsy. This knowledge was significantly improved after the lecture. In the study amongst university students in Pakistan, [8] about 70% of the students did not identify fasting blood glucose level of 7.0 mmol/l as the recommended cut-off point for the diagnosis of diabetes while in Unadike study in Calabar in Nigeria, less than half of the secondary school students identified this cut-off point [10].

A high number of students agreed that obesity was a risk factor for diabetes even in children. The body mass index has been shown to be a dominant risk factor for diabetes especially type 2 diabetes [11]. The effect of obesity is mainly related to insulin resistance and toxicity of beta cells due to the high level of free fatty acids in obese individuals [12]. This knowledge of obesity as a risk factor for diabetes was increased after the lecture. The commonest symptoms of diabetes in children include excessive passage of urine, enuresis, polydipsia, weight loss and polyphagia [13]. Only half of the students could state three common symptoms of diabetes mellitus in children this response improved considerably after the lecture. Diabetic Ketoacidosis (DKA) and hypoglycaemia are common acute complication of diabetes in children and DKA accounts for 80 to 90% of reason for admission especially at diagnosis [13]. The knowledge of two common acute complications of diabetes mellitus was poor amongst the students only about one third of the students knew acute complications of diabetes in children.

The management of diabetes in children involves several aspects of which diabetic education is the most important. Diabetic education involves the education of the patients and family about the disease condition and care to ensure optimal outcome and improve independence of the patient in self care. Only about 10% of students identified diabetic education as the most

important aspect of management of diabetes in children although this increased to 77% after the lecture and this was statistically significant.

This study has shown the presence of poor knowledge on some aspects of childhood diabetes amongst 5th year medical students. This report is similar to various reports conducted amongst health workers in many parts of the world. In a study conducted in the USA, it showed physician's knowledge in the treatment of diabetes was not enough and knowledge of level of different medical groups such as general practitioners, specialist and medical students was significantly different. [14] Also in a cross sectional survey on the attitude and practice regarding diabetes and diabetic retinopathy among final year medical students of the University medical college of AL Hasa region of Saudi Arabia it highlighted the lacuna in knowledge and teaching systems of medical students and advocated incorporation of syllabus to focus on increasing their knowledge [15].

The major challenge for all health workers is to increase awareness and give correct and uniform information and care to patients with diabetes and the general public to help in improving outcome of diabetes even in children.

5. CONCLUSION

This study demonstrates that there is still poor awareness even amongst medical students on certain aspects of childhood diabetes. Education is the most important determinant of quality of knowledge and outcome of diabetes. We advocate the incorporation of syllabus and teaching systems to focus on increasing the knowledge of diabetes amongst medical students and medical staff at all levels to improve quality of information and care given by health workers on childhood diabetes.

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COMPETING INTERESTS

There is no competing interest with this article.

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