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Prevalence of type-2 diabetes mellitus amongst suspected subjects in Agbor, Delta State, Nigeria and its relationship with age and gender

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ABSTRACT

The prevalence of type 2 diabetes mellitus amongst suspected persons in Agbor, Delta State, Nigeria, and its relationship with age and gender was studied. Two hundred suspected subjects comprising of 100 males and 100 females of ages 30 and above who were referred to Government Hospital, Owa-alero, Agbor, were screened using a Glucose meter (Randokit) following standard procedures prescribed by the producer. Individuals whose fasting blood sugar levels were above 180mg/dl after three visits were considered to be diabetic. Results indicate that 118 subjects out of the suspected 200 were found to be diabetic representing a total prevalence rate of 59%. The risk of developing diabetes mellitus was also found to be increasing with increasing age with females being more susceptible to developing the disease than males. Those of age 30-50 years old had incidence rates of 9.1% and 56.86% for males and females respectively, as those 51-70 years old had incidence rates of 48.39% and 82% for males and females respectively while those 71 years and above had incidence rates of 59.26% and 100% for males and females respectively. The development of diabetes mellitus in Agbor, Delta State, Nigeria is therefore strongly associated with increasing age and females at all age brackets above 30 are at higher risk of developing the disease than their male counterparts.

Key words: Agbor, Diabetes mellitus, Females, Males, Prevalence

INTRODUCTION

The upsurge in the number of individuals with diabetes mellitus across the globe of late has become very alarming and appears to be tilting towards a pandemic state. It is estimated that diabetes mellitus affects about 246 million people globally and is expected to affect a staggering 380 million people by 2025 [1]. Recent reports have put Nigerian diabetes mellitus incidence rate at 2.2% with about 90% of such cases being type-2 diabetes mellitus [2]. This may be the reason for the widespread search for new antidiabetic agents and health campaigns on how to effectively checkmate the disease with particular interest on prevention.

Diabetes mellitus is a metabolic disease characterized by hyperglycaemia resulting from defects in insulin secretion, insulin action or both [1,3], which is reported to be a leading cause of blindness, renal failure, lower limb amputation, susceptibility to infections and hypertension and other forms of cardiovascular complications due to damage to the blood vessels in the kidneys, heart, eyes and nervous system [4, 3, 1, 5].

Two major types of diabetes mellitus have been identified and include Type 1 (Juvenile onset or insulin dependent diabetes mellitus) and Type 2 (Adult onset or non insulin dependent diabetes mellitus). Type 1 diabetes mellitus may begin in childhood as an autoimmune condition characterized by the body attacking its own pancreas with antibodies and thereby making the pancreas unable to produce and secrete insulin needed for onward mobilization of glucose into body cells to be metabolized. This type of diabetes mellitus is genetically linked and treatment is usually based on the administration of exogenous insulin. Type 2 diabetes mellitus usually begins at adult age, although with recent rise in cases of obesity among children have made many teenagers to be diagnosed with type 2 diabetes mellitus. Type 2 diabetes mellitus is however characterized by the pancreas not been able to produce sufficient insulin to meet body's need or the body cells becoming resistant to the produced insulin, becoming rather insensitive to it. In this case the pancreas has to work extra hard to produce more insulin to keep the sugar levels normal, which eventually has always been difficult to achieve. The control of type 2 diabetes mellitus is therefore based on weight management, nutrition and exercise and most times aided with medications. The relationship between diabetes mellitus and gender has been reported as recent survey in Iran has shown that adult women are more susceptible than their male counterparts [6].

Recent studies have shown how effective glycaemia control can be in the management of complications associated to diabetes mellitus. This current study was designed to investigate the incidence and prevalence of diabetes mellitus amongst adults attending Government Hospital, Owa- alero, Agbor, Delta State, Nigeria with particular interest in gender disparity.

MATERIALS AND METHODS

This was a cross-sectional, descriptive study. Two hundred patients consisting of one hundred male and one hundred female adults attending clinics at the Government Hospital, Owa- alero, Agbor, Delta State, Nigeria were screened for the incidences of diabetes mellitus. The study period was from January to December, 2014. Data collected were ages in years, sex and the fasting blood sugar levels of the patients on three different visit days. Fasting blood sugar for each patient was determined using a Glucose meter (Randokit) following standard procedures prescribed by the producer, Randox Company, United Kingdom. Individuals whose fasting blood sugar levels were above 180mg/dl after 3 visits were considered to be diabetic.

Ethical approval for the work was obtained from the Ethics Committee of the Government Hospital, Owa- alero, Agbor, Delta State, Nigeria.

2.1 Statistical Analysis

Results were expressed as mean $\pm$ standard deviation (SD). Students's t-test at 95% level of significance was used to compare means. Computer software package, SPSS version 17 was employed.

RESULTS

Results obtained revealed that only one person out of the suspected 11 male subjects between the ages of 30-50yrs was found to be diabetic and represented an occurrence rate of 9.10%, while for females of the same age range, 29 out of the suspected 51 were diabetic (56.86% occurrence). For those 51-70 yrs, the females also had a significantly higher occurrence ($p < 0.05$) with 32 diabetics out of 39 screened subjects (82%) while the males had 30 diabetics out of 62, representing 48% occurrence. A higher rate of occurrence was however recorded amongst subjects who had attained ages 71 and above as 16 out of the 27 males (59.26%) screened were found to be diabetic while all the 10 females (100%) screened were diabetic. The results therefore indicate that the risk of developing type 2 diabetes mellitus usually increases with increasing age with females being more susceptible.

Table: Prevalence of diabetes mellitus amongst suspected patients and its relationship with age and gender

Sex and Age of Patients	Number screened	Number of Diabetics	% of Diabetics	Mean Fasting Blood Sugar Level (mg/dl)
Males(30-50yrs)	11	1	9.10	244 $\pm$ 0.00
Males(51-70yrs)	62	30	48.39	288.80 $\pm$ 36.80
Males(71yrs & above)	27	16	59.26	286.69 $\pm$ 78.78
Females(30-50yrs)	51	29	56.86	341.80 $\pm$ 50.30
Females(51-70yrs)	39	32	82.00	317.59 $\pm$ 31.90
Females (71yrs&above)	10	10	100.00	300.30 $\pm$ 32.69

DISCUSSION

A high percentage of subjects suspected and screened were actually found to be diabetic and suggests that the rate of development of diabetes mellitus amongst adults in Agbor, Nigeria is on the increase. This result agrees with existing literature on the global prevalence of diabetes mellitus, particularly the type 2. The World Health Organisation (WHO) had reported that there are about 100 million persons with diabetes mellitus worldwide. The National Expert Committee on Non communicable Diseases also in 1992 gave the crude prevalence of diabetes mellitus in Nigeria as 2.73% [7]. This development may not be unconnected to current developments in lifestyle and nutrition patterns which usually encourages increased consumption of carbohydrates and storage of fats in body tissues and discourages involvement in exercises and other activities that may lead to increased metabolism of body sugar and fat. No wonder, the development of type 2 diabetes mellitus by the screened subjects in the area of study was strongly related with age as the prevalence rate increased progressively with increasing age. This may be due to the accumulation of fats over time in the body particularly within and around visceral organs in most adults, particularly when family history shows a trend of obesity and diabetes. This fat formed around cells usually impair the movement of sugar into the cells, inhibiting the metabolism of such and causing a buildup of sugar in the blood stream. As blood sugar levels increase, the beta cells that produce insulin become impaired and may not be able to meet the body's insulin requirement resulting into type 2 diabetes mellitus. This may be why the control of type 2 diabetes mellitus is based on weight management, nutrition and exercise in addition to medications. The findings of this work agree with existing literature which had reported that the incidence of type 2 diabetes mellitus usually increases with age [8, 9, 10].

It was also observed from results obtained that women are more likely to develop type 2 diabetes mellitus at all ages than their men counterparts. This may be because women are more likely to be obese than men. Several reports agree with this finding. Muhammed *et al.*, (2013) [11] reported that diabetes mellitus is worse in women than in men, while Esayas *et al.*, (2013) [12] reported that women are expected to have higher prevalence of diabetes mellitus because they tend to become obese more easily than men. Recent survey in Iran also showed that adult women are more susceptible being diabetic than their male counterparts [6].

In conclusion the results of this study has shown that the rate at which people develop type 2 diabetes mellitus in Agbor, Delta State, Nigeria is on the increase and may reach pandemic level if not checked. Type 2 diabetes mellitus is also strongly linked to age as susceptibility to the disease tends to increase with age and women are more at risk because they are more likely to be overweight and physically inactive. Results obtained also tend to agree with existing literature in this regard.

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