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Diabetes Mellitus: Prevalence Amongst University Staff In Southern Nigeria And Attitude Towards Routine Glycemic/Glucosuric Checkup

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ABSTRACT: The cross sectional study was carried out in a university community located in Ekpoma, a semi-urban community in southern Nigeria. Subjects were selected using the stratified random sampling. Fasting/Random blood glucose analyses were done using Trinder's method. The study aimed at determining the prevalence of diabetes among university staff besides attitude towards routine glycemic/glucosuric checkup. The prevalence of diabetes was 9.8% with an incidental finding (unknown) contributing 6.1%. The male/female diabetic ratio were 1.4:1 and 1.3:1 for senior staff and junior staff respectively. Only 5.9% of the study population go for routine glycemic/glucosuric checkup. The body mass indices were 25.68 ± 30.20 kg/m² and 26.11 ± 3.61 kg/m² for the female junior staff and female senior staff respectively ($P > 0.05$). While the body mass indices for the male junior staff and male senior staff were 26.89 ± 5.03 and 28.43 ± 4.79 respectively ($P > 0.05$). Correspondingly the mean fasting blood sugar (FBS) for junior staff and senior staff were 4.85 ± 1.30 mmol/l and 5.30 ± 2.38 mmol/l, respectively ($P > 0.05$) indicating that the chances of developing diabetes is a function of body mass index. There is need for awareness programmes that will traverse rural, semi-urban and urban communities, emphasizing the need for traditional lifestyle especially with reference to diet, besides routine glycemic/glucosuric checkup.

Keywords: Diabetes, Prevalence, University Staff, Checkup, Nigeria.

Introduction

Diabetes mellitus is a group of metabolic disorder characterized by an underlying hyperglycemia (resulting from absolute or relative lack of insulin) with nephropathy, neuropathy, angiopathy and oculopathy as its attendant complications. Obesity, diet and sedentary life style have been named as the major causative factors for the prevalence of the disease.

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There are reports in the literature that 95% of male and almost all of the female diabetics are over weight by the WHO standard at the onset of the disease (1). Worldwide, more than 140 million people suffer from diabetes, making it one of the most common non-communicated disease (2). The prevalence of diabetes in the developed countries is well established (3-5).

In 1998 the World Health Organization projected a world wide adult diabetic population of 300 million and this translated to a 122% rise by the year 2005 (6). A seemingly uncomplicated diabetes may not sufficiently express the substantial morbidity and mortality associated with the disease. The chances are that even diabetics at their very early stage, and individuals potentially at risk, especially by not going for routine check up might take the disease for granted. Routine fasting/random blood sugar (glycemic) and glucosuric (urinalysis) remain important panacea for early detection of diabetes and its management. Most adverse diabetes outcomes are as a result of vascular complications, both of a macrovascular level (coronary artery disease, cerebrovascular disease, or peripheral vascular disease) and a microvascular level; retinopathy and nephropathy (7-15). This study is focused at assessing the prevalence of diabetes among university staff, viz a viz their attitude towards routine glycemic/glucosuric check up, bearing in mind that the university community can be regarded as a functional unit of a state or a nation.

Materials and Methods

This cross sectional study was conducted at Ambrose Alli University a tertiary institution located in Ekpoma (semi urban), Edo State. A stratified random sampling technique was used; senior staff ≥ 40 years were grouped together and 300 subjects were randomly selected from the group. Again junior staff ≥ 40 years were grouped together and 300 subjects were randomly selected from the group. The total target population was therefore 600. The purpose of the study was explained to them and an informed consent was obtained from subjects who subscribed to participating in the study. They were interviewed using a structured questionnaire that could extract basic socioeconomic and demographic data. Subjects' heights were measured using a standard standiometer and their weights were measured using a bathroom scale Hana BR-901. The body mass index BMI which is expressed in kg/m^2 was used to defined gross obesity ($\text{BMI} > 40\text{kg/m}^2$), obesity $\text{BMI} > 30\text{kg/m}^2$, overweight $\text{BMI} > 25\text{kg/m}^2$, normal weight (19kg/m^2 - 25kg/m^2) and under weight $< 19\text{kg/m}^2$. The glucose oxidase (Trinder's) method (16-18) was employed for the study. Fasting blood sugar (FBS) was done between 8am and 10am/preprandial. Random blood sugar was done after 10am/post prandial Venous blood was obtained with minimum stasis into a clean disposable plastic syringe and then transferred into a universal bottle containing anticoagulant fluoride oxalate. After mixing, the blood samples were then centrifuged at 3000rpm for 5 minutes. Plasma was collected and kept at 37°C ready for use. Prior to use, the plasma was treated with glucose oxidase reagent and color developed within 15 minutes. The color that developed was measured color metrically at 480nm.

Statistical analyses were carried out using the student's t-test and chi square tests.

Results

Using the stratified random technique a total of 600 staff comprising 300 senior staff and 300 junior staff were selected for the study. All the junior staff that were selected for the study completed the study, however 26 out of the 300 senior staff declined FBS/RBS investigation so only 274 senior staff completed the study. The mean FBS/RBS concentrations for the junior staff were respectively, $4.85 \pm 1.3\text{mmol/l}$ and $5.03 \pm 2.9\text{mmol/l}$, while the mean FBS/RBS concentrations for the senior staff were respectively $5.3 \pm 2.38\text{mmol/l}$ and $5.63 \pm 2.80\text{mmol/l}$. There was no significant difference between the glycemic indices for the junior staff and the senior staff, $p > 0.05$

The overall prevalence of diabetes in this study was 9.8%. Of the 56 diabetic, 21 (3.7%) were known, while 35 (6.1%) were incidental finding. Of the total population studied, 22 (5.9%) subjects go for routine glycemic/glucosuric check up and they were essentially those who were known diabetic.

TABLE 1: CHARACTERISTICS OF STAFF

SUBJECTS	JUNIOR STAFF	SENIOR STAFF
Sex		
Female	184 (32.10%)	156 (27.30%)
Male	116 (20.22%)	118 (20.51%)
Age		
Female	43.70 ±2.20	49.34 ±7.42
Male	46.80±3.74	46.41±6.32
BM1 (kg/m ²)		
Female	25.68±3.20	26.11±3.61 [♠]
Male	26.89±5.03	28.43±4.79 [♠]

Values are mean ± standard deviation or percentage

♠: P>0.05.

TABLE 2: PERCENTAGE DISTRIBUTION OF DIABETES AMONG STAFF

Subject	Diabetic junior staff N = 25	Diabetic senior staff N =31
Male	14 (25.00%)	18 (32.14%) [▽]
Female	11 (19.04%)	13 (23.22%) [▽]

▽: P>0.05

Discussion

Prevalence of diabetes mellitus in various countries has been reported (19-24), and this varies considerably around the world (25). Hyperglycemia, which is the hallmark of diabetics condition depletes natural antioxidants and facilitates the production of reactive oxygen species (ROS), which has the ability to react with all biological molecules, like lipids, protein, carbohydrate, DNA etc and exerts cytotoxic effects on cellular components (26). Therefore no matter what the prevalence may be it should not be taken with levity both at curative and preventive levels. In this cross sectional study the overall prevalence of diabetes was 9.8% and the diabetic male/female ratio were 1.4:1 and 1.3:1 for senior staff and junior staff respectively, (Table 2) a similar ratio of 1.5:1 has also been reported (27).

The prevalence here is at variance with 23.4%, which was reported among oil workers in Port-Harcourt Nigeria (28), and the associated factors were affluent diet comprising of a high fat consumption and reduced complex carbohydrate besides sedentary life style (29). Although the prevalence is relatively low, 6.1% of the study population was incidental finding, which is technically alarming. The devastating sequelae of an untreated case cannot be over emphasized. However, undiagnosed reports in literature have revealed 45-56% in Saudi Arabia, 40-56% in Egypt and 30-40% in Baliram (30-32). The study revealed that routine glycemic/glucosuric checkup is not so popular in Nigeria, only 5.9% go for routine checkup.

The chances are that potential diabetic or even diabetic prefer to be reactive rather than being proactive. This attitude might also be applicable to other health conditions. Although there is a fundamental distinction between the senior staff and junior staff in term of socioeconomic status, this distinction however did not reflect in their body mass indices (P> 0.05) correspondingly, there was also no statistical difference in the prevalence of diabetes between the junior staff and senior staff. The seemingly equilibration of body mass/diabetic indices between these two categories of staff may be due to the fact that this study was done in a semi urban area where traditional life style takes preeminence over westernization.

Here affordability/accessibility to traditional diet may not necessarily be a function of one's socioeconomic status, as supply is usually enormous.

This study has shown that traditional diet can moderate body mass index with a concomitant reduction in the prevalence of diabetes. However, routine checkup for diabetes is remarkably poor. There is therefore need for awareness programmes that will cut across all communities whether rural, semi-urban or urban emphasizing the need for traditional diet besides routine glycemic/glucosuric checkup.

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