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PREVALENCE OF TYPE 2 DIABETES MELLITUS AND ITS RISK FACTORS AMONG MALE AND FEMALE ADULT 50 YEARS ABOVE OF OUTPATIENTS IN EKITI STATE NIGERIA

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Introduction

Diabetes mellitus (DM) is caused as a result of insulin deficiency. DM is a metabolic disorder characterized by the presence of chronic progressive hyperglycemia accompanied by greater or lesser disorder in the metabolism of carbohydrates, lipids and proteins (Baynes, 2015). The incidence of diabetes mellitus in the human population has reached epidemic proportions worldwide, and it is increasing at a rapid rate. Ninety percent of the present cases are type 2 diabetes and most of the increase will be in type 2, paralleling the increase in the incidence of obesity (William, 2005).

In type 2 diabetes these mechanisms break down, with the consequence that the two main pathological defects in type 2 diabetes are impaired insulin secretion through a dysfunction of the pancreatic β-cell, and impaired insulin action through insulin resistance (American Diabetes Association, 2010). Type 2 diabetes is due to increased insulin resistance, associated with weight gain, inactive lifestyles and poor diet. Type 2 diabetes is more frequently found in men, especially at ages of 35-54, where men are twice as likely to develop diabetes, with onset at a much lower average body mass index (BMI) (Simmons, 2019). Sex-related differences in lifestyle may lead to differences in the risk of developing diabetes mellitus and, in consequence, to differences in the prevalence of this condition in women and men (Esayas , Hiroshi, Leo and Atsuko, 2013). Diversities in biology, culture, lifestyle, environment, and socioeconomic status impact differences between males and females in predisposition, development, and clinical presentation Kautzky-Willer, Harreiter and Pacini, 2016**)**. Genetic effects and epigenetic mechanisms, nutritional factors and sedentary lifestyle affect risk and complications differently in both sexes (Kautzky-Willer et al, 2016). Research has recently shown that there is link between this hormone and development of type 2 diabetes in men, with lower testosterone levels leading to a greater risk. Conversely, it has been identified that women with high blood

testosterone levels are at greater risk (Simmons, 2019). However, the relationship between a known risk factor for diabetes mellitus – such as obesity – and the development of symptomatic diabetes mellitus may not be simple. For example, in many countries of sub-Saharan Africa, women are more likely to be obese or overweight than men and might therefore be expected to have higher prevalence of diabetes mellitus (Esayas, et al, 2013). Assessing the prevalence of type 2 DM is important for national health planners; therefore, the purpose of present study was to determine the prevalence of type2 diabetes mellitus among male and female adult 50 years above of outpatient in Ekiti state, south west Nigeria.

Little is known about the sex that more vulnerable to diabetes type 2 in Ekiti state. Due to this survey research was conducted on type 2 diabetes out patients attending Ekiti State Specialist Hospital in Ikere- Ekiti.

Methodology

Descriptive survey study was carried out on the type 2 diabetes outpatient attending Ekiti State Specialist Hospital in Ikere- Ekiti between July and August 2019. These areas were chosen because of their relative social disadvantage compared to many other areas of the south Nigeria. Simple random sampling techniques were adopted to select respondents among the type 2 diabetes out-patient in Ikere-Ekiti. The patients were informed about the purpose, aims and objective of the study and informed consent was sought from participants at the commencement of the study. Questionnaires were administered to them randomly to collect information about the patient or guardians. The data obtains included biodata and present complain.

The results were analyzed by using the SPSS software, version 19.0. Means, standard deviation and frequencies were calculated. Then, the data was represented in descriptive forms as tables, bar and pie charts.

Results

The study was carried out on 115 type 2 diabetes out-patient of State Specialist Hospital in Ikere- Ekiti. There were 72(62.6%) females and 43(37.4%) males with a male female ratio of 1:1.67. The age mean ± deviation of the study participants was 3.48 ±1.93 years with a significant age difference between the males and the females. This is illustrated in table 1.The highest age groups involved were (50-55). The least age group affect were ago of (71-75). In this study marital status married 74(64.3%), single 17(14.8%), divorced 10(8.7%) and widow/widower 14(12.2%). Majority of the studied populations were Christian 87 (75.7%) and Muslim 28 (24.3%). No education 25(21.7%), Primary school level education 19(16.6%), Secondary school level education 17(14.8%), and Tertiary institution 54(47%).The occupation of the participants: traders were 32(27.8%), farmers were 28(24.3%), civil servants were 34(29.6%) and pensioners were 21(18.3%). This is shown in table2

Table1: Age of mean and standard deviation

	N	Minimum	Maximum	Mean	Std. Deviation
AGE	115	1.00	6.00	3.4783	1.93013

Figure 1 Sex, age distribution of the out- patients and did your family had diabetes before

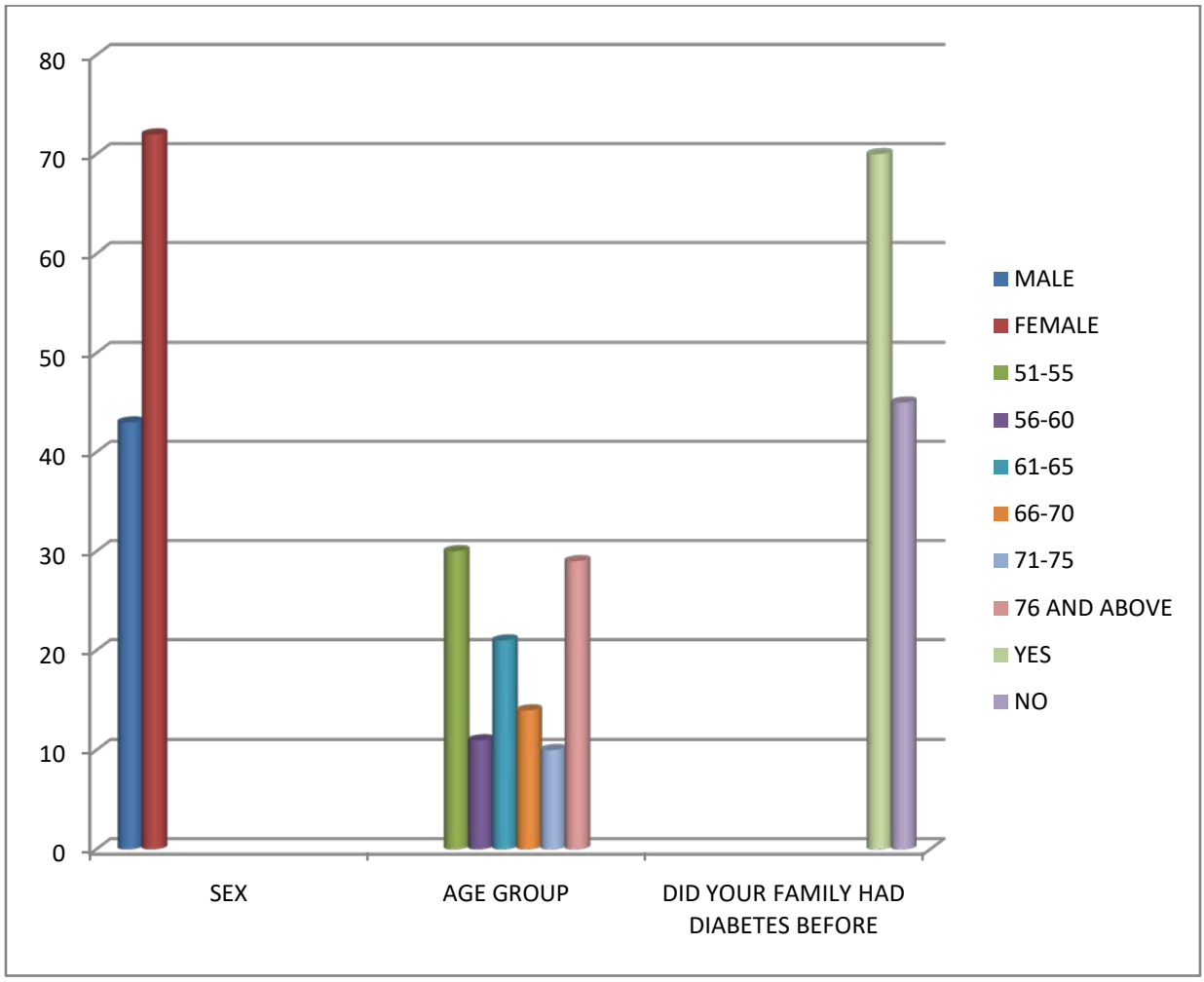

Table 2 Socio demographic data of the out-patients

Variables		Frequency	Percentage (%)
SEX	Male	43	37.4
	Female	72	62.6
AGE GROUP	51-55	30	26.1
	56-60	11	9.6
	61-65	21	18.3
	66-70	14	12.2
	71-75	10	8.7
	76 and above	29	25.2
MARITAL STATUS	Single	17	14.8
	Married	74	64.3
	Divorced	10	8.7
	Widow/Widower	14	12.2
EDUCATION STATUS	Primary Education	19	16.6
	Secondary Education	17	14.8
	Tertiary Education	54	47.0
			21.7
RELIGION	Christianity	87	75.7
	Islamic	28	24.3
OCCUPATION	Civil servants	34	29.6
	Traders	32	27.8
	Farmers	28	24.3
	Pensioners	21	18.3

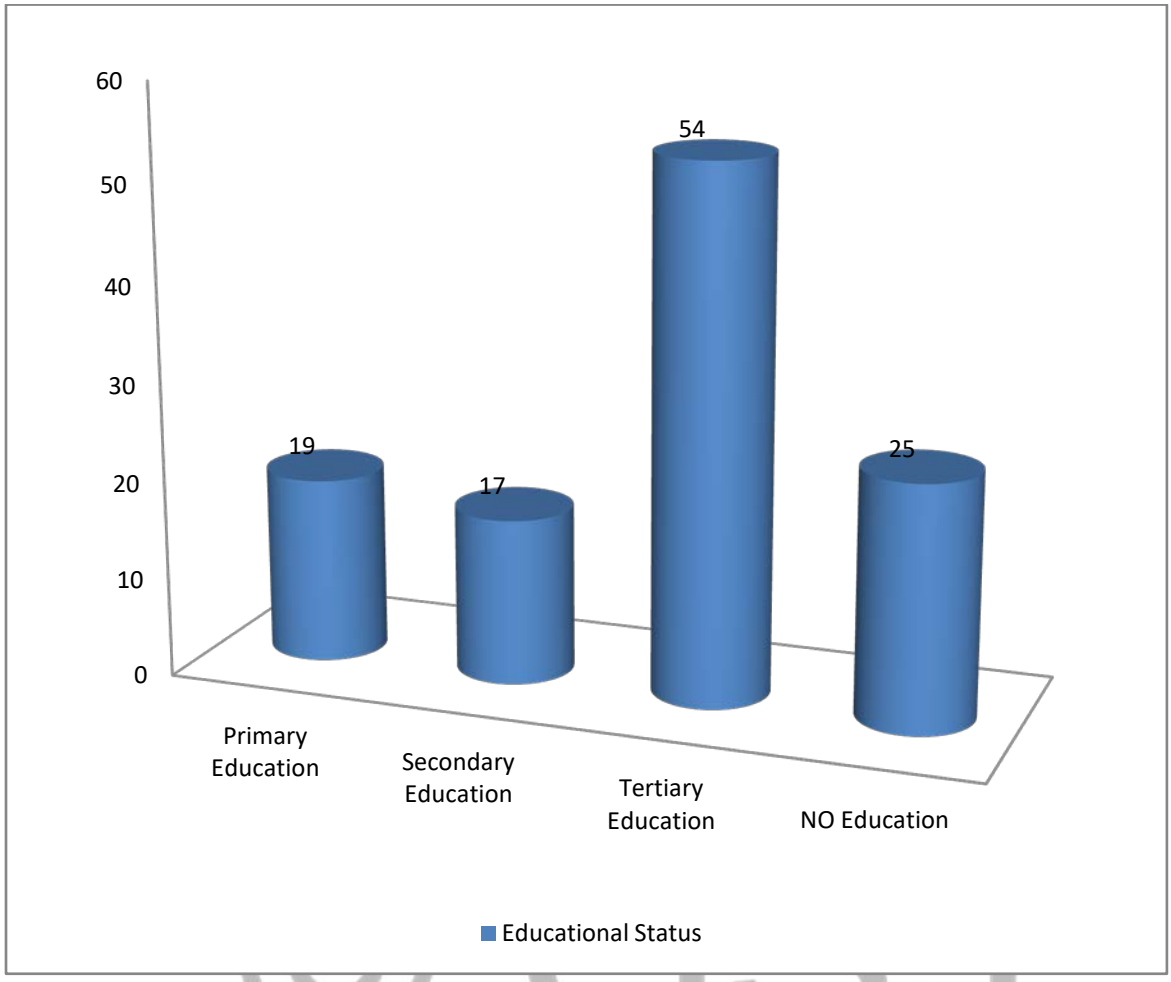

Figure 2 Educational Status of the participants

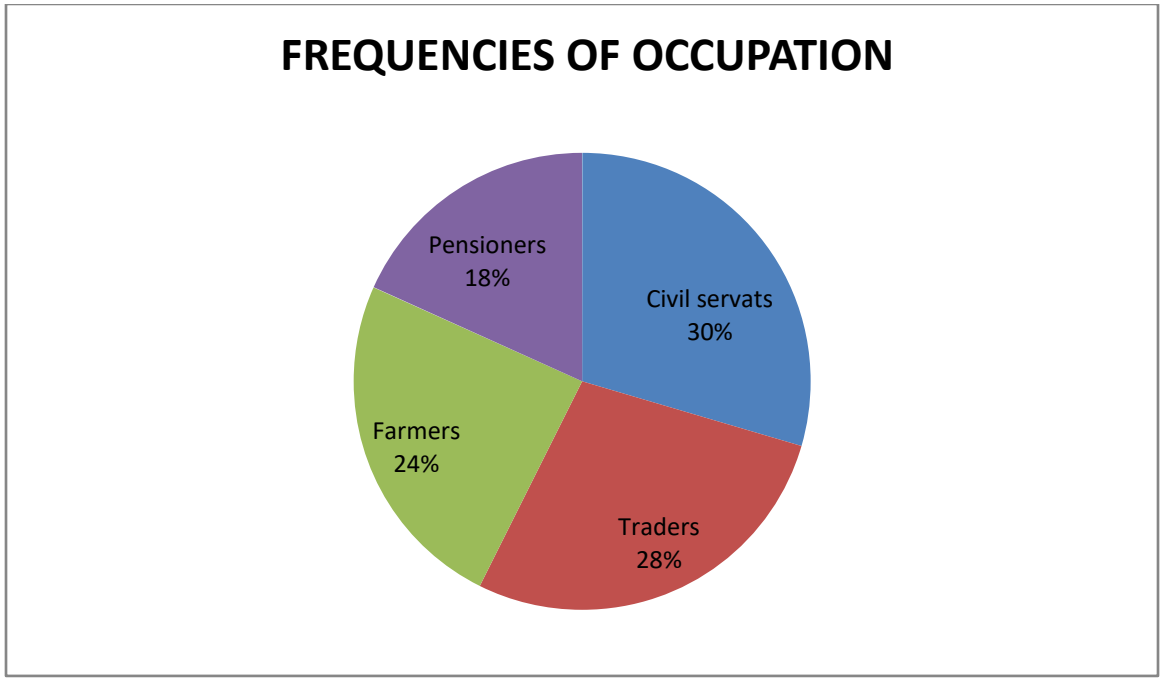

Figure 3 Occupation of the participants

Discussion

In this survey study, the result shows that female had higher prevalence of type 2 diabetes than male. These results were similar to the study by Ajayi el al, stated that there were 125 males (40.6%) and 183 females (59.4%) giving an M: F ratio of 1:1.46. However, the study by Bahendeka et al. who reported a prevalence of diabetes mellitus among males and females was 1.6% and 1.1%, respectively is disagree with this study. Machado-Alba et al state that females are highly affected by type 2 diabetes because they are less muscular which does not support high uptake of fixed glucose load and have relatively high levels of estrogen and progesterone which are involved in the reduction of the whole-body insulin sensitivity. Physical inactivity and unhealthy diet have also both been associated with impaired glucose tolerance (Esayas et al 2013). In many countries in sub-Saharan Africa, women are more likely to be physically inactive than the corresponding men (Kruger et al, 2012).

This study found that the age group 51-55 (26.1%) mostly affected by type 2diabetes mellitus followed by age group 76 and above (25.2%), this is agree to some extent with findings by Cho et al. Where adults aged 45-64 was the most diagnosed age group for type 2 diabetes mellitus. Kirkman, et al stated that older adults with diabetes may either have incident disease (diagnosed after age 65 years) or long-standing diabetes with onset in middle age or earlier. The management of diabetes is directly affected by gender and a person's age, where females and adults of 60 years and above are affected due to the coexistence of multiple medical conditions involving the heart and the kidney leading to limitation and insufficiencies of medical prescription (Debrah, et al. **2020)**. Older adults are at high risk for the development of type 2 diabetes due to the combined effects of increasing insulin resistance and impaired pancreatic islet function with aging. Age-related insulin resistance appears to be primarily associated with adiposity, sarcopenia, and physical inactivity (Kirkman, et al. 2012).

The study revealed that nature of job; nutrition, hereditary and sedentary lifestyle were the causes of type 2 diabetes. Weight gain resulting from these factors may then lead to obesity, a lifestyle and socioeconomic factor that are another strong predictor of diabetes (Grant, Hicks, Taylor, et al, 2009). Personal lifestyle and eating habits which lead to overweightedness and obesity were the primary causes of type 2 diabetes (Bahendeka et al, 2019). Thus, visceral fat may mediate the effects of a high macronutrient intake, especially a high-fat high-carbohydrate diet that has been shown to be proinflammatory and to induce endotoxemia (Anna, Jenny, Tommy, Paul and Peter, 2016). Type 2 diabetes had a hereditary factor from a close family and was associated with gene mutations that are transferred to the genetic line of the family (Bahendeka et al, 2019)

A low household income, as another social structural factor, was consistent in both groups and it is acknowledged that people on lower incomes generally have poorer health than those on higher incomes. Therefore, improving the social conditions of a household may not only assist those currently faced with decreasing health and wellbeing, but future generations to come. This may be particularly salient for women who traditionally had less opportunity to study and therefore less access to secure, well paid employment (Grant,et al,2009).Women therefore are often cast in a support role, often working in part-time or casual employment due to their need to move in and out of the workforce to have and look after children, as well as provide care to ageing family members (Artazcoz, Borrell, Benach, Cortes and Rohlfs ,2004). The incidence of Type 2 diabetes mellitus among adults with low socioeconomic status was found to be generally higher in women than in men; it was suggested that the women who lived in impoverished areas were more likely to be obese, physically inactive and under high levels of psychosocial stress than the men in the same areas (Esayas,et al.2013)

Conclusion and Recommendation

In this study, it was observed that prevalence of type 2 diabetes was high in female than male at ratio male female 1:1.67, which compared to studies done in previous years which raise a public health concern. It was found that patient aged 50-51 years were most affected by diabetes. Lastly, Hereditary, sedentary lifestyle and low income were found to increase incidence of type 2 diabetes.

From findings of this study I recommended investment in research and health system at Ekiti state to reduce increased rate of diabetes. Secondly, improvement on sensitization of general public about the burden and complications of type 2 diabetes should be emphasized on media. Thirdly, people should do aerobic exercise three times per week to reduce body mass index and increasing sensitivity of insulin receptors. In case of hereditary which increases the risk of having type 2 diabetes, lifestyle, environmental factors and many others can be adjusted to alter the occurrences.

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