

Prevalance of Blood Sugar among Patients Attending Eye Clinic in Guinness Eye Hospital Onitsha -2010 to 2017

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Abstract

Aim: To find the Prevalence of Blood sugar among Patients Attending Eye Clinic in Guinness Eye Hospital Onitsha from 2010-2017.

Methodology: This is a retrospective study of patient that attended the Guinness eye hospital Onitsha from January 2010 to December 2017 was conducted. The urine sugar, urine protein and blood sugar analysis data carried out in the laboratory unit were used to determine the prevalence of blood sugar among patients, aged 6 to 84 years.

Results: A total of 56,550 patients that attended the Guinness eye hospital were mandatory screened for urine sugar and protein, 26,747 (55%) were males while 29,803(45%) were female. From 2010-2017 data, in all 5,336(9.4%) patients had urine sugar, 1,556(2.7%) patients had urine protein, 720(1.3%) patients had both sugar and protein in their urine. 4,876 (91.3%) patients out of the 5,336 patients with urine sugar had their blood sugar level greater than 180mg/dl.

Conclusion: The prevalence of blood sugar in patients attending Guinness eye hospital, Onitsha is low (12.0%). This is due to the fact that the people are becoming aware of diabetes mellitus as a metabolic abnormality and avoiding unhealthy diet associated with obesity and hypertension (7)

Keywords: Prevalence, Blood Sugar, Patients, Guinness eye hospital.

INTRODUCTION

The blood sugar level or blood glucose level is the amount of sugar present in the blood of humans and other animals (1). In humans, sugar is the primary source of energy, and is critical for normal function, in a number of tissues; the body tightly regulates blood sugar levels as a part of metabolic homeostasis (2). Blood sugar levels outside the normal range may be an indicator of a medical condition. A persistently high level is referred to as hyperglycemia; low levels are referred to as hypoglycemia (3) Diabetes mellitus (DM) or simply diabetes is characterized by persistent hyperglycemia, and is a complex disease resulting from

the inability of the body to produce insulin, a hormone that takes sugar out of the blood and into cells where it can be used for energy. Diabetes leads to high blood sugar levels, which can lead to damage of blood vessels, organs, and nerves. Long-term, complications of uncontrolled diabetes affect the small blood vessels that supply the nerves, kidneys, retina, and other organs (4, 5). Some serious problems that can develop include:

- Vision loss
- Kidney disease leading to kidney failure
- Erectile dysfunction

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- Foot ulcers
- Permanent nerve damage, causing numbness and tingling
- Poor wound healing
- Increased risk of heart attack or stroke (4,5)

Diabetes Mellitus effect on the eyes can be

- Blurred vision – where by the lens within the eye can swell and temporarily cause blurred vision. This type of blurred vision will usually get better after the blood glucose level comes back to normal.
- Retinopathy - a disease which damages the tiny blood vessels in the retina and the light sensitive lining of the eye become leaky, blocked, or grow abnormally. All patients with diabetes are at risk for developing retinopathy, but the risk is higher for patients with worse blood sugar control. Early retinopathy may have no symptoms, but early treatment is essential to prevent any loss of vision.
- Cataract – the clouding of the eye's lens that results in blurring of normal vision. People with diabetes are nearly twice as likely to develop cataracts as other adults. Cataracts also tend to develop at an earlier age (5).

Eye damage (retinopathy) is a major complication of diabetes. Diabetes mellitus (DM) is a metabolic disease defined by WHO as the elevated blood glucose level of greater than 180mg/dl (6). DM is a global epidemic and the prevalence is anticipated to continue to increase. The ocular complications of DM negatively impact the quality of life and carry an extremely high economic burden. Blurry vision is often one of the first warning signs of diabetes (7).

The worldwide prevalence was 271 million in the year 2016 and is estimated to rise to 366 million in 2030, but in Nigeria, the prevalence is between 2-7 %.(8)

Urbanization with the adoption of western lifestyles has been blamed for the increasing prevalence (9). Various researchers have reported prevalence ranging from 2% to 12% across the country in recent years (9, 10, 11, 12, 13, and 14). The last time a nationwide population estimate of DM was undertaken in Nigeria was during the 1992 Nigerian National Non-

communicable Diseases (NCD) survey, where DM was said to occur in 2.2% of the population (15, 16). There has been no nationwide health (diabetes) survey in Nigeria since then (15, 16).

In the South-Eastern Nigeria, where the Guinness eye hospital is located, diabetic retinopathy is a leading cause of blindness in people with DM and accounts for 16.2 -42.1% of retinal diseases (17). However, to the best of our knowledge, the prevalence of urine sugar and blood sugar in patients that have attending the Guinness eye hospital had never been reported. Patients visiting the hospital often complain only about their eye problems when they come to the hospital, and it is common for ophthalmologists to refer them to the laboratory for urine sugar and urine protein. The entire patients with sugar in their urine were tested for blood sugar. The systemic control of BG can only slow the ocular complications, but they cannot stop them, especially if clinical symptoms are already present. In this review we discuss the prevalence blood glucose complications associated with the patients attending the Guinness eye hospital Onitsha for their eye treatments.

METHODOLOGY

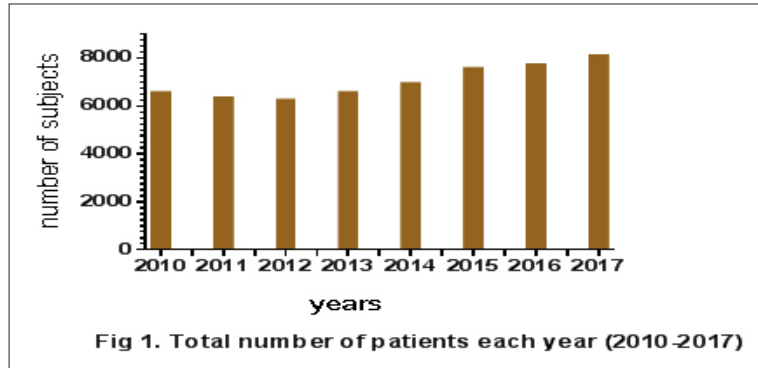
This is a retrospective study of 56,550 patients that attended the Guinness eye hospital Onitsha from 2010 to 2017. The urine sugar, urine protein and blood sugar analysis data carried out in the laboratory unit were used to determine the prevalence of blood glucose among patients, aged 6 to 84 years. The patients urine were tested for sugar and protein using Medi-test Combi-2 (Macherey-Nacel, Germany). Those with sugar in their urine were given another appointment for the fasting blood sugar procedure. The patients fasted for ten hours (10pm -7am) before 3mls of their venous blood sample were taken into fluoride sugar bottles. The blood samples were centrifuged immediately at room temperature, and the plasma was used to measure blood sugar using Randox sugar reagent (GOD-PAP & Hexokinase) and Spectrophotometer (StatFax-4500 Awareness Technology, product of USA). The Statistical packages for social science (SPSS-16) were used to analyze the data. Frequency and percentage were computed for categorical variables and mean and standard deviation were estimated for quantitative variables. Graph Pad prism version 6 was used for graphs.

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RESULTS

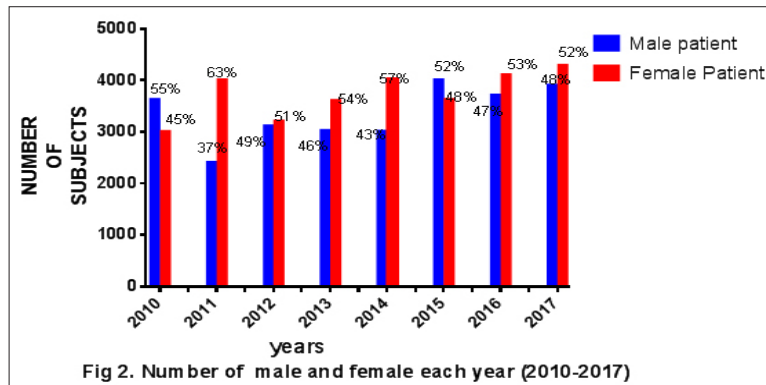
A total of 56,550 patients that attended the Guinness eye hospital were mandatory screened for urine sugar and protein, 26,747 were males while 29,803 were female. From 2010-2017 data, in all 5,336 patients

had urine sugar, 1,556 patients had urine protein, 720 patients had both sugar and protein in their urine. 4,876 patients out of the 5,336 patients with urine sugar had their blood sugar level greater than 180mg/dl. The attendance of patients to the Guinness eye hospital increases yearly as shown on figure 1.



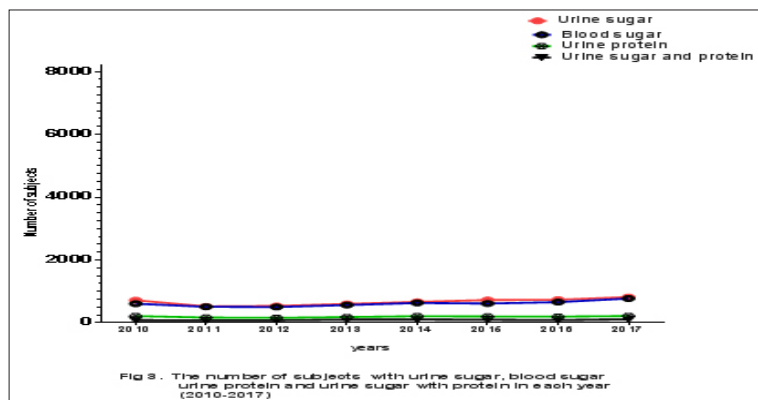
With more female patients than the male patients with different cases of eye problems except in 2010

and 2015 were the males were more in attendance than the female patients (figure 2).



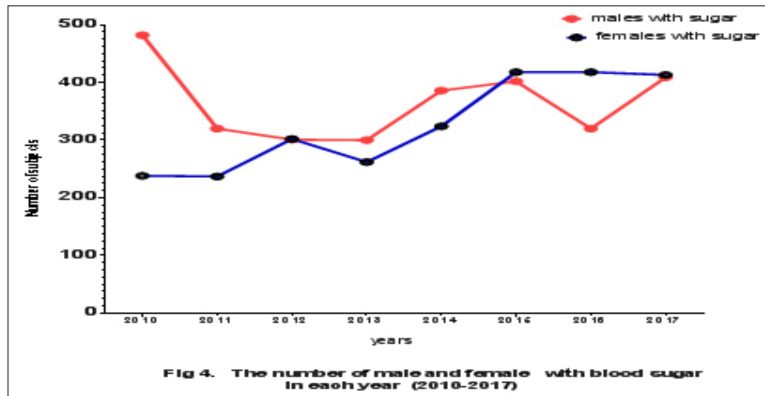
The minimum and maximum number of patient that attended the Guinness eye hospital each year from 2010 to 2017 were 6,308 and 8,180 patients respectively. And the mean percentage of urine sugar for those years was $23.4 \pm 1.4\%$, Blood sugar; $11.0 \pm 1.8\%$, Urine protein; $2.4 \pm 0.6\%$

while those patients with both sugar and protein in their urine percentage were $1.7 \pm 0.2\%$. The percentage of patients with urine sugar, blood sugar, urine protein and sugar and protein for each year, from 2010 to 2017, were shown below on Figure 3.

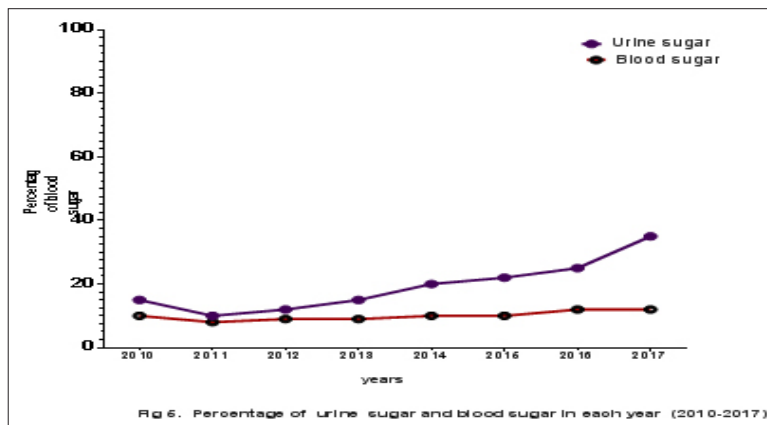


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The percentage of blood sugar were higher in the males than the females, except in 2015 and 2016 (figure 4).



The percentage of blood sugar decreases in 2011 to 2017 showing a percentage of 10% -13% and 2012 but gradually increased from 2013 (figure 5).



DISCUSSION

To the best of our knowledge, the present study is the first to report on the prevalence of blood sugar in patients attending the Guinness eye hospital. The prevalence of Urine and Blood sugar in this study was 23% and 12%, respectively. Which is lower than that reported in previous studies (10,11,12,13,14). Most of the subjects attending the Guinness eye hospital were not aware of either having urine sugar nor blood sugar while seeking for cure for their eye problems. And in this study, we did not determine the different causes of the eye problems of the different ages, but took only the age range (6-84). The prevalence of blood sugar was higher in the year 2016 and 2017. The reason for this might be that diet, lifestyle change, social urbanization. In this study, not all that have sugar in their urine, had blood sugar this might be due to drastic lifestyle changes, such as physical inactivity, unhealthy diet, obesity and hypertension caused by stress. This study represents further evidence of global health inequality and the scale of the epidemic

which sub-Saharan African countries now face. Good management of blood glucose and prompt treatment of retinopathy (including maculopathy) is the key to avoid permanent visual impairment. Evidence shows that dietary and exercise modifications offered to non-diabetic adults can reduce or delay onset of type 2 diabetes (5).

CONCLUSION

In conclusion, this study demonstrated the prevalence of blood sugar and its risk factors in eye patients. The prevalence of blood sugar in patients attending Guinness eye hospital is low (12.0%) and positively associated with awareness of diabetes mellitus, which is a metabolic abnormality and avoiding unhealthy diet associated with obesity and hypertension. Urine sugar and blood sugar are by definition very important factors related to an eye patient's treatment and prognosis. The results of our study could offer great information about urine and blood sugar that will help the ophthalmologists to identify high-risk and low-risk patient populations within our locality.

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