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THE PREVALENCE OF TYPE 2 DIABETES MELLITUS AND IMPAIRED GLUCOSE TOLERANCE TEST IN POPULATION OF MULTAN

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ABSTRACT

Diabetes mellitus prevalence has been increasing in developed countries due to factors like lifestyle changes. Pakistan is included in developing countries where half of the population lives under poverty, despite of this fact prevalence of diabetes is increasing day by day. The aim of this analysis was to evaluate the prevalence of impaired glucose tolerance test (IGT) and diabetes mellitus type 2 in the population of Multan. **Methodology:** It is a cross-sectional study done at Nishtar hospital Multan and Multan medical and dental hospital. We completed this study during a duration of one year from December 2017 to December 2018. We obtained 1000 random samples from patients, attendants and hospital staff after taking informed consent. Each individual is tested for fasting blood sugar, glucose tolerance test and HbA1c. Cases were studied according to the WHO criteria for Diabetes. Already known case of diabetes, type 1 diabetic patients, seriously ill patient and who didn't gave consent were excluded from the study. **Results:** We enrolled 1000 individual in the study, among them 450 were male and 550 female with male to female ratio of 1:1.2. Out of total 1000 persons, 780 cases were normal healthy, 91 were having diabetes mellitus and 129 cases were having impaired Glucose Tolerance Test. Of the 450 men, 368 were normal, 33 were diabetics and 49 had IGT. Out of the 550 women 412 were found normal, 58 women were diagnosed diabetic and 80 were having impaired glucose tolerance test. **Conclusion:** The overall diabetes mellitus prevalence for the population of Multan was 9.1% and IGT in 12.9%.

KEYWORDS: Diabetes mellitus, Prevalence, FBS, RBS, IGT.

INTRODUCTION

Over the last decade, diabetes mellitus has become important clinical and public health problem throughout the world.[1] It has more than 150 million people worldwide and this figure will increase to 370 million by 2030.[2] The WHO has ranked Pakistan on seventh in diabetes prevalence list.[3] Diabetes mellitus is a chronic hyperglycemia syndrome. According to WHO definition of diabetes, symptoms or glucose tolerance or fasting plasma glucose more than 126 mg / dl, and random blood glucose level of more than 200 mg / dl is labelled as Diabetic.[4] Earlier it was considered that it is a disease of the wealthy people and mostly prevalent in urban areas but due to change in nutrition and a more sedentary lifestyle for many people, it has affected middle-income and low-income nations, including Pakistan.[5-6] In Pakistan, 6.9 million people are diabetics and the IDF estimates that it will rise to 11.6 million by 2026, if no measures were adopted combat the disease.[6] The most common clinical symptom of Diabetes are polydipsia, polyphagia, nocturia, fatigue and generalized weakness. It is an irreversible progressive disease leads to long-term complications i.e. stroke, heart attack, amputation, nephropathy, retinopathy and peripheral neuropathy etc. Late complication causes high health costs and reduced life expectancy. The rising prevalence of sedentary lifestyles and obesity is one of the main causes of diabetes mellitus type II and is the fastest growing public health issue worldwide, which brings about a high financial burden and cost of medical care. Type 2 diabetes is mainly because of genetics, lifestyle and environmental factors. Diabetes screening test is advised for most of the people in different life stages and in any of the various risk factors. Many researchers suggests adults between 40 and 50 years of age should be done with universal screening at regular intervals.[7] The earliest screening tests are usually suggested for people with risk factors such as family history of diabetes, obesity, high-risk ethnicity, gestational diabetes history. Keeping this in mind this study was designed to estimate the prevalence of diabetes in areas of district Multan.

MATERIALS AND METHODS

It is a cross-sectional study done at Nishtar hospital Multan and Multan medical and dental hospital. We completed this study during a duration of one year from December 2017 to December 2018. We obtained 1000 random samples from patients, attendants and hospital staff after taking informed consent. All the individuals were having sedentary life style or housewives. Each individual is tested for fasting blood sugar, glucose tolerance test and HbA1c. First sample was collected in starvation for FBS and then second sample was taken 2 hours after oral glucose load of 75 grams. Cases were studied according to the WHO criteria for Diabetes. Already known case of diabetes, type 1 diabetic patients, seriously ill patient and who didn't gave consent were excluded from the study. Data were analyzed by the SPSS version 20.

RESULTS

We enrolled 1000 individual in the study, among them 450 were male and 550 female with male to female ratio of 1:1.2. Out of total 1000 persons, 780 cases were normal healthy, 91 were having diabetes mellitus and 129 cases were having impaired Glucose Tolerance Test. Of the 450 men, 368 were normal, 33 were diabetics and 49 had IGT. Out of the 550 women 412 were found normal, 58 women were diagnosed diabetic and 80 were having impaired glucose tolerance test.

Table 1: Overall frequency of Normal, IGT and Diabetics.

	Frequency	Percentage
Normal individual	780	78%
Impaired glucose tolerance	129	12.9%
Diabetic individual	91	9.1%
Total	1000	100%

Table 2: Frequency of male and female cases.

Gender	Frequency	Percentage
Male	450	45%
Female	550	55%
Total	1000	100%

Table 3: Distribution of IGT and Diabetes prevalence among male gender. n=450.

	Frequency	Percentage
Normal individual	368	81.7%
Impaired glucose tolerance	49	10.8%
Diabetic individual	33	7.3%
Total	450	100%

Table 4: Distribution of IGT and Diabetes prevalence among female gender. n=550.

	Frequency	Percentage
Normal individual	412	74.9%
Impaired glucose tolerance	80	14.5%
Diabetic individual	58	10.54%
Total	550	100%

DISCUSSION

According to our study the overall diabetes mellitus prevalence for the Multan population was 9.1% and 12.9% for IGT (impaired glucose tolerance), respectively. The diabetes mellitus prevalence in our analysis can be compared with the data published by Punjab, Baluchistan, KPK and Sindh.[8] In the Punjab study, the diabetes prevalence was 9.83% for women and 12.14% for men. Total intolerance to total glucose (IGT and diabetes) was present in 16.67% of men and in 19.37% of women. In NTFPs, the overall IGT and NIDDM prevalence in men and women was 9.4% and 11.1%, respectively.[9] Gender-specific diabetes prevalence was 11.6% in women and 9.2% in men. In Balochistan, incidence of IGT and diabetes in both genders are 11.9% and 10.8% (urban) and 11.2% and 6.5% (rural) respectively.[10] The diabetes prevalence in urban and rural areas was 11.1% in males, 10.6% in females, 10.3% in males and 4.8% in females. In the Sindh region, the diabetes prevalence in males was 16.3% (8.90%, 7.2% newly diagnosed) and 11.7% in women. In our study, the diabetes mellitus prevalence is comparable to other populations in developing countries such as Iran 2%, Oman 10%, Argentina 7%, Palestine 9.6%, Taiwan 8.1% and Porto 9.7%.[11] The diabetes mellitus prevalence and IGT was 15.9% and 22.01%, respectively, in studies conducted by Martin et al. A

similar diabetes mellitus prevalence was observed in Malaysia. IGT and Diabetes mellitus in the population were 11.3% and 4.7%, respectively. Hamman et al reported a different prevalence of diabetes in two different ethnic groups (Hispanic and Anglo-Saxon) living in similar conditions.[12] The overall prevalence of diabetes was higher in Hispanic (6.6%) than AngloSaxons (3.6%). This variable prevalence of the most common endocrine disease is due to environmental and social factors. The increase in income, obesity and low exercise were associated with the high prevalence of diabetes mellitus.

CONCLUSION

The overall diabetes mellitus prevalence for the population of Multan was 9.1% and IGT in 12.9%. In our analysis, the diabetes mellitus prevalence was comparable to that obtained from the four other Pakistan provinces and compared with other populations in developing countries. The Type II diabetes prevalence is becoming one of the fastest growing public health problems in Pakistan, so assessing the prevalence of diabetes will be useful in future national planning and service delivery.

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