



Assessment of Prediabetes Among Medical Students

KEYWORDS

Fasting plasma glucose, Prediabetes, Body mass index

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ABSTRACT For the last few decades incidence of diabetes increasing worldwide. Prediabetes is defined as a condition with blood glucose level higher than normal but not diagnosed to be diabetes. Global projection of diabetes in 2025 by International Diabetes Federation (IDF) suggests that India is going to have 60 million diabetics. The objective of this study is to assess the prediabetes among medical students of IMS & SUM Hospital. Diagnosis of prediabetes was based on American Diabetes Association criteria. The study was conducted for a period of 4 months. A total of 250 volunteers were taken for the study between the age group of 17-25 years. Anthropometric parameters heights, weight, BMI were measured. Fasting plasma glucose (FPS) was estimated in all subjects & data were analyzed. Subjects having higher BMI were having high FPS (>100mg/dl) as compared to normal BMI range.

INTRODUCTION

Diabetes mellitus is a clinical syndrome of hyperglycemia occurring due to deficiency of insulin or insulin resistance. Prediabetes is a condition with blood glucose level higher than normal but not high enough to be diagnosed as diabetes[1]. Change in food habits, sedentary life style & increased urbanization are major contributors of diabetes. Most people with prediabetes are asymptomatic but are at high risk of developing diabetes, heart disease & stroke. Prevalence of prediabetes is increasing worldwide & it has been projected that more than 470 million people will have prediabetes by 2030[1]. Prediabetes is defined as fasting blood sugar level between 110 mg/dl to 125 mg/dl as per WHO guidelines & 100 mg/dl to 125 mg/dl as per American Diabetes Association [2,3]. India leads the world with largest number of diabetic subjects and according to the Diabetes Atlas 2006 published by the International Diabetes Federation, the number of people with diabetes in India currently 40.9 million is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken [4,5]. The objective of the study was to see the prevalence of prediabetes in medical students between 17-25 yrs of age.

MATERIALS & METHODS

The present study was done in IMS & SUM Hospital, Bhubaneswar during February 2016 to May 2016 to identify prediabetes risk students. The study comprised of 250 subjects in the age group of 17 to 25 years out of which 110 are female & 140 are male.

Following consents of the subjects, the subjects were assessed.

- First, age was recorded
- Standing height was recorded without shoes with a stadiometer in centimeters
- Weight was recorded without shoes and with light clothes on a weighing machine
- Body mass index (BMI) was calculated as weight in kilogram divided by height in meter² (kg/m²) as per Quetelet's index [6]. The participants of the study were classified into two groups. Normal weight group having BMI 18.5 kg/m² to 22.9 kg/m² & obese group having BMI \geq 23 kg/m². According to

WHO Western Pacific Region 2000 in Asians a person with BMI of 23kg/m² or considered as overweight & with BMI 25 kg/m² or more considered as obese [7].

- After an overnight fast of 8-14 hrs fasting plasma glucose (FPG) was recorded. According to American Diabetes Association prediabetes is defined fasting plasma glucose between 100 mg/dl to 125 mg/dl. FPG level less than 100 mg/dl considered as normal.

Data were collected & analysed using SPSS software. For all statistical analyses the p value was considered to be significant at $p < 0.05$

RESULTS

Table 1: Comparison of anthropometric parameters between study & control group

		Age (Yrs)	Height (m)	Weight (Kg)	BMI (Kg/sq m)
Study group (n=102)	Mean \pm SD	20 \pm 2	1.6 \pm 0.08	81.00 \pm 9	30.00 \pm 3
Control group (n=148)	Mean \pm SD	19 \pm 2	1.65 \pm 0.05	58.00 \pm 4.6	21.00 \pm 0.98
P value		NS	NS	<0.001	<0.001

This table shows comparison of anthropometric parameters in study & control group. No significant difference age or height was found among study & control groups indicating the samples were homogenous in this respect. However, weight & BMI were significantly different between study & control group.

Table 2: Comparison of fasting plasma glucose among study & control group

		Fasting plasma glucose (mg/dl)
Study group (n=102)	Mean \pm SD	103.0 \pm 5.3
Control group (n=148)	Mean \pm SD	78.7 \pm 4.8
P value		<0.01

This table shows comparison of fasting plasma glucose among study & control group. P value <0.05 signifies that fasting plasma glucose is significantly higher in study group as compared to control group.

DISCUSSION

India has a high prevalence of diabetes mellitus & the numbers are increasing rapidly. International Diabetes Association has estimated that there would be around 70 million cases of Diabetes mellitus in India by year 2025 [5,8]. In the present study subjects with higher BMI were having high FPS (>100mg/dl) as compared to normal BMI range. Taranikanti et al also found that anthropometric indicators like WHR & BMI are associated with a greater possibility of development of DM & metabolic syndrome[1]. DM was typically regarded as a disease of middle-aged & elderly. While it is still true that this age group maintains a higher risk than younger adults, evidence is accumulating that onset in those aged under 30 years is increasingly common, even children & adolescents are now becoming caught up in the diabetes epidemic[9].

CONCLUSION

Due to sedentary life style, changing food habits, as the number of diabetics increasing day by day in young adults, so screening for prediabetes is one of the preventive measures to prevent or delay the onset of type 2 diabetes mellitus. By screening the the subjects with undiagnosed prediabetes we can suggest them lifestyle/pharmacological intervention. By this we can prevent or delay the onset of diabetes & reduce the number of young diabetes.

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