

Research Article

# A Study of Diabetes Prevalence and its Risk Factors in the Medical College Faculty of Bhopal, Madhya Pradesh

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## Abstract

**Introduction:** The population in India has an increased susceptibility to diabetes mellitus, in India there are 30-33 million diabetic cases, the prevalence of disease in adults was found to be 2.45 in Rural and 4 - 11.6% in urban dwellers.

**Objective:** To estimate the high risk subjects by using Indian diabetes risk score for detecting undiagnosed diabetes/ risks in Medical faculty.

**Methodology:** This is a cross-sectional (descriptive) study.

**Results:** 300 respondents were interviewed, of these 234 (78%) were male and 66(22%) were females. According to the physical activity, majority of them 171(57%) belong to mild physical activity category. According to family history 96 (32%) were having history of diabetes in either parents. 24 (8%) of studied persons were known diabetics, according to IDRS scoring 66(22%) in high risk for diabetes, the high body mass index (>30) significantly increase the diabetes risk. Out of total known diabetic cases 15(62.5%) had high Indian diabetes risk score.

**Conclusion:** This study provides a use of simplified Indian Diabetes Risk Score for identifying undiagnosed high risk for diabetic subjects in India. Simplified diabetes risk score, which has categorized the risk factors based on their severity. Use of the IDRS can make mass screening for undiagnosed diabetes in India more cost effective.

**Keywords:** Diabetes Mellitus; Medical Faculty; Risk Factors; Indian Diabetes Risk Score.

## Introduction

The International Diabetes Federation (IDF) estimated that currently there are 100 million people with diabetes worldwide representing about 6% of all adults [1]. Although great efforts have been made by developed countries to control infectious diseases, but non-communicable diseases have not received the same attention. Diabetes Mellitus is one of the non-communicable diseases which have become a major global health problem. Asia is one of the regions that has high prevalence of diabetes and it is estimated that 20 % of current global diabetic population resides in South- East Asia Region. Indeed, the number of people with diabetes in India is likely to double in less than 2 decades - from 39.9 million (in 2007) to 69.9 million by 2025 [2,3]. The population in India has an increased susceptibility to diabetes mellitus, in India there are 30-33 million diabetic cases, the prevalence of disease in adults was found to be 2.45 in Rural and 11.6% in urban dwellers [4,5].

## Objective

To estimate the high risk subjects by using Indian diabetes risk score (IDRS) for detecting undiagnosed diabetes/ risks in medical faculty.

## Methodology

This is a cross-sectional (descriptive) study was carried out in the

Peoples college of medical sciences and Research Centre, informed consents were obtained from all participants, information were collected by using a predesigned and pretested protocol to find out the prevalence and the risk of diabetes mellitus in medical faculty by using Indian Diabetes Risk Score (IDRS) (Figure 1). In all subjects, family history of diabetes was obtained and details on physical activities and various parameters were assessed using a validated questionnaire [6]. Waist measurements were measured by using standardized technique [7].

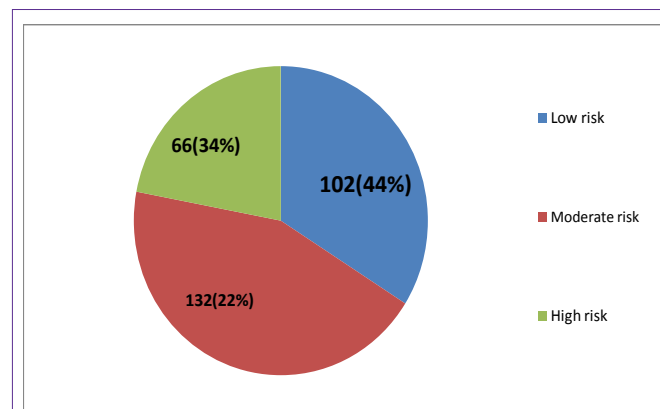


Figure 1: According to Indian Diabetes Risk Score (IDRS)

**Table 1:** Respondents according to their socio-demographic profile.

Serial Number	Category	Number	Percentage
1.	Age Groups <35	120	40%
2.	35-49	147	49%
3.	>50	33	11%
4.	Gender Male	234	78%
	Female	66	22%

**Table 2:** Respondents according to their Family History of Diabetes.

Serial Number	Family History	Number	Percentage
1.	Either Parent	96	32%
2.	Both Parents	18	6%
3.	None	186	62%
Total		300	100

**Table 3:** Distribution of respondents according to their physical activities status.

Serial Number	Physical Activities	Number	Percentage
1.	Vigorous exercise or strenuous work	12	4%
2.	Moderate exercise work / home	90	30%
3.	Mild exercise work/home	171	57%
4.	No exercise and sedentary	27	9%
Total		300	100

**Table 4:** Distribution of respondents according to their Indian Diabetes Risk Score (IDRS).

Serial Number	IDRS	Number	Percentage
1.	< 30 (Low risk)	102	34%
2.	30-50 (Moderate risk)	132	44%
3.	60 and above (High risk)	66	22%
Total		300	100

**Table 5:** Respondents according to their known status of diabetes and Indian diabetes risk score (IDRS).

Known cases of diabetes	High IDRS in known diabetic
(N=300)	(N=24)
24 (8%)	15(62.5%) $\chi^2=62.3, P<0.005$

**Table 6:** Respondents according to their body mass index (BMI) and diabetes risk as per Indian diabetes risk score (IDRS).

Body mass Index	Diabetes risk as per Indian diabetes risk score			
	Low risk	Moderate risk	High risk	Total
<18.50 (Underweight)	15(50%)	9(30%)	6 (20%)	30(100%) $P<0.05$
18.50-24.99 (Normal )	45 (36%)	63(50%)	18(14%)	126(100%) $P>0.05$
25-29.99(Pre obese /over weight)	18(17%)	63 (60%)	24 (23%)	105(100%) $P>0.05$
30 and above (Obese)	3(0.8%)	15 (38%)	21 (54%)	39(100%) $P<0.05$
Total	81 (27%)	150(50%)	69 (23%)	300(100%)

Inclusion criteria: Faculty above 18 years of age, willing to participate, not seriously ill.

Exclusion criteria: Those who less than 18 years of age, Refuse to participate, seriously ill.

## Results

The present study was carried out in medical college of Bhopal with the objective to assess the risk of diabetes among medical faculty. 300 respondents were interviewed and examined. Table 1 shows that 147 (49%) were between 35-49 years followed by 120(40%) <35 years of age. Of these 234 (78%) were male and 66 (22%) were females. Table 2 shows that according to family history 96 (32%) were having positive history of diabetes in one parent and 18 (6%) in both parents. Table 3 shows that according to the level of physical activity, majority of them 171 (57%) belong to mild physical activity category only 12(4%) medical professional belong to Vigorous exercise or strenuous work.

Table 4 shows that according to IDRS scoring 66 (22%) were come under high risk to develop diabetes, majority 132 (44%) of subjects come under moderate risk category in studied group. According to Table 5 24 (8%) of studied subjects were known case of diabetes, among the known diabetic cases 15 (62.5%) were had high Indian diabetes risk score. According to Table 6 those who were had body mass index (BMI) >30 in study group two and half time more 21 (54%) come under high risk category for diabetes according to Indian diabetes risk score in comparison to BMI <18.5 6(20%). High BMI >30 persons were having significant risk for developing diabetes (54%) in comparison to normal BMI persons (14%).

## Discussion

In the present study, we used simplified Indian diabetes risk score for identifying newly diagnosed high risk subjects in the medical college faculty. This is of great significance as use of such scoring system can prove to be a cost effective tool for screening of diabetes [8]. Further use of such a risk score would be of great help in developing countries like India where there is a marked explosion of diabetes and over half of them remain undiagnosed. 22% of population had high risk score (>60) for diabetes (Table 4). In a similar study conducted at Chennai by Mohan *et al.* 43% of the population were found in high risk category [9] and another study done by us in urban area of Pondicherry had 31.2% high risk subjects [10,11]. This risk difference may be due to variance in life-styles of the population as our study was done in a medical faculty, whereas Mohan *et al* [11]. Conducted the study in a metropolitan city and our another study was in the urban area of Pondicherry [12,13]. Further confirmation with Glucose Tolerance Test (GTT) is required among subjects with IDRS >60 to early detect the occurrence of diabetes. Besides this, lifestyle and dietary modification are to be initiated to reverse the risk factors among these groups. Various studies in the west used different diabetes risk scores, based on simple anthropometric, demographic and behavioural factors, to detect undiagnosed diabetes [14-17]. We also used diabetes risk score suitable for detecting undiagnosed diabetes in South Asia. The risk score used in this study are those recommended by American Diabetes Association [18] Compared to other studies IDRS has the following merits: its use is simple; scores are easily obtainable and have been drawn from high risk population.

In addition the score is developed from representative sample of a large metropolitan city of India, the demographic of which is similar to rest of the India. According to the study “Urban rural differences in prevalence of self-reported diabetes in India,” people with sedentary lifestyle had more diabetes [19]. In our study we also found that people with sedentary and mild physical activity had a higher risk for diabetes. According to the study conducted by Ramachandran et al [20]. in an urban area of south India [20] 47% of the people who had diabetes had a positive family history and the present study done by us in the medical faculty had 32% positive family history. This difference may be due to different life-styles and socio-economic status of the respondents.

## Conclusion

This study provides a use of simplified Indian Diabetes Risk Score for identifying undiagnosed high risk for diabetic subjects in general population. Simplified diabetes risk score, which has categorized the risk factors based on their severity. Use of the IDRS can make mass screening for undiagnosed diabetes in developing country like India more cost effective.

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