# **Original Research Article**

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# Assessment of diabetic risk among non-diabetic workers of a tertiary care hospital

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#### **ABSTRACT**

**Background:** Diabetes is a metabolic disease characterised by high blood sugar levels and is one of the major causes of premature illness and death worldwide. There is an inflation in number of people with diabetes from 108 million in 1980 to 422 million in 2014. WHO has projected that DM is going to be 7th leading cause of death in 2030. 80% of diabetics live in low and middle income countries thereby increasing burden on their economy. Among the working population due to stress and lifestyle problems the toll is climbing in terms of morbidity, mortality and costs of society.

**Methods:** Cross sectional study was conducted in SDM College of Medical Sciences and Hospital. Sample size was 200 with class 1 and class 2 workers 100 each. Data was collected using pre-designed and pre-tested questionnaire after taking informed consent (IDRS). Data entered in Epidata v3.1 and analyzed using IBM SPSS v20.

**Results:** Of the 200, majority 71% belonged to 36-49 years age group. Majority 67% were males and 73% had normal BMI. A high IDRS profile was found among 18.5% of study participants. Majority 68% had moderate risk profile in relation to IDRS.

**Conclusions:** High risk score was found in 18.5% of study subjects and moderate risk score in 68% of study subjects who were non diabetic. This is the scenario among the class I and class II staff in health care industry. Intervention needed to prevent development of diabetes among the nondiabetic working population.

Keywords: IDRS, Diabetes mellitus, Working population

#### INTRODUCTION

The world today is facing an epidemic of non communicable diseases (NCD), Diabetes as a non-communicable disease is a significant public health problem and the prevalence rate is increasing globally and reaching epidemic proportions which will soon surpass communicable diseases both in developing and developed world. Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), the most common is type 2 diabetes. The population in India has an increased susceptibility to diabetes mellitus. The Indian Council of Medical

Research (ICMR) study done in the 1970s reported a prevalence of 2.3% in urban areas, which has risen to 12-19% in recent years. <sup>5,6</sup> In an working population due to working environment and its demands, occupational stress can get concentrated. Occupational stress can be defined as "harmful physical and emotional responses that occur when job requirements do not match the capabilities, resources or needs of the worker". <sup>7</sup> Diabetes is the 7<sup>th</sup> leading cause of death and with combination of obesity and hypertension (HTN). <sup>8</sup> The prevalence of diabetes mellitus (DM) and obesity are increasing parallel in worldwide. <sup>9</sup> According to the World Health Statistics Report 2012, globally, the risk of morbidity and mortality

has significantly increased. Interventions in form of health education, behaviour and life style modification approaches at occupational level is a must. The study was done to know the IDRS Risk score for diabetes mellitus among class I and class II workers.

#### **METHODS**

A cross sectional study was conducted among class I and class II workers of Sri Dharmasthala Manjunatheshwara College of Medical Sciences and Hospital situated in Dharwad district, Karnataka.

#### Selection criteria

The study participants were non diabetic (not on treatment or undiagnosed).

Inclusion criteria were all those class I and class II workers who were not diabetic were invited to participate in the study. First 100 people to volunteer in each category were included in the study. Those who were diabetic and workers belonging to class III & class IV were excluded.

#### Study period

The study was conducted from June 2017 to August 2017. The purpose of the study was explained and written consent was taken from the study participants on voluntary basis. Predesigned and pretested questionnaire was used to collect socio-demographic profile, BMI. To calculate the score of diabetes risk IDRS was used. <sup>10</sup>

#### Statistical analysis

Score <30 regarded as low risk, score between 30-50 as moderate risk and scores more than 60 were regarded as high risk for development of diabetes. Data collected was entered in Microsoft excel software and analyzed using SPSS v22. Descriptive statistics like frequencies, percentages, mean and standard deviation were calculated. Chi square test was applied. P value less than 0.05 was considered statistically significant.

## RESULTS

A total of 200 study participants were interviewed and data was collected. The study population comprised 134 (67.0%) males and 66 (33.0%) females, their age ranged from 30-48 years (mean 37.44±2.02 years).

Table 1 shows the socio-demographic characteristics of the study participants. The mean age was 37.44±2.02 years. Out of 200 study participants, majority 79.5% belonged to Hindu religion, 84.5% belonged to nuclear family. Majority 66.0% were on mixed diet. Majority 73% of study participants had normal BMI, followed by 16.5% overweight and 5.5% obese.

Table 1: Socio-demographic characteristics of the study participants (n=200).

Characteristics	Number	Percentage (%)
Age group		
<35	71	35.5
36-49	121	60.5
>50	08	4.0
Sex		
Female	66	33.0
Male	134	67.0
Religion		
Hindu	159	79.5
Muslim	19	9.5
Christian	2	1.0
Others (Sikhs, Jains)	20	10.0
BMI		
Underweight (<18.50)	10	5.0
Normal (18.5-24.99)	146	73.0
Overweight (25-29.99)	33	16.5
Obese (≥30)	11	5.5
Family type		
Joint	31	15.5
Nuclear	169	84.5
Diet		
Vegetarian	132	66.0
Mixed	68	34.0

Table 2 shows difference between class I vs. class II with respect to socio-demographic data personal data and work duration information. Factors like age, gender, residence, history of other illness, nightshifts and wok duration were not found to be statistically significant.

Table 3 describes the level of risk according to IDRS10 risk score among the class I and class II workers. Majority 69.0% in class I workers had moderate risk and 18.0% had high risk. Among class II workers majority 67% had moderate risk and 19% had high risk of developing diabetes mellitus. Between the class of workers with respect to IDRS score no statistical significance was found.

Table 2: Class I vs. class II (sociodemographic and occupational characteristics).

Chanastanistias		Class		Total (m. 200)	D welve ( <0.5)
Characteristics		I	II	Total (n=200)	r value (<0.5)
Age	<35	37	34	71	0.20
	36-49	59	62	121	
	>50	4	4	8	

Continued.

Characteristic		Class		Total (n=200)	P value (<0.5)	
		I	II		10tai (11–200)	r value (<0.5)
Gender	Males	71	63		134	1.44
	Females	29	37		66	1.44
Residence	Urban	87	81		168	1 22
	semiurban	13	19		32	1.33
H/o other illness	Yes	84	79		163	0.31
	No	16	21		37	
Nightshifts	Yes	46	51		97	0.50
	No	54	49		103	
Work duration (years)	<5	39	40		79	0.73
	5-10	44	39		83	
	>10	17	21		38	

Table 3: Class wise IDRS score comparison among the participants.

IDRS category	Class (n=2	(00)	Tetal (0/)	Dualus
	I	II	Total (%)	P value
Low (<30)	13	14	27 (13.5)	
Moderate (30-50)	69	67	136 (68.0)	0.093
High (>60)	18	19	37 (18.5)	

#### **DISCUSSION**

The present study was aimed to find out the level of risk of developing diabetes mellitus among the class I and class II workers of the tertiary care centre.

In our study prevalence of moderate risk was found in 68.0% of the study subjects, which was more when compared to a study done in Kolkata. Present study high risk was found to be in 18.5% but it was on higher side 31.0% in Kolkata study. The difference in findings could be because of conduct of study in general population instead of conducting among the health care industry professionals.

The present study results when compared with a study done in Davanagere, Karnataka showed high risk among 16.67% which was less compared to our study where high risk was found in 18.5% of study participants, similarly moderated risk was also higher. This difference could be because of work environment where the study done in Davanagere was among the bank employees and present study among the professional in health care industry. <sup>12</sup> In a study done in rural area near Raja Rajeshwari Medical college, Bangalore, low, moderate and high risk IDRS score was found to be 26.0%, 49.0% and 26.0% respectively which when compared to our study was 13.5%, 68.0% and 18.5%. <sup>13</sup> The difference in the result could be because of selection of the population rural vs. urban

#### CONCLUSION

The present study estimates the usefulness of simplified Indian diabetes risk score for identifying high risk

working population. Use of IDRS tool can make mass screening for diabetes in India more cost effective. Implementation of diabetes education and stress prevention programmes are required for working population. There is need to increase awareness about the disease for taking necessary preventive and control measures for particular situation and environment.

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