ASSESSMENT OF THE RISK OF DIABETES AMONG UNDIAGNOSED PEOPLE IN URBAN HEALTH TRAINING CENTER AREA

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ABSTRACT

Background: Diabetes mellitus (DM) is one of the most common non-communicable disease (NCDs) globally. The burden of diabetes is increasing day by day. The lack of information or delayed information about diabetic problem by the diabetic patients themselves adds to the gravity of diabetes and its related problems in India. The regular screening programs coupled with awareness programs for different sections of the population would pave way to minimize the burden to a great extent. **Objectives:** The present study is aimed to work out the risk involved for those patients who remains undiagnosed over a period of time. The Screening method based on Indian Diabetes Risk Score (IRDS) was used for this purpose. **Methods:** This cross sectional study was conducted on 1500 individuals residing in field area of the Urban Health Training Centre attached to Medical College using a pre- tested questionnaire based on Indian Diabetes Risk Score (IRDS). **Results:** In the present study, it was found that out of 1500 study subjects, 24.4 % were in low risk (IDRS score <30), 49.6% were in moderate risk (IDRS score 30-50) and 26% were in high risk (IDRS score ≥ 60). **Conclusions:** The mass screening of suspected community using the IDRS technique would help to initiate required interventions so as to minimize the burden of the disease as well as other complications on account of it.

Keywords: Indian Diabetes Risk Score (IDRS), Diabetes mellitus (DM), Urban area

INTRODUCTION

Diabetes mellitus (DM) is one of the most common non-communicable disease (NCDs) globally. It is one of the most important leading causes of death in most high-income countries.

It is reported that the diabetes has become a type of epidemic in many parts of the world especially in developed countries (**1**). The projected burden of diabetes by WHO in 2030 comes to 366 million indicating that it is an ever increasing problem. The recent World Health Organization report suggests that over 19% of the world's diabetic population currently reside in India (**2**). It implies that there are currently 35 million diabetic patients in India and it will reach 80 million by 2030. This positive trend in number of diabetic patients would further push up the health burden in India (**3**). The lack of timely information by more than half of diabetes patients adds to the increased burden due to this disease which can be suitably reduced through implementation of mass awareness program coupled with screening programs

to locate suspected cases. Keeping this fact in view, effort has been made to find out the risk of diabetes in undiagnosed persons using Indian Diabetic Risk Score.

The specific objectives of the study are:

a) To assess the Indian Diabetic Risk Score among the specified population

b) To assess the relationship between IDRS and various socio-demographic factors of the study population

METHODS

This was a hospital based cross-sectional study carried out at field practice area under urban health training centre of community medicine department R.N.T. medical college. In this study we included all persons attending UHTC aged 15 year or more who were willing to participate. An informed consent was obtained from all participants. Confirmed case of diabetes and unwilling persons were excluded. Total 1500 respondents were studied during July to September 2018.

The present study has used a semi-structured questionnaire based on IDRS developed by

Dr. Mohan and others. This scoring is used to screen undiagnosed diabetic patients, the details of which are given below (3):

Particular	Score
Age (years)	
<35	0
35-49	20
≥50	30
Abdominal obesity	
Waist<80cm (F); <90cm (M)	0
Waist 80-89cm (F); 90-99cm (M)	10
Waist >90cm (F); >100cm (M)	20
Physical activity	
Exercise regular + strenuous work	0
Exercise regular or strenuous work	20
No exercise and sedentary work	30
Family history for diabetes	
Either parents	10
Both parents	20
No family history	0
Minimum score	0
Maximum score	100

A non-elastic tape was used to measure the waist circumference with the accuracy level of 0.1 cm at the midpoint of highest point of iliac crest and lowest rib at the end of expiration. Those persons with IDRS value <30, 30 to 50 and ≥60 were categorized as low risk, moderate risk and high risk respectively for diabetes (**3**).

Data analysis was done using MS Excel and SPSS17 version.

RESULTS

In present study total 1500 subjects were assessed. Among the respondents, 710 (47.33%) were male and 790 (52.67%) female. Out of 1500 study subjects, 375 (25%) were in the age group of 15-34 years, 467 (31.13%) were in the age group of 35-49 years and 658 (43.86%) were in ≥ 50 years age group. Of the total 1500 subjects, 24.4 % were in low risk (IDRS score <30), 49.6% were in moderate risk (IDRS score 30-50) and 26% were in high risk (IDRS score ≥ 60) (Table 1).

Among participants aged ≥50 years 48.6% were in high risk while 50.9% were in moderate risk. Among subjects 15-34 years majority were in low risk (88.8%) and this difference was statistically significant (p=<0.001). Among male participants 19.9% were in high risk score while among female participants 47.6% were in moderate risk score, this was also statistically significant(p=<0.001). Among participants having positive family history majority were in moderate risk category (46.2%) while 36.3% were in high risk category (Table-2).

Out of total 1500 subjects female participants with waist circumference >90cm and male participants with >100cm, majority were in high risk (68.9%). Association between IDRS score and waist circumference was statistically significant (Table-3).

Among participants with IDRS score >60 (high risk), majority of the males were overweight (41.84%) while majority of the females were obese (38.55%). Among participants with IDRS score <30 (low risk) majority of the males (51.74%) and female (58.79%) having normal body mass index (18.5-24.99) (Table-4).

DISCUSSION

Present study was conducted on 1500 persons aged 15 year or more attending one of the UHTC field practicing area of RNT Medical College, Udaipur and who were willing to participate in the study.

In this study, majority of the participants (49.6%) were in moderate risk category having IDRS score 30-50. In study done by Suraj A et al. showed 66.8% participants were found in moderate risk category (5).

In this study, among 15-34 aged participants, majority were in low risk category (88.8%, IDRS score <30). Almost similar results were also found in a study by Suraj A et al (5). In the present study for those participants aged above 50 years, it was found that 50.9% persons belonged to moderate risk category and 48.6% were in high risk category. Suraj A et al study reported that among participants aged >50years majority (86%) were in high risk and 15% in moderate risk category (5). Saleem et al. showed that the mean age of participants was 51.5 years and 54% of participants were women (6).

In present study majority of the participants (male=51.8%, female=47.6%) were in moderate risk category (IDRS=30-50). Similar to our study Suraj A et al. (5) also found majority of the participants (male=71.51%, female=54.92%) were in moderate risk category. Study by Saleem et al. showed about 54% women were in moderate risk category (6). In this study majority of the participant having positive family history were in moderate risk category 46.2% (IDRS=30-50) while 56.8% were in moderate risk category in study done by Suraj A et al.(5). Subramani et al.(7), Bhatia et al. (8) and Gopalkrishnan et al.(9) also reported similar findings with varied risk level of 16.6%, 32% and 46.8% respectively.

Majority of the male (69.47%) having waist circumference >100 cm and female (68.75%) having waist circumference >90 cm were in high risk category. Our finding was similar to study done by Suraj A et al. (5). Study done by Singh MM et al showed statistically significant association of moderate-high diabetes risk with male gender as well as with higher BMI (P = 0.0069 and 0.009, respectively) (10).

CONCLUSION

In the present study, it was found that people in the age group between 35 to 49 years were high risk population. Among participants, females were found having high chances to develop diabetes. The study also revealed that, female having waist circumference above 90 cm was at high risk of developing diabetes. High BMI was also an important factor among male to develop diabetes. Current study revealed that it is important to educate young generation regarding healthy lifestyle adoption. There is an urgent need for early identification of at-risk population and to increase awareness through health education to decrease morbidity burden due to diabetes.

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Table 1. Distribution of subjects according to IDRS score (percentage)

S. No	IDRS score	Number of participants (%)
1	>60 (High Risk)	390 (26)
2	30-50 (Moderate Risk)	744 (49.6)
3	<30 (Low Risk)	366 (24.4)
Total	**-**	**1500 (100)**

Table 2. Association between IDRS and Socio-demographic profile and family history for diabetes

Age group (Years)	IDRS SCORE			Total (%)	P VALUE
	>60(High Risk) (%)	30-50 (Moderate Risk) (%)	<30(Low Risk) (%)		
15 - 34	0 (0)	42 (11.2)	333 (88.8)	375(100)	<0.001
35-49	70 (15)	367 (78.6)	30 (6.4)	467(100)	
≥ 50	320 (48.6)	335 (50.9)	3 (0.5)	658(100)	
Sex					
Male	141(19.9)	368 (51.83)	201 (28.30)	710 (47.33)	<0.001
Female	249 (31.5)	376 (47.6)	165 (20.9)	790 (52.67)	
Family History					
No	328(24.7%)	662(49.9)	336(25.3%)	1326	0.003
Yes	62(36.3%)	79(46.2)	30(17.5%)	171	

Table: 3. Association between IDRS and Waist Circumferences

Waist Circumference	IDRS			Total	P Value
	>60 (High Risk)	30-50 (Moderate Risk)	<30 (Low Risk)		
Female					
<80cm (F);	5 (1.78%)	151 (53.77%)	125 (44.48%)	**281 (35.57%)**	<0.001
80-89cm (F);	68 (26.88%)	147 (58.10%)	38 (15.02%)	**253 (32.02%)**	
>90cm (F);	176 (68.75%)	78 (30.47%)	2 (0.78%)	**256 (32.40%)**	
Male					
<90cm (M)	6 (1.52%)	199 (50.51%)	189 (47.97%)	**394 (55.49%)**	
90-99cm (M)	69 (31.22%)	142 (64.25%)	10 (4.52%)	**221 (31.13%)**	**<0.001**
>100cm (M)	66 (69.47%)	27 (28.42%)	2 (2.10%)	**95 (13.38%)**	

Table: 5. Association between IDRS and BMI

IDRS Score	BMI						
	Sex	<18.5	18.5-24.99	25-29.99	≥30.00	Total	P Value
>60(High Risk)	**Male**	11 (7.8%)	53 (37.59%)	59 (41.84%)	18 (12.76%)	141 (9.4%)	<.001
	Female	12 (4.82%)	59 (23.69%)	82 (32.93%)	96 (38.55%)	249 (16.65%)	
30-50 (Moderate Risk)	**Male**	51 (13.86%)	217 (58.97%)	93 (25.27%)	7 (1.90%)	368 (24.53%)	.001
	Female	39 (10.37%)	191 (50.80%)	77 (20.8%)	69 (18.35%)	376 (25.07%)	
<30 (Low Risk)	**Male**	81 (40.3%)	104 (51.74%)	15 (7.46%)	1 (0.5%)	201 (13.4%)	<.001
	Female	35 (21.21%)	97 (58.79%)	25 (15.15%)	8 (4.85%)	165 (11%)	