

Research Article

A study on assessment of risk of developing diabetes using IDRS (Indian Diabetes Risk Score) in the urban area of Jamnagar city

Dr. Suraj A Khandhedhia¹, Dr. Arunkumar I Chaudhary², Dr. Sumit Unadkat³, Dr. Dipesh Parmar⁴

^{1,2}Tutor, Department of Community Medicine, GMERS Medical College, Dharpur-Patan

³Associate Professor, ⁴Professor and Head, Department of Community Medicine, M.P.Shah Medical College, Jamnagar

***Corresponding author**

Dr. Suraj A Khandhedhia

Email: surajkhandhedhia@gmail.com

Abstract: Diabetes as a non communicable disease is significant public health problem the prevalence rate all the world over is raising. Unfortunately more than 50% of the diabetic subjects in India remain unaware of their diabetes status, which adds to the disease burden. This underscores the need for mass awareness and screening programmes to identify and overcome the burden due to diabetes in India. Therefore present study was carried out with an aim to assess the risk of diabetes among undiagnosed individuals using IDRS (Indian Diabetes Risk Score). Present study was a cross sectional study. Pre-tested semi structured questionnaire based on IDRS was used in this study. The study was conducted on 500 individuals residing in urban area of Jamnagar city. In the present study, it was found that out of total 500 study subjects, 334 (66.8%) were in moderate risk category, 114 (22.8%) were in high risk category and 52 (10.4%) were in low risk category. It may be concluded that it is essential to implement the simple IDRS tool in the community for mass screening so that proper intervention can be carried out earliest to reduce the burden of diabetes.

Keywords: IDRS, Diabetes, Urban area.

INTRODUCTION

Diabetes as a non communicable disease is significant public health problem the prevalence rate all the world over is raising [1]. The recent World Health Organization report suggests that over 19% of the world's diabetic population currently resides in India [2]. This translates to over 35 million diabetic subjects, and these numbers are projected to increase to nearly 80 million by 2030. This rising trend predicts a significant health burden due to diabetes in India [3]. Unfortunately more than 50% of the diabetic subjects in India remain unaware of their diabetes status, which adds to the disease burden [4]. This underscores the need for mass awareness and screening programmes to identify and overcome the burden due to diabetes in India. The Indian Diabetes Risk Score (IDRS), a simple screening tool for prediction of undiagnosed diabetes developed by Dr. Mohan and colleagues at the Madras Diabetes Research Foundation (MDRF), Chennai. The MDRF – IDRS was derived from the Chennai Rural Epidemiology Population Study (CURES) and was internally validated using the data from the Chennai Urban Population Study (CUPS) [3]. Therefore present study was carried out with an aim to assess the risk of

diabetes among undiagnosed individuals using IDRS (Indian Diabetes Risk Score).

EXPERIMENTAL SECTION (MATERIALS & METHODS)

It was Community based observational study with cross sectional study design. The study was conducted on 500 individuals residing in urban area of Jamnagar city during October-2011 to March 2012. Pre-tested semi structured questionnaire based on IDRS was used in this study. Waist circumference was measured with a non-stretchable tape to nearest 0.1 centimetre (cm) at the midpoint between the lowest rib and the highest point of iliac crest at the end of expiration. Adult subjects aged 20 years or more who were cooperative were included in the study. An informed consent was obtained from all participants. Indian Diabetes Risk Score (IDRS) was used as a study tool. Data analysis is being done using MS Excel and epi-info software.

Study subjects with IDRS value <30 were categorized as low risk, those with score 30 to 50 as moderate risk and those with score ≥60 as high risk for diabetes [3].

Indian Diabetes Risk Score [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	
No family history	0
Either parents	10
Both parents	20
Minimum score	0
Maximum score	100

RESULTS AND DISCUSSION

Table 1 shows that among the respondents, 358(71.6%) were male and 142(28.4%) were female. We had stratified the age group of the respondents according to IDRS and 54(10.8%) were in the age group of 20-34 years, 298 (59.6%) were in the age group of 35-49 years and 148(29.6%) were ≥ 50 years. Geetha M *et al.*; [5] observed in their study that 14% of study subjects were <35 years of age, and 55% of study

subjects were ≥ 50 years which is higher while 31% belonged to age group of 35-49 years which is lower than the findings of present study. Chowdhury R *et al.*; [6] observed in their study that 47.2% of study subjects were in the age group of 20-34 years which is higher, 28.5% were in the age group of 35-49 years which is lower while 24.3% were ≥ 50 years which is almost similar compared to present study finding.

Table 1: Association between IDRS and socio-demographic variables

Variables	No. of study subjects (n=500)	Indian Diabetes Risk Score (IDRS)			p value
		≥60 (High risk)	30-50 (Moderate risk)	<30 (Low risk)	
Age groups					
< 35 years	54 (10.8%)	0 (0%)	2 (0.6%)	52 (100%)	---
35-49 years	298 (59.6%)	16 (14%)	282 (84.4%)	0 (0%)	
≥ 50 years	148 (29.6%)	98 (86%)	50 (15%)	0 (0%)	
Gender					
Male	358 (71.6%)	68 (60%)	256 (76.6%)	34 (65.4%)	p<0.005
Female	142 (28.4%)	46 (40%)	78 (23.4%)	18 (34.6%)	
Literacy status					
Illiterate	112 (22.4%)	40 (35.1%)	52 (15.6%)	20 (38.5%)	p<0.0001
Literate	388 (77.6%)	74 (64.9%)	282 (84.4%)	32 (61.5%)	
Religion					
Hindu	446 (89.2%)	101 (88.5%)	300 (89.8%)	45 (86.5%)	p=0.76
Muslim	54 (10.8%)	13 (11.5%)	34 (10.2%)	7 (13.5%)	
Waist Circumference (cm)					
<80cm (F); <90cm (M)	134 (26.8%)	10 (8.8%)	78 (23.4%)	46 (88.5%)	p<0.0001
80-89cm (F); 90-99cm (M)	286 (57.2%)	40 (35.1%)	240 (71.9%)	6 (11.5%)	
>90cm (F); >100cm (M)	80 (16.0%)	64 (56.1%)	16 (4.7%)	0 (0%)	
Family history					
No	412	76 (66.6%)	284 (85%)	52 (100%)	P<0.0001
Yes	88	38 (33.4%)	50 (15%)	0 (0%)	
Total		114	334	52	

In our study 77.6% of the study subjects were literate. Almost similar finding was reported by Geetha M *et al.*; [5]. Majority of the study subjects were Hindu. On applying chi-square test, statistical significant difference was found between IDRS and gender, literacy status, waist circumference and family history while no association was found between IDRS and religion.

Table 2 shows distribution of study subjects according to IDRS Category. Out of total 500 study subjects, 334 (66.8%) were in moderate risk category, 114 (22.8%) were in high risk category and 52 (10.4%) were in low risk category. Almost similar finding were also observed by Abhishek A *et al.*; [7] in their study. Lower percentage of population in moderate risk category was found in the study done by Chowdhury R *et al.*; [6] (46%), Geetha M *et al.*; [5] (30%) and Anand V *et al.*; [8] (28%). The distribution of population in high risk category was higher in the study done by Geetha M *et al.*; [5] (59%) and Chowdhury R *et al.*; [6] (31.5%) than reports by present study but it was lower in the study done by Anand V *et al.*; [8] (5%). Compared to present study, proportion of low risk population was reported higher by Anand V *et al.*; [8] (67%) and Geetha M *et al.*; [5] (59%) while almost similar proportion was reported by Chowdhury R *et al.*; [6] (22.6%).

Table 2: Distribution of study subjects according to Indian Diabetes Risk Score (IDRS)

Sr. No.	IDRS	No. of subjects (n = 500)
1	>= 60 (High risk)	114 (22.8%)
2	30-50 (Moderate risk)	334 (66.8%)
3	<30 (Low risk)	52 (10.4%)

CONCLUSION

IDRS is a simple, useful and cost-effective screening tool for diabetes in resource limited settings. It is essential to implement the simple IDRS tool in the community for mass screening so that proper intervention can be carried out earliest to reduce the burden of diabetes.

RECOMMENDATION

We recommend that every individual above 20 years should be assessed for the risk of developing diabetes by calculating the IDRS and those with a moderate to high risk score must have their fasting blood sugar and lipid profile assessed annually, which could motivate them to adhere to life style changes.

REFERENCES

1. Nandeshwar S, Vishal J, Pal DK; Indian diabetes risk score for screening of undiagnosed diabetic subjects of Bhopal city. NJCM, 2010; 1(2): 176-177.
2. Wild S, Roglic G, Green A, Sicree R, King H; Global prevalence of diabetes, estimates for the year 2000 and projections for 2030. Diabetes Care 2004; 27: 1047-53.
3. Mohan V, Deepa R, Deepa M, Somannavar S, Datta M; A Simplified Indian Diabetes Risk Score for Screening for Undiagnosed Diabetic Subjects. JAPI, 2005; 53: 759-763
4. Deepa M, Deepa R, Shanthirani CS, Manjula Datta, Unwin NC, Kapur A, Mohan V; Awareness and knowledge of diabetes in Chennai – The Chennai Urban Rural Epidemiology Study (CURES – 9). J Assoc Physicians India 2005; 53: 283-7.
5. Geetha M, Kalaivani A, Raja D; Application of Indian Diabetes Risk Score in screening of an undiagnosed rural population of Kancheepuram District, Tamil Nadu- A cross-sectional survey.

- NRIMS Journal of Health Sciences 2014; 2(2): 81-83.
6. Chowdhury R, Mukherjee A, Lahiri SK; A study on distribution and determinants of Indian Diabetic Risk Score (IDRS) among rural population of West Bengal. National Journal of Medical Research 2012; 2 (3): 282-286.
7. Abhishek A, Srivastava JP, Gupta P, Sachan B, Prakash D, Zaidi ZH; Indian diabetes risk score (IDRS), a strong predictor of diabetes mellitus: A cross sectional study among urban and rural population of Lucknow. International Journal of Applied Research, 2015; 1 (7): 135-138.
8. Anand V, Adhikari Prabha MR, Kotian SM, Neha S, Sandhya G, Amruta T; The Value of the Indian Diabetes Risk Score as a Tool for Reducing the Risk of Diabetes among Indian Medical Students, Journal of Clinical and Diagnostic Research 2011; 5(4): 718-720.