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Risk of Developing Diabetes among Ayurveda Students using Indian Diabetes Risk Score

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ABSTRACT

Background: The increasing prevalence of diabetes reflects an increase in associated risk factors. Risks of the diabetes are among those with family history of diabetes, overweight or obese and people with moderate to high Indian Diabetic Risk Score (IDRS). There is a long asymptomatic prediabetic stage before the development of diabetes.

Materials and Methods: Present study was done on 300 students of National Institute of Ayurveda, Jaipur to screen those at risk of Diabetes among Ayurveda students by using IDRS. Age, sex, waist circumference, details of physical activities and family history of diabetes were recorded to calculate Indian Diabetic Risk Score (IDRS).

Results and Discussion: The mean IDRS score among female was 29.4 and among male was 27.8. 70.6% of the students had reported no family history of Diabetes. 35% of students did not follow regular physical exercise. The mean BMI of students in study was 22.38. 25.7% had either parent suffering from diabetes while 3.7% had both the parents suffering from diabetes. 60 percent were found in moderate risk group while 2.7 % were in high risk group on the basis of IDRS. The high prevalence among parents suggests that the number of students with moderate risk will come under high risk score once they turn to middle age above 35 years.

Conclusions: 60 % of Ayurveda students were in the moderate risk group. IDRS which is easy, cost effective and reliable tool for early screening of diabetes and prediabetic population in developing countries can contribute towards screening and preventing diabetes.

Key words: IDRS, diabetes, prediabetes, screening

INTRODUCTION

Diabetes mellitus once considered the disease of wealthy and sedentary population is now been common disease among all socioeconomic class people and also in younger age groups. Prevalence of metabolic syndrome is rapidly increasing in developing countries. Epidemiological trends indicate that nearly 70% of people with diabetes live in developing countries.¹ India has the second highest prevalence of diabetes mellitus in the world with over 69.2 million diabetic subjects.² The increasing prevalence of diabetes reflects an increase in associated risk factors such as being overweight or obese.³ Risks of the diabetes are those with family history of diabetes, overweight or obese and people with moderate to high Indian Diabetic Risk Score (IDRS).⁴ BMI provides a simple numeric measure of a person's thickness or thinness, allowing health professionals to discuss weight problems more objectively is also used in screening the obesity risk. The body mass index (BMI) is a value derived from the weight and height of an individual. The BMI is defined as the body mass in kilogram divided by the square of the body height in meters. The BMI is an attempt to quantify the amount of body mass in an individual, and then categorize that person

as underweight, normal weight, overweight, or obese based on that value. BMI ranges are underweight: under 18.5 kg/m², normal weight: 18.5 to 25, overweight: 25 to 30, obese: over 30. There is a long asymptomatic prediabetic stage before the development of diabetes. As one of the most common non communicable disease the direct and indirect cost of diabetes and its complication figure prominently in healthcare expenditure globally. Indian Diabetes Risk Score (IDRS), devised and developed by Mohan *et al.* at the Madras Diabetes Research Foundation, is a validated tool to identify individuals with high risk of developing type 2 diabetes mellitus (T2DM) in future.⁵ Among the youth of today, the medical students have a busy academic schedule and they generally do not have much time for physical exercise and are addicted to different food fads.⁶ So Cost effective screening methods like assessment of IDRS can contribute towards preventing and managing the national and global burden. The present study was done with the objective to find out the risk of diabetes mellitus among Ayurveda students in National Institute of *Ayurveda*, Jaipur, India by using IDRS.

MATERIALS AND METHODS

Present survey study was done on 300 students of National Institute of *Ayurveda*, Jaipur during June- August 2017. Sufficient information was given to the students and explanations regarding questions was done. Almost 1/3rd of total students were taken for the study. Students who have given written consent irrespective of sex were included in the present study. Students not willing for the study and who were taking medications for diabetes mellitus were excluded in the study. All the participants were assessed for IDRS which needs answers for three questions and waist measurement. IDRS (Table 1) scores takes in consideration of age, waist circumference, physical activity and family history. Waist circumference was measured using measuring tape directly on the body with light clothing with accuracy of ± 1 cm. Waist circumference was taken at the midpoint between the iliac crest and the lower border of the ribs after a normal expiration on standing position. Scores to all the subjects were awarded based on their physical activity viz. sedentary, mild, moderate, vigorous exercise or strenuous work. Risk interpretation was done as high, moderate and low risk on the basis of IDRS. Total range of Score being 0-100, and <30, 30-50, ≥ 60 being considered as low risk, moderate risk and high risk respectively.

RESULTS

In age wise distribution 40% of students were in-between the age group 20-24 years, 38.7% were in the age group 25-29 years, 16.7% were in the age group 30-34 years. Only 15 Students (4.6%) were in the age group above 35 years. In sex wise distribution 61.67 % were female students while 38.33% were male students.

In waist circumference wise distribution among male students maximum 52.2% had waist circumference below 90 cm, 38.2% had waist circumference between 90 to 99 cm while 9.6% had waist circumference greater or equal to 100. Among female

students maximum 64.8% had waist circumference below 80 cm, 31.5% had waist circumference between 80 to 89 cm while 3.7% had waist circumference greater or equal to 90.

Table 1: Indian Diabetic Risk Score (IDRS)

Particulars	Score
Age	<35
	35-49
	≥ 50
Waist Circumference	<80 cm [female] , <90 [male]
	$\geq 80 - 89$ cm [female], $\geq 90 - 99$ cm [male]
	≥ 90 cm [female], ≥ 100 cm [male]
Physical activity	Regular vigorous exercise
	Regular moderate exercise
	Regular mild exercise
	No exercise or sedentary work
Family History	No Family History
	One Parent is Diabetic
	Both Parents are Diabetic

In distribution according to family history of diabetes 70.6% of the students had reported no family history of diabetes. 25.7% had either parent suffering from diabetes while 3.7% had both the parents suffering from diabetes.

In distribution according to the level of physical activity 6% did regular vigorous exercise, 19.7% did moderate exercise, 39.3 did mild exercise, and 35% did not follow regular physical exercise.

In IDRS Score Wise distribution the mean IDRS score among female was 29.4 and among male was 27.8. Maximum value of IDRS was 70 and minimum value was 0. 37.3% were having low risk score, 60% were in moderate risk while 2.7% were in high risk.

In distribution according to Body mass index (BMI) the mean BMI of students in study was 22.38. Maximum 66% of the students were normal weight, 19% were overweight, 11.7% were underweight and 3.3% were obese.

DISCUSSION

All the students selected were above the age of 20 and below 50 years. The students were from different age group because National Institute of *Ayurveda* is an apex institute of *Ayurveda* at Jaipur India which is engaged in Clinical Teaching and Research at Under-Graduate, Post-Graduate, Ph.D. and Diploma Course in *Ayurveda* Nursing and Pharmacy. There are also certain Post-Graduate seats reserved for *Ayurveda* medical officers from different states. Only 15 students were above the age of 35 who were included in the study. IDRS being simple, non-interventional, cost effective

screening tool can widely be used by any healthy worker to identify the risk of developing diabetes mellitus.⁷ 60 % of students were in the moderate risk group, while 37.3% were in low risk group while only 2.7% were in high risk group of developing diabetes on the basis of IDRS Score. Most students vulnerable to diabetes were percentage of moderate risk due to the low physical activity. 70.6% had no family history of diabetes and others had either one or both parents suffering from diabetes. Family history of diabetes was found in 77 students with single parent while 11 students had both parents diabetic. The high prevalence among parents also suggests that the students are vulnerable to diabetes. The risk increases with increasing age which is non modifiable factor. The high prevalence among parents suggest that the number of students moderate risk will come under high risk score once they turn to middle age above 35 years. Individual's family history along with other risk factors like sedentary lifestyle can put the individual at high risk of developing type 2 diabetes. Since age and family history are the non modifiable risk factor, attempts should be made to reduce waist circumference and perform regular vigorous physical exercise. Present study had limitations such as sample was from a single education centre. Although students knew that diabetes mellitus is lifestyle disorder but many didn't follow preventive steps. Many students were not aware regarding non interventional screening tool like IDRS. Easy screening method IDRS can contribute in screening risk of diabetes. This study was an endeavour to find the risk score of students so that preventive lifestyle modification could be advocated.

CONCLUSION

IDRS being simple tool individuals can be assessed for the risk of developing diabetes mellitus by calculating the IDRS easily in *Ayurveda* students. 60 percent of *Ayurveda* student in national institute were found in moderate risk group while 2.7 % were in high risk group on the basis of IDRS indicating the need of early screening and preventive lifestyle modifications in students.

CONFLICT OF INTEREST: The authors declare no conflict of interest.

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