



# A Study to Determine the Risk of Diabetes among the Adults of Various Temperaments using IDRS

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## Abstract

**Background:** The prevalence of diabetes is increasing worldwide and is expected to reach 4% by 2030. The risk of diabetes increases with the presence of more and more risk factors. Being categorized among *Amraz-e-baridah*, diabetes was more expected to affect *Amzaja-e-barida (balghami and saudavi)*. The IDRS is a simple, feasible and low cost tool for studying the diabetes risk.

**Aims of the study:** To assess the risk score of diabetes among the subjects of different temperaments using IDRS.

A cross sectional study was conducted on adult subjects (n=358) of both gender and four temperaments at department of *Tashreeh wa Munafeul Aza*, faculty of unani medicine, AMU, Aligarh during April 2017 – April 2018. A semi- structured interview was scheduled consisting of socio-demographic characteristics. The temperament assessment questionnaire based on *Ajnas-e-Ashrah* was used to assess the *mizaj-e-Shakhsi* and IDRS pro forma was used to determine the diabetes risk score of the subjects. Data was entered and analyzed in SPSS.

**Results:** More than half of the selected subjects (54.24%) were found to be at Moderate risk of developing diabetes in near future while around one tenth of the total subjects (13.40%) were at high risk. A good percentage (22.34%) was found to be at No risk. 80.96% *Balghami* subjects selected for this study were found to be at risk of having diabetes.

**Conclusion:** The subjects having more of Barudat and Ratubat in their Amzaja were found to be at greater risk of developing Diabetes hence this screening is of utmost importance and can be proved beneficial for timely interventions.

**Keywords:** Diabetes Mellitus, IDRS, Mizaj, Amraz-e-Baridah

## Introduction

As per WHO, diabetes mellitus (DM) is a heterogeneous metabolic disorder characterized by common features of chronic hyperglycemia with disturbances of carbohydrates, fat and protein metabolism.<sup>1</sup>

In classical Unani literature, most of the Unani physicians have described diabetes with its number of Greek and Arabic vernaculars like *Ziabetas*, *Ziasaqus*, *Qaramees*, *Dawar* (giddiness), *Dolab* (water wheel) and *Zalaqul kulliyah*; and defined *Ziabetas* symptomatically as characterized by excessive thirst and increased frequency of urination soon after taking fluids<sup>2, 3, 4, 5, 6</sup>.

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Emerging trend of diabetes is becoming a challenge for health care professionals. The International Diabetes Federation (IDF) indicates that the number of people living with diabetes globally is expected to rise from 366 million in 2011 to 552 million by 2030, if no urgent intervention is done. Hence it is important to screen individuals early to increase the quality of life and delay complications<sup>7</sup>. The developing world (mainly central Asia and Sub-Saharan Africa) accounted for 141 million people with diabetes in 2003.<sup>8</sup>

India has the dubious distinction of being the diabetes capital just next to China having 62.4 million diabetics<sup>7</sup>. The International Diabetes Federation estimates the total number of people in India with diabetes to be around 50.8 million in 2010 rising to 87.0 million by 2030.<sup>9,10</sup>

Environmental factors like obesity (central or general), physical inactivity, diet (rich in trans and saturated fats) and socio-economic factors are responsible for the development of DM.<sup>11, 12, 13, 14, 15</sup>

Most of the Unani scholars believe that diabetes is caused due to *sue-mizaj Balghami* which is caused by cold and moist humor.<sup>16, 17</sup>

The Indian Diabetes Risk Score (IDRS) is a simple, low cost, feasible tool for mass screening programme at the community level developed by V Mohan et al<sup>18</sup>. The IDRS has a sensitivity of 72.5% and specificity of 60.1% which takes into account two non-modifiable risk factors (age and family history of diabetes) and two modifiable risk factors (waist circumference and physical inactivity) which are easy to measure at a very low cost.

### Diabetes Screening Proforma

- Name:
- Age:
- Address:
- Contact number:
- Marital status:
- Education:
- Family income:
- Nature of job:
- Blood glucose (mg/dl):
- Exercise:
- Smoking:
- Alcohol:
- Height (cm)/ weight (kg):
- BMI:
- Waist circumference (cm):
- Blood pressure:

**Table 1. Indian diabetes risk score (IDRS)**

Particulars	Score
<b>Age (years)</b>	
<35	0
35-49	20
≥ 50	30
<b>Abdominal obesity</b>	
Waist <80 cm (female), <90 (males)	0
Waist ≥80-89 cm (female), ≥ 90-99 (males)	10
Waist ≥90 cm (female), ≥100 (males)	20
<b>Physical activity</b>	
Exercise (regular)+strenuous work	0
Exercise (regular) or strenuous work	20
No exercise and sedentary work	30
<b>Family history</b>	
No family history of diabetes	0
Either parent is diabetic	10
Both parents are diabetic	20

Minimum score: 0, Maximum score: 100

### Interpretation

Subjects with an IDRS of <30 is categorized as no risk, 30-50 as moderate risk and those with > 60 as high risk for diabetes.

Since diabetes is an ice-berg disease, most of the subjects remain asymptomatic. The purpose of community based screening for diabetes is to differentiate asymptomatic individuals who are at high risk of diabetes from individuals at lower risk, so that appropriate preventive measures can be initiated early. Hence this study was planned to screen the adult population of both gender with different temperaments with the following objectives in mind:

- To study the diabetes risk in the selected subjects using Indian Diabetes Risk Score (IDRS)
- To study the association of Diabetes risk with individual temperaments

### Material and Methods

This cross sectional study was conducted in which the adult subjects (n=358) of both gender and four temperaments were invited at department of *Tashreeh wa Munafeul Aza*, faculty of Unani medicine, AMU, Aligarh during April 2017 – April 2018. The 416 subjects screened for this study were mostly students so that their individual temperaments

belonged to the same category. 58 subjects were excluded as they were suffering from one or more diseases and were on medication. Hence total 358 subjects were selected for this study. A semi-structured interview was schedule consisting of the following:

- **Socio-demographic record:** Age, Gender, Marital status, Education, Occupation, Religion, Family income.
- **Anthropometric measurements:** The standing height was measured by the portable stadiometer with a fixed backboard and an adjustable head piece. The subject was told to stand straight with both feet flat on the platform and look straight. The Weight of the subjects was measured using the digital weighing scale. The subject was asked to remove the footwear and stand in the middle of the scale with feet slightly apart, hands at sides and with minimal clothing. The weight and height were used to calculate the body mass index (BMI) of the subject. The waist circumference was measured at the mid- point between the lower margin of the last rib and the highest point of the iliac crest using a tailor tape.
- **Individual temperament assessment:** Done by using self designed questionnaire based on *Ajnas-e-Ashrah including malmās, lehm shehm, asha'r badan, lawn e badan, kaifiyat e infeal, nom wa yaqza, haiyat e aaza, afa'l e aza, fuzlat e badan, infelaat nafsaniyah.* The temperaments were classified into four basic categories.
- **Indian Diabetes Risk Score (IDRS):** This includes four parameters: age, waist circumference, physical activity and family history. Each parameter has assigned score ranging from 0 to 60 and accordingly the subjects were graded as having No risk, Moderate risk or High risk of Diabetes.

**Data analysis:** the data was entered and analyzed in SPSS. The categorical data was expressed as percentage while the continuous data was expressed as mean, median and standard deviation. The  $\chi^2$  test was done wherever applicable. The p value <0.05 was considered to be statistically significant.

**Note:** the socio-demographic feature and anthropometric measurements were not analysed as this was beyond the scope of this study.

## Observations

**Distribution according to gender:** Among the selected 358 subjects 170 (47.48%) were males and 188 (52.51%) were females (Table-1, Chart-1).

Table 1

Male	Female	Total
170	188	358

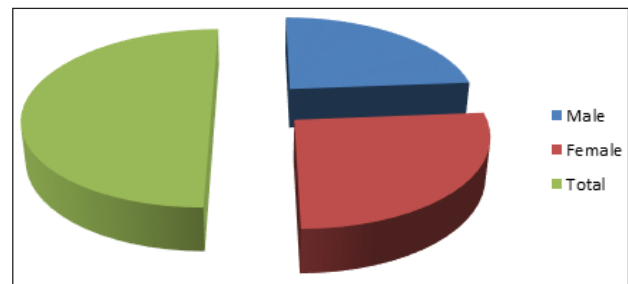


Chart 1

**Distribution according to Mizaj:** Among the selected subjects 90 (25.13%) were of *Damvi mizaj*, 145 (40.5%) were of *Balghami mizaj*, 67 (18.71%) were of *Safravi mizaj* and 56 (15.64%) were found to have the *Saudavi mizaj*: (Table-2, Chart-2).

Table 2

Damvi	Balghami	Safravi	Saudavi	Total
90	145	67	56	358

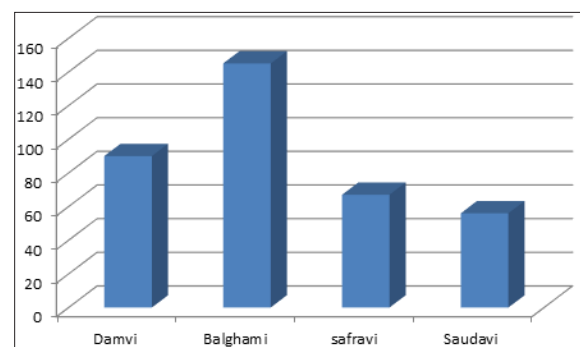


Chart 2

**Distribution according to IDRS:** 80 (22.34%) were found to have no risk, 230 (54.24%) were at moderate risk and 48 (13.40%) subjects were at high risk of developing Diabetes: (Table-3, Chart-3).

Table 3

No risk	Moderate risk	High risk
80	230	48

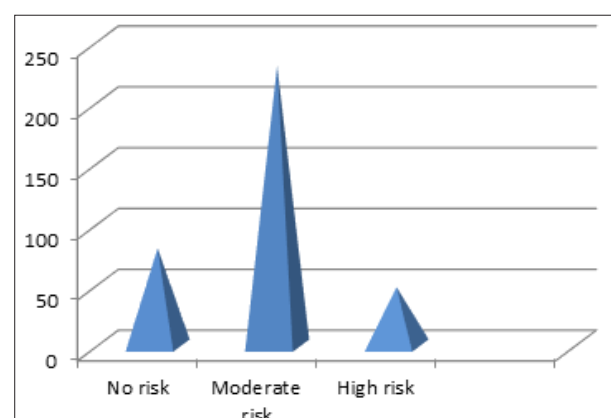


Chart 3

**Distribution of subjects of various Amzaja according to IDRS:** Among the total 90 *Damvi* subjects 20 were at No risk, 60 were at Moderate risk while 10 were found to be at high risk of developing Diabetes.

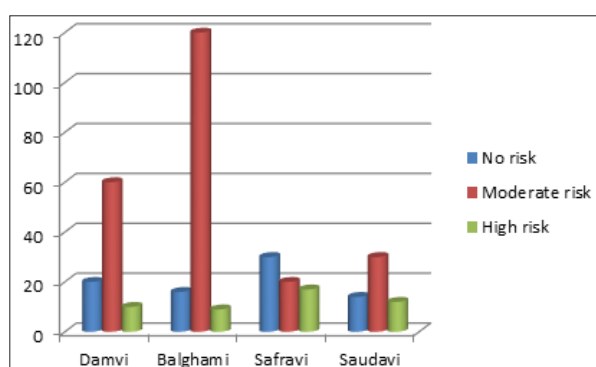
Among the total 145 *Balghami* subjects 16 were at No risk, 120 were at Moderate risk while 09 were found to be at high risk.

Among the total 67 *Safravi* subjects 30 were at No risk, 30 were at Moderate risk while 17 were found to be at high risk of developing Diabetes.

among the total 56 *Saudavi* subjects 14 were at No risk, 60 were at Moderate risk while 12 were found to be at high risk: (Table-4, Chart-4).

**Table 4**

Mizaj	No risk	Moderate risk	High risk
Damvi	20	60	10
Balghami	16	120	09
Safravi	30	20	17
Saudavi	14	30	12



**Chart 4**

## Results

More than half of the selected subjects (54.24%) were found to be at Moderate risk of developing diabetes in near future while around one tenth of the total subjects (13.40%) were at high risk. A good percentage (22.34%) was found to be at No risk.

Highest number of Balghami subjects (80.96%) were at Moderate to high risk. 77.78% of Damvi subjects were at Moderate to high risk. 55.22% of Safravi subjects were at Moderate to high risk. 75% of total Saudavi subjects were at Moderate to high risk.

## Conclusion

The subjects having more of Barudat and Ratubat in their Amzaja were found to be at greater risk of developing Diabetes. Hence the results of this study goes in concordance with the Unani concept.

**Conflict of Interest:** None

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