

Distribution of Body Mass Index (BMI) Among Individuals of *Safravi* and *Balghami* Temperament

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Determination of temperament (*tashkhees-e-mizaj*), in Unani System of Medicine, is done on the basis of certain morphological, physiological and psychological features. Muscles and Fat (*Lahm wa Shahm*) and Physique (*Haiyat-e-aza*) are important parameters amongst the ten determinants of temperament. These parameters need interpretations and explanations in terms of modern science. Body Mass Index (BMI) provides an index of weight relative to height. As per Unani classical literatures, *Safravi* individuals are lean and thin while *Balghami* individuals are fatty and obese. They possess temperament (*mizaj*) and other characteristics different from each other. In this study, Body Mass Index (BMI) was calculated in 148 healthy individuals having *Safravi* and *Balghami* temperament. Volunteers having their BMI 30 or more were considered obese and excluded from the study. The *Balghami* individuals had significantly higher Body Mass Index (BMI) than the *Safravi* individuals. The mean value of BMI in *Safravi* and *Balghami* volunteers were found to be 19.8 ± 1.8 and 23.1 ± 1.9 respectively.

Keywords: Temperament, Body Mass Index, *Safravi*, *Balghami*.

Introduction

Temperament (*mizaj*) is one of the basic and fundamental concepts of Unani System of Medicine. It is an expression of the various physical as well as physiological tendencies of the individual in terms of mass and energy i.e., activity as heat and cold and reactivity as dryness and

moisture¹. Regarding the determination of temperament (*tashkhees-e-mizaj*), various parameters have been described in detail by the ancient Unani physicians. No doubt, Unani scholars differ on the number of diagnostic parameters, but as far as the parameters, Muscles and Fat (*Lahm wa Shahm*) and Physique (*Haiyat-e-aza*), are concerned, most of the Unani physicians are fully convinced of their importance and have included them as parameters for the assessment of temperament²⁻⁶. In the modern era, these parameters need their explanations on modern scientific lines.

According to domination of four kinds of *akhlat* (humours) the human species has been broadly classified into four types of personalities – *Damavi* (Sanguineous), *Balghami* (Phlegmatic), *Safravi* (Bilious) and *Saudavi* (Melancholic)⁷. These four temperamental personalities have different characteristics. *Safravi* (bilious) individuals are marked by medium stature, moderate musculature and deficient fat. They possess hot-dry (*har-yabis*) temperament, lean build and are energetic. Individuals having *Balghami* (phlegmatic) temperament are flaccid and obese with soft and flabby muscles. They possess cold-wet (*barid-ratab*) temperament and their movements and activities are sluggish⁷⁻⁸.

The Body Mass Index (BMI) or Quetelet index is a measure for human body shape based on individual's height and weight. The formula previously called Quetelet index for Body Mass Index, was first used by Adolphe Quetelet in the 19th century⁹. The term 'Body Mass Index' published in the *Journal of Chronic Diseases* (July edition, 1972) by Ancel Keys¹⁰, is commonly used as a measure of weight relative to height¹¹. Body Mass Index (BMI) is defined as the weight in kilograms divided by the square of the height in metres (kg/m^2)¹². It is also an indicator of how much an individual's body is composed of fat¹³. Epidemiologists generally use this index as measure of fatness¹⁴ but, its ability in predicting total body fat accurately, remains controversial, because BMI cannot distinguish fat mass and lean mass¹⁵. WHO expert committee has also stated that BMI does not measure fat mass or fat percentage¹⁶. Thus, BMI is a surrogate marker for body fat content¹⁷.

The use of Body Mass Index (BMI) is usually more predictive and accurate in the assessment of the state of well-being of individuals¹⁸⁻¹⁹. WHO has recommended classifications of body weight which include degrees of underweight and gradation of excess weight or overweight²⁰. Studies reveal the mean BMI showed an increasing trend over the decades²¹⁻²³. A raised BMI value is an established risk factor for coronary heart disease, ischaemic stroke, type 2 diabetes mellitus and carcinoma^{13, 24-25}. Both low and high BMI are associated with increased risk of mortality²⁶⁻²⁷.

The need of the hour is to discover some more precise and accurate

parameters for the determination of *mizaj*. The present work is an attempt in this direction. Body habitus, as described by BMI is related to skeletal size, muscle mass and adiposity. Being exactly opposite in *mizaj* and other characteristics, *Safravi* and *Balghami* individuals can be better evaluated in terms of Body Mass Index. The objectives of this work is (i) to compare the value of Body Mass Index in the individuals of *Safravi* and *Balghami* temperament. (ii) to find out whether BMI can be understood in terms of, state of flesh and fat and body build characteristics, of *Safravi* and *Balghami* temperament individuals, as described in Unani literatures.

Methodology

This study was conducted at Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh. One hundred forty eight (148) healthy volunteers, without any gender bias, in the age group of 18-40 years, having *Safravi* and *Balghami* temperament, were randomly selected for the study. Volunteers having any history of medications, addiction, smoking, alcoholism, tobacco chewing and pregnancy were excluded from the study.

After obtaining the consent, each volunteer was subjected to a detailed history and full clinical examination to rule out any pathological condition. Assessment of temperament (*mizaj*) was made on the basis of a self designed Pro forma (questionnaire) prepared in the light of criteria described in classical Unani literatures. Volunteers possessing only *Safravi* and *Balghami* temperament were included.

Height and weight of volunteers were recorded and Body Mass Index (BMI) was calculated. Volunteers having their Body Mass Index (BMI) 30 or more were considered obese and excluded from this study. The volunteers were divided into three groups according to their BMI: 15-20, 20-25 and 25-29.9. The height meter was mounted on the wall and the volunteers stood erect, barefooted with heels touching and the eyes directed straight ahead. Weight measurements were done by adjusting the weight scale properly to the zero point, and the subjects mounted with little clothing and barefoot. Body Mass Index (BMI) was calculated using the formulae:

$$\text{Body Mass Index (Quetelet's Index)} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

Statistical analysis was performed by applying t-test. Values found below 0.05 were considered significant.

Results and Discussions

The results are shown in Tables 1-5 and Fig. 1. Table 1 shows distribution of male *Safravi* and *Balghami* volunteers as per their Body Mass Index (BMI). Out of total 82 male volunteers, 46 were *Safravi* and 36 were *Balghami*. Among the *Safravi* male group, 20 volunteers were in the BMI range of 15-20, twenty six (26) in the range of 20-25 and none in higher BMI range of 25-29.9. In *Balghami* group, 02 and 27 volunteers were in the BMI range of 15-20 and 20-25 respectively. Seven (07) volunteers were in 25-29.9 range.

Mean and standard deviation of height, weight and Body Mass Index of male *Safravi* and *Balghami* volunteers was calculated as shown in Table 2. The difference in the mean height between the male *Safravi* and *Balghami* individuals was found to be insignificant. Mean weight as well as mean BMI of the male *Balghami* was significantly higher than *Safravi* males.

Table 3 shows, distribution of female *Safravi* and *Balghami* volunteers as per their Body Mass Index (BMI). Out of total 41 females in *Safravi* group, 28 and 13 volunteers were in the BMI range of 15-20 and 20-25 respectively. No *Safravi* female was found in the range of 25-29.9 BMI. In *Balghami* group, out of total 25 female volunteers, 01 was in 15-20 BMI range and 17 were in 20-25 BMI range. Seven (07) *Balghami* volunteers were in the range of 25-29.9 BMI.

It was observed that the difference of the mean height between the female *Safravi* and *Balghami* volunteers was insignificant. Mean weight and mean BMI of the female *Balghami* volunteers was significantly higher than the *Safravi* females as depicted in Table 4.

As it is evident from Table 2 and Table 4, that male (*Safravi* and *Balghami*) volunteers are taller and weighed more than the female (*Safravi* and *Balghami*) volunteers. Our findings, favour the claim that men are on the average taller, larger, heavier, more muscular and have stronger and wider bones than women²⁸⁻²⁹. The higher weight of the males compared to females may be due to the higher height of the males as seen in the study. Taller individuals have larger masses of bones and muscles¹⁸. This may be the reason the males weighed more. On comparing the mean BMI, It can be seen that *Safravi* males have higher mean BMI than *Safravi* females, the reason can be easily deduced from the above discussions. This finding is consistent with the fact that some individuals have high BMI due to a large muscle mass¹⁷. In contrast, we find that *Balghami* females have little higher BMI than *Balghami* males. Our finding is similar to a study, which reports higher BMI value in females than males³⁰. As described in Unani medicine that *Balghami* individuals are fatty. Females typically have more body fat than males. This may be the explanation for *Balghami* females having higher BMI.

Table 5 gives a comparison of BMI in *Safravi* and *Balghami* Volunteers. Out of 148 volunteers, 87 were *Safravi* and 61 were of *Balghami* temperament. The numbers of volunteers having their BMI between 15-20 were fifty one (51), out of which 48 were *Safravi* and 03 were *Balghami*. Among the 83 volunteers having BMI 20-25, thirty nine (39) were *Safravi* and forty four (44) were *Balghami*. Fourteen (14) *Balghami* volunteers had their BMI between 25-29.9. None *Safravi* volunteers have their BMI in the range of 25-29.9. It is observed that the maximum numbers of *Safravi* volunteers were having their BMI range 15-20, while the maximum number of *Balghami* volunteers had their BMI between 20-25.

Characteristics of *Safravi* and *Balghami* volunteers is shown in Fig. 1. *Safravi* and *Balghami* volunteers have mean age (26.5 ± 1.4 and 26.3 ± 5.8 years) and mean height (1.6 ± 0.08 and 1.6 ± 0.07 meter) respectively and the difference was insignificant. Comparison of the weight and Body Mass Index of both showed that the calculated mean value of weight and Body Mass Index was observed to be 54.0 ± 8.1 kg and 19.8 ± 1.8 kg/m² respectively for *Safravi* and 60.9 ± 7.8 kg and 23.1 ± 1.9 kg/m² respectively for *Balghami* volunteers. Thus, in this study, *Balghami* volunteers have significantly higher value of mean weight ($p < .001$) and mean BMI ($p < .001$) than the *Safravi*. The result revealed that the difference in mean BMI between the two groups is mainly due to difference in their mean weight and not because of their height. This finding is inconsistent with the concept of Unani medicine that *Balghami* individuals are heavier than the individuals having *Safravi* temperament³¹.

Balghami volunteers have higher BMI than the *Safravi* volunteers. Our study is in concordance with the Unani concept. As documented in Unani classical literatures, *Balghami* individuals are obese, fatty, dull, less active in their routine activities, while *Safravi* individuals are lean, active, alert and smart in their routine activities. Thus, the descriptions of *Balghami* and *Safravi* temperament can be better understood with the help of this parameter i.e., Body Mass Index.

Conclusion

From the findings of this study, it may be concluded that individuals having *Balghami* temperament possessed a comparatively higher BMI than *Safravi* individuals. It has been also observed that the higher BMI in the *Balghami* volunteers were not because of height, but weight which increased their BMI. Furthermore, as this study assessed the associations between Body Mass Index and individuals having only *Safravi* and *Balghami* temperament, it is recommended that further studies are required involving individuals of different temperaments especially *Damvi* and *Saudavi*.

TABLE 1
Distribution of Male *Safravi* and
Balghami Volunteers According to BMI

BMI	<i>Safravi</i>	<i>Balghami</i>	Total
15-20	20	02	22
20-25	26	27	53
25-29.9	0	07	07
Total	46	36	82

TABLE 2
Characteristics of Male *Safravi* and
Balghami Volunteers Expressed as Mean $\pm$ S.D*

	<i>Safravi</i>	<i>Balghami</i>	Significance
Number of volunteers	46	36	
Height (in meter)	1.7 $\pm$ 0.05	1.7 $\pm$ 0.06	t = 0
Weight (in kg)	59.6 $\pm$ 6.2	64.1 $\pm$ 7.1	t = 3.0, p<.001**
BMI (kg/m ²)	20.3 $\pm$ 2.5	23.2 $\pm$ 2.4	t = 2.6, p<.001**

*SD = Standard deviation

**Shows that the value is significant

TABLE 3
Distribution of Female *Safravi* and
Balghami Volunteers According to BMI

BMI	<i>Safravi</i>	<i>Balghami</i>	Total
15-20	28	01	29
20-25	13	17	30
25-29.9	0	07	07
Total	41	25	66

TABLE 4
Characteristics of Female *Safravi* and
Balghami* Volunteers Expressed as Mean±S.D

	<i>Safravi</i>	<i>Balghami</i>	Significance
Number of volunteers	41	25	
Height (in meter)	1.6±0.05	1.6±0.03	t = 0
Weight (in kg)	47.8±4.8	56.5±6.4	t = 5.8, p<.001**
BMI (kg/m ²)	19.1±2.3	23.7±2.6	t =7.3, p<.001**

*SD = Standard deviation

**Shows that the value is significant

TABLE 5
Distribution of
***Safravi* and *Balghami* Volunteers According to BMI**

BMI	<i>Safravi</i>	<i>Balghami</i>	Total
15-20	48	03	51
20-25	39	44	83
25-29.9	0	14	14
Total	87	61	148

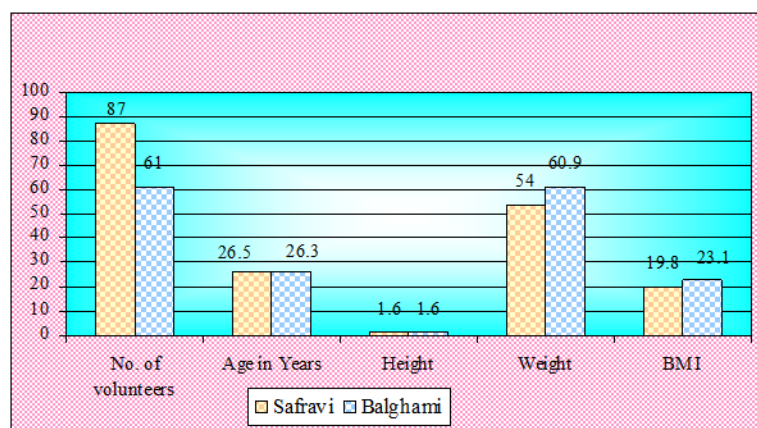


Fig. 1

Characteristics of *Safravi* and *Balghami* volunteers expressed as mean

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