



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2020; 9(6): 369-374

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www.thepharmajournal.com

Received: 02-04-2020

Accepted: 04-05-2020

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Study of range of body weight in young healthy adults on mixed diet with special reference to different temperament

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DOI: <https://doi.org/10.22271/tpi.2020.v9.i6f.4795>

Abstract

Background & Objectives: *Mizaj* (temperament) is one of the unique concepts of Unani system of medicine, by which the Unani physicians explain the properties of different types of individuals, properties of Drugs and pathophysiology of different diseases. *Mizaj* has an important role in diagnosis and treatment in Unani System of medicine. So the aim of the study was to find out the relationship between the body weight/ (BMI) and the *Mizaj* of an individual.

Methods: This study was an observational study. Hundred healthy volunteers were selected as per inclusion and exclusion criteria and allocated into four groups as per *Ajnas-e-Ashra*. The subjects of all *Mizaj* categories were assessed for height, weight and BMI.

Results: The study found that 42 subjects were of *Mizaj Damvi*, 36 *Balghami*, 22 *Safravi*, and no volunteers have been reported from *Saudavi* humours. Amongst 42 *Damvi* volunteers, 4 were under weight, 26 were normal, 10 were pre obese, 1 were obese class I category and 1 belonged to obese class II category. Of the 36 *Balghami* volunteers 7 were under weight, 19 were normal, and 9 belonged to pre obese 1 were obese class I. There were total 22 *Safravi* volunteers 20 were normal weight, 2 were pre obese and none belonged to underweight, obese class I, obese class II, obese class III category.

Conclusion: The Study showed that there were variations in various demographic parameters such as height, weight and BMI in various *Mizaj* categories.

Keywords: *Mizaj*, temperament, height, weight, BMI, unani system of medicine

1. Introduction

Unani System of Medicine is based on the specific principles put forward by Hippocrates.¹ He was the first person to establish that disease is a natural process, its symptoms are the reactions of the body to the disease, and that the main function of the physician is to aid the natural forces of the body^[1, 2]. Unani system of medicine still sticks to their basic principles and philosophies^[2]. The Primary goals of Unani Tibb are the maintenance of good health and the healing of diseases^[3]. Unani medicine is a science, which teaches us how to maintain natural harmony within the body to attain health and live healthy life^[4]. *Mizaj* is one of the unique concepts of Unani system of medicine, by which the Unani physicians explain the properties of different types of individuals, properties of Drugs and pathophysiology of different diseases. *Mizaj* has an important role in Diagnosis and treatment in Unani System of medicine^[5].

The Great Unani physicians have described several parameters to diagnose the *Mizaj* of individual^[6]. Jalinoos, Ali Ibn Abbass Majoosi, Zakariya Razi and Ismail Jurjani etc, have described only five parameters which are called “*Ajnas-e-Khamsa*” While Ibn Sina has described ten parameters known as “*Ajnas-e-Ashra*”^[7].

Out of which some provide information about the Sakht (Structure) and others about the functions of the body. *Mizaj* is based on two criteria i.e. *Mizaj-e-Khilti* and *Mizaj-e-Khilqi*^[8]. Therefore, two performas have been used to assess the temperament in present study, One was concerned with *Mizaj-e-Khilqi*, and the other was for the determination of *Mizaj-e-Khilti* which is comprised of signs and symptoms of dominance of *Akhlat-e-Badan*^[9].

If these two standards or scales are applied properly *Mizaj* of and individual may be determined accurately and then we may know about the *Haalat-e-Badan* (Body conditions) and can predict about the diseases that may occur in the body in future and what type of

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precautions should be adopted for maintaining health^[6]. Lahm wo Shaham (Muscle and fat) are important determinates of Mizaj, their Quantities plenty or scanty.¹¹ Definitely affects the body weight therefore the body Wight of a person may be used as a vital tool in explaining Mizaj determination.¹²

Keeping in mind above points the topic entitled “Study of Range of Body Weight in Young Healthy Adults on Mixed Diet with Special Reference to Different Mizaj” is undertaken. The study includes the body weight, height and BMI of individuals in relation to their Mizaj.

2. Material and Methods

This study was carried out in the department of *Munafe-ul-Aza*, Deoband Unani Medical College Research Centre Deoband, during the year 2015-2018. The aim of the study was to find out the relationship between the body weight/(BMI) and the Mizaj of an individual. For this study, normal healthy volunteers on mixed (vegetarian and non-vegetarian) diet were randomly selected.

2.1 Sample Size and Study Design

This study was an observational study. Hundred healthy volunteers of either sex on mixed diet were randomly selected from Deoband Unani Medical College Research Centre Deoband Preference was given to undergraduate students residing in hostel because their environmental and nutritional status almost remains similar.

2.2 Inclusive Criteria

- Phlegmatic, Biliou, Sanguine and Melancholic Temperament.
- Individuals of 20-30 years of age
- Both sex
- Mixed Diet

2.3 Exclusion Criteria

- Individuals having any disease.
- Individuals below the age of 20 yrs.
- Individuals above the age of 30 yrs.

2.4 Informed Consent

An informed consent form was given to the volunteers during this study. The purpose of the informed consent form to obtain permission from each of the volunteers in their willingness to take part in this study. The form clearly indicated what exactly the study demands, what the volunteers expect from the study, the minimal risk and benefits of their participation, and guaranties of confidentiality. It has also stated the volunteer's ability to withdraw from the study at any time without penalty.

2.5 Determination of Mizaj

The objective parameters described in literature and quoted in review were assessed to determine the Mizaj. The assessment if Mizaj of the volunteers was made on the basis of a self-designed proforma (questionnaire) prepared in the light of criteria, described in Unani classical literature i.e *Ajnas-e-Ashra*. The proforma of the Mizaj was given in the tabulated form to the volunteers.

2.6 Procedure of Study

The subject fulfilling the inclusion criteria were selected, then their temperament was assessed by two pre-structured

proforma designed for the assessment of Mizaj. These were based on A'lamat Ajnas-e-A'shra and Ghalba-e-Akhlat (Symptoms of dominance of humour of the body) respectively and body weight and height were measured to evaluate the BMI. After assessment of Mizaj, body weight/(BMI).relation in respect of Mizaj of the person was evaluated.

Height: The height of individual was measured using a 200 cm stature meter manufactured by Biocon. The individual with bare foot were made to stand on a flat floor with fit parallel and with heels, shoulder and back of head touching the wall. The head was kept erect so that the orbit was in the same horizontal plain as the external auditory meatus. The scale then was bought down making a firm contact with vertex and was parallel to the floor, reading were recorded to the nearest of 0.5 cm.

Weight: The weight was measured in kilograms using electronic digital weight machine to the nearest measure of 0.1 kg. The volunteers weighted with minimal clothing, without foot wear and the volunteers were asked to empty the bladder before weighing.

Body Mass Index or Quetelet's Index

The BMI was calculated using the formula mentioned below:
 $BMI = \text{Body Weight in (Kg)} / \text{Height (m)}^2$

2.7 Data Analysis

Data were tabulated in a systemic way for presentation and analysis on the basis of recorded parameters including demographic profile. Statistical analysis was done to calculate the mean and standard deviation followed by t-test to know the relation between the body weight/(BMI) and different Mizaj. Results on continuous measurements are presented on Mean \pm SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance. The following assumptions on data are made

Assumptions: 1. Dependent variables should be normally distributed, 2. Samples drawn from the population should be random, and Cases of the samples should be independent. Analysis of variance (ANOVA) has been used to find the significance of study parameters between three or more groups of subjects. Student t test/Post-Hoc Tukey test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters. Chi-square/Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups, Non-parametric setting for Qualitative data analysis. Fisher exact test used when cell samples are very small.

2.8 Documentation

Records have been submitted to the department of *Munafe-ul-Aza*, Deoband Unani Medical College and Research centre, Deoband.

3. Result and Discussion

The Great Unani physicians have described several parameters to diagnose the Mizaj of individual^[2, 7]. Jalinoos, Ali Ibn Abbass Majoosi, Zakariya Razi and Ismail Jurjani etc, have described only five parameters which are called “Ajnas-e-Khamsa” While Ibn Sina has described ten parameters

known as “Ajnas-e-Ashra” [1, 6].

Out of which some provide information about the Sakht (Structure) and others about the functions of the body [5]. Mizaj is based on two criteria i.e. *Mizaj-e-Khilti* and *Mizaj-e-Khilqi*. Therefore, two performas have been used to assess the temperament in present study, one was concerned with Mizaj-e-Khilqi, and the other was for the determination of Mizaj-e-Khilti which is comprised of signs and symptoms of dominance of *Akhlat-e-Badan* [2, 5, 6].

If these two standards or scales are applied properly Mizaj of an individual may be determined accurately and then we may know about the Haalat-e-Badan (Body conditions) and can predict about the diseases that may occur in the body in future and what type of precautions should be adopted for maintaining health.⁸ Lahm-wo-Shaham (Muscle and fat) are important determinates of Mizaj, their Quantities plenty or scanty. Definitely affects the body weight therefore the body Weight of a person may be used as a vital tool in explaining Mizaj determination. Keeping in mind above points the topic entitled “Study of Range of Body Weight in Young Healthy Adults on Mixed Diet with Special Reference to Different Mizaj” is undertaken. The study includes the body weight, height and B.M.I. of individuals in relation to their Mizaj. The study reveals the following facts, which are as follows :-for the present study, 100 healthy volunteers of either sex on mixed diet were randomly selected, Out of total hundred Volunteers selected for the study, 42(42%) were Damvi, 36 (36%) were Balghami, 22 (22%) were Safravi, no one of saudavi Mizaj as displayed in table-01 [13].

As shown in Table no. 1, Maximum numbers of volunteers fell in the category of Damvi Mizaj (42%) followed by Balghami, Safravi and the least number were of safravi Mizaj. It may be due to Sinne Shabab, which is considered as Har Yabis age, so in this age (20-30 years), Prevalence and susceptibility to Har Mizaj of the individuals should be higher as was found in this study [14].

As shown in table no. 2, out of 100 volunteers. 76% were male and 24% were Female. The Data revealed relatively higher number of individuals in male group whereas lower number in female group. The observe number may be because of higher number of male individuals in said group of college

[15]. The difference may be due to easy access and higher health consciousness in male as compared to female as Females are less health conscious. As shown in the table no. 3, out of total 100 volunteers 78 (78.00%) were unmarried, 22% were married individuals. As shown in the table no.4, amongst total hundred subjects who participated in the study, most of them were Muslims (92%) and rest were non-Muslims, in which 8 were Hindu. The participation of more numbers of Muslim volunteers was because of Muslim dominated area so the participation of Muslim volunteers was inevitable.¹⁶ As shown in the table no.5, out of total 100 subjects 68 (68%) were belongs to 20-25 years of age, 32 (32%) were 25-30 years of age. As shown in the table no.6, out of total hundred subjects, majority of the participant belongs to rural habitat (53%), rest of them belongs to urban (38%) and semi urban (9%). Higher prevalence of rural individuals was found in the study as compared to urban and semi urban individual prevalence [17]. As shown in the a table no.7, out of total 100 subjects 42 were Damvi, in which 4 were Under weight, 26 were normal, 10 were pre-obese and one belonged to obese class I Category and 1 belongs to obese class II category. Of the total 36 Balghami volunteers, 7were underweight, 19 were normal, 9 belongs to pre-obese, 1 were belongs to obese class I. There were total 22 Safravi volunteers, in whom 20 were normal weight, 2 were Pre Obese and none belongs to underweight, obese class I, Obese Class II and Obese Class III category [18].

Majority of the volunteers were belonged to the Normal body weight Category according to their BMI, irrespective of their Mizaj. Out of total Damvi, Balghami and Safravi Mizaj, Obese Individuals are rare in the selected [19, 20].

A volunteer as most of them belongs to students’ class and 21 of them are in border line category which is pre obese due to intake of junk food. As shown in Table no. 8-13, The BMI mean of Damvi subjects were 23.74 while the Balghami subject were 20.91 which means that variation among BMI of Damvi Mizaj is highest while variation amongst Balghami Mizaj is lowest [14, 19]. On the other hand the standard deviation of Balghami subjects (3.59) is the highest amongst the three category while safravi has the lowest standard deviation (1.86) [21, 22].

Table 1: Distribution of volunteers according to Mizaj

S.NO	Temperament (Humours)	No. of Volunteers	Total	Percentage (%)
1.	Damvi	42	42	42%
2.	Balghami	36	36	36%
3.	Safravi	22	22	22%
	Total	100	100	100%

- The most favorable incidence is Damvi i.e 42%
- Next higher incidence is observed in Balghami i.e 36%, Safravi incidence is 22%.
- No volunteers have been reported from saudavi humours.

Table 2: Distribution of volunteers according to sex

S.no.	Temperament	Male	Female	Percentage	
				Male	Female
1.	Damvi	36	6	36%	6%
2.	Balghami	25	11	25%	11%
3.	Safravi	15	7	15%	7%
Total		76	24		100%

It is observed from the above table that the volunteers are more common in male then female.

Male: 76 volunteers out of 100 volunteers and Female: 24 volunteers out of 100 volunteers.

Table 3: Distribution of volunteers according to marital status

	Volunteers	Percentage (%)
Married	22	22%
Unmarried	78	78%

100 volunteers were selected for the study in which most of them were unmarried (78%) and rest were married (22%)

Table 4: Distribution of volunteers according to religion

S.No	Temperament	Muslim	Hindu	Muslim Percentage	Hindu percentage
1.	Damvi	39	3	39%	3%
2.	Balghami	33	3	33%	3%
3.	Safravi	20	2	20%	2%
Total		92	8	92%	8%

It is observed from the above table that the volunteers are more common in Muslim than Hindu. Muslim: 92 volunteers out of 100 volunteers i.e. 92%, Hindu: 8volunteers out of 100 volunteers i.e.8%.

out of 100 i.e. 68%.

Next higher incidence is observed in age group 26-30 years is 32 out of 100 i.e. 32%

Table 5: Age distribution of subjects studied

Age in years	No. of Subjects	%
20-25	68	68.0
26-30	32	32.0
Total	100	100.0

Mean ± SD: 23.65±3.28

The most favorable incidence age group is 20-25 years is 68

Table 6: Distribution of volunteers according ti habitat

Habitat	Volunteers	Percentage
Rural	53	53%
Urban	38	38%
Semi urban	9	9%

Total hundred subjects were selected for the study, out of them majority of the population belong to rural (53) rest of them belong to urban (38) and semi urban (9).

Table 7: Mizaj according to body weight/bmi

Classification	BMI	DAMVI	BALGHAMI	SAFRAVI
Under weight	<18.50	4	7	0
Normal weight	18.50-24.99	26	19	20
Pre obese	25-29.99	10	9	2
Obese class I	30-34.99	1	1	0
Obese class II	35-39.99	1	0	0
Obese class III	≥40	0	0	0
Total=100		42	36	22

Amongst 42 Damvi volunteers, 4 were under weight, 26 were normal, 10 were pre obese, 1 were obese class I category and 1 belonged to obese class II category. Of the 36 Balghami volunteers 7 were under weight, 19 were normal, and 9

belonged to pre obese 1 were obese class I. There were total 22 Safravi volunteers 20 were normal weight,2 were pre obese and none belonged to underweight, obese class I, obese class II, obese class III category.

Table 8: Showing distribution of mean, standard deviation of bmi amongst volunTERS of various mizaz

Mizaj	Mean	Standard deviation
DAMVI	23.74	3.59
BALGHAMI	20.91	4.85
SAFRAVI	22.41	1.86

The BMI mean of Damvi subjects were 23.74while the Balghami subject were 20.91 which means that variation among BMI of Damvi Mizaz is highest while variation amongst Balghami Mizaj is lowest. On the other hand the

standard deviation of Balghami subjects (3.59) is the highest amongst the three category while safravi has the lowest standard deviation (1.86).

Table 9: Comparison of clinical variables according to mizaj of subjects studied

Variables	Mizaj			Total (n=100)	P value
	Balghami (n=36)	Damvi (n=42)	Safravi (n=22)		
Age in years					
20-25	17(47.2%)	34(81%)	17(77.3%)	68(68%)	0.004**
26-30	19(52.8%)	8(19%)	5(22.7%)	32(32%)	
Gender					
Female	11(30.6%)	6(14.3%)	8(36.4%)	25(25%)	0.096+
Male	25(69.4%)	36(85.7%)	14(63.6%)	75(75%)	
Marital Status					
Married	11(30.6%)	8(19%)	3(13.6%)	22(22%)	0.266
Unmarried	25(69.4%)	34(81%)	19(86.4%)	78(78%)	
Religion					
Hindu	3(8.3%)	3(7.1%)	2(9.1%)	8(8%)	1.000
Muslim	33(91.7%)	39(92.9%)	20(90.9%)	92(92%)	
Habitat					
Rural	27(75%)	18(42.9%)	8(36.4%)	53(53%)	0.012*
Urban	8(22.2%)	18(42.9%)	12(54.5%)	38(38%)	
Semi Urban	1(2.8%)	6(14.3%)	2(9.1%)	9(9%)	

Chi-Square/Fisher Exact Test

Table 10: Diet distribution according to mizaj of subjects studied

Diet	Mizaj			Total
	Balghami	Damvi	Safravi	
Mixed	36(100%)	42(100%)	22(100%)	100(100%)
Veg	0(0%)	0(0%)	0(0%)	0(0%)
Total	36(100%)	42(100%)	22(100%)	100(100%)

P=1.000, Not Significant, Fisher Exact Test

Table 11: Body weight, height and BMI according to Mizaj of subjects studied

Variables	Mizaj			Total (n=100)	P value
	Balghami (n=36)	Damvi (n=42)	Safravi (n=22)		
Body weight (kg)					
41-50	6(16.7%)	9(21.4%)	1(4.5%)	16(16%)	0.193
51-60	12(33.3%)	18(42.9%)	11(50%)	41(41%)	
61-70	12(33.3%)	7(16.7%)	7(31.8%)	26(26%)	
71-80	5(13.9%)	1(2.4%)	3(13.6%)	14(14%)	
>80	1(2.8%)	2(4.8%)	0(0%)	3(3%)	
Height (cm)					
<150	1(2.8%)	0(0%)	0(0%)	1(1%)	0.111
150-160	17(47.2%)	10(23.8%)	7(31.8%)	34(34%)	
161-170	13(36.1%)	23(54.8%)	11(50%)	47(47%)	
171-180	2(5.6%)	8(19%)	4(18.2%)	14(14%)	
>180	3(8.3%)	1(2.4%)	0(0%)	4(4%)	
BMI (kg/m²)					
<18.5	7(19.4%)	4(9.5%)	0(0%)	11(11%)	0.072+
18.5-25	19(52.8%)	26(61.9%)	20(90.9%)	65(65%)	
25-30	9(25%)	10(23.8%)	2(9.1%)	21(21%)	
>30	1(2.8%)	2(4.8%)	0(0%)	3(3%)	

Chi-Square/Fisher Exact Test

Table 12: Comparison of clinical variables according to mizaj of subjects studied

Variables	Mizaj			Total	P value
	Balghami	Damvi	Safravi		
Age in years	25.22±2.84	22.50±3.04	23.27±3.48	23.65±3.28	0.001**
Body Weight (kg)	61.58±11.41	61.10±12.72	60.23±7.42	61.08±11.18	0.906
Height (cm)	163.33±8.49	166.07±7.47	164.05±7.13	164.64±7.80	0.282
BMI (kg/m ²)	23.07±4.20	22.46±4.03	22.46±2.15	22.68±3.74	0.743

ANOVA test

Table 13: Pairwise comparison of variables in three groups studied

	Balghami- vs Damvi	Balghami- vs Safravi	Damvi vs Safravi
Age in years			
Difference	2.722	1.949	-0.773
P value	0.001**	0.054+	0.606
Body weight			
Difference	0.488	1.356	0.868
P value	0.980	0.897	0.954
Height (cm)			
Difference	-2.738	-0.712	2.026
P value	0.273	0.939	0.585
BMI (kg/m²)			
Difference	0.604	0.609	0.005
P value	0.761	0.822	1.000

Post HoC Tukey Test

4. Conclusion: The fundamental framework of this system is based on Hippocratic theory of four Humours (Akhlat)-Blood (Dam), Phlegm (Balgham), Yellow Bile (Safra) and Black Bile (Sauda). Admixture of different elements and their qualities in specific ratio in a particular entity, whether living or non-living, denominates its temperament (Mizaj). Human temperament is commonly denoted by the dominant humour i.e. Sanguine (Damawi), Phlegmatic (Balghami), Choleric (Safravi) and Melancholic (Sawdavi), which can be correlated

with the temperament of diet, drugs, environmental factors, etc. as the entities of non-human universe being made up directly of elements are described in terms of qualitative temperament. Any disturbance in the equilibrium of humours causes disease, and therefore the treatment aims at restoring the equilibrium by giving factors (including drugs) of opposite temperament. In addition, Unani System of Medicine believes that medicatrix naturae is the supreme power, which controls all the physiological functions of the body and

provides resistance against the diseases.

5. Conflict of Interest: Nil

6. Funding: Nil

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