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## An analytical study of renal function in healthy young adults of different temperament

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### Abstract

**Background & Objectives:** *Mizaj* (Temperament) of a person is given great importance for identifying the most suitable diet and lifestyle for promoting the health of a particular individual. On the basis of *Mizaj* human beings have been categorized into four qualitative types: *Damvi*, *Balghami*, *Safravi*, and *Saudavi*. So the main aim of this study was to an analytical study of renal function in healthy young adults of different temperament.

**Methods:** This was an observational study. Fifty healthy volunteers were selected as per inclusion and exclusion criteria and allocated into four groups as per *Ajnas-E-Ashra*. The patients of all *Mizaj* categories were assessed for renal function tests of blood urea, serum creatinine and Glomerular Filtration Rate (GFR) along with demographic description for age, gender, occupation, religion, weight, etc.

**Results:** The study found that 11 subjects were of *Mizaj Damvi*, 26 *Balghami*, 12 *Safravi*, and one of *Saudavi*. There was marked differences in various parameters when analyzed in consideration with *Mizaj* categories. Renal function parameters also varied in respect of *Mizaj* categories though they were in normal range.

**Conclusion:** The Study showed that there were variations in various demographic parameters and renal function tests in various *Mizaj* categories.

**Keywords:** *Mizaj*; temperament; renal parameters; blood urea; serum creatinine, GFR

### 1. Introduction

*Mizaj* (Temperament) is one of the basic concepts of Unani systems of medicine upon which diagnosis and line of treatment of a disease are based. Every human being has been furnished a specific *Mizaj* through which an individual performs his functions properly. If it is disturbed, body becomes more susceptible to develop such diseases having same temperament as that of an individual [1]. Kidneys are one of the vital organs of body which carry out several important roles in regulating the normal body functions. Its major role is formation of Baul (Urine) and execute water and salt balance, and release of hormone [2]. According to concept of Unani Medicine, *Kullia* or *Gurdah* working on the basis of faculties which divided into four *Quwa*; *Quwate Jazibah*, *Quwate masika*, *Quwate hazimah* or *Quwate mughayirah* (Power of digestion and transformation) and *Quwate dafi'ah* (power of propulsion and excretion) [3]. Chronic kidney disease (CKD) is a world-wide public health problem, with adverse outcomes of kidney failure, cardiovascular disease, and premature death [4].

The markers of renal function test assess the normal functioning of kidneys. These markers may be radioactive and non radioactive. They indicate the glomerular filtration rate, concentrating and diluting capacity of kidneys (tubular function). If there is an increase or decrease in the values of these markers it indicates dysfunction of kidney [5].

Accurate estimation of kidney function is central to the detection, evaluation, and treatment of chronic kidney disease (CKD) [6]. The kidney performs a multitude of essential functions to maintain homeostasis. In clinical medicine, glomerular filtration rate (GFR) provides the best index of overall kidney function, and protein-uria adds additional information on renal and nonrenal prognosis [7].

Biochemical markers play an important role in accurate diagnosis and also for assessing risk and adopting therapy that improves clinical outcome [5]. Urea and creatinine are nitrogenous end products of metabolism. Urea is the primary metabolite derived from dietary protein and tissue protein turnover. Creatinine is the product of muscle creatine catabolism. Both are relatively small molecules (60 and 113 daltons, respectively) that distribute throughout total body water [8].

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Creatinine is a breakdown product of creatine phosphate in muscle, and is usually produced at a fairly constant rate by the body depending on muscle mass. It is a commonly used as measure of kidney function [9]. The National Kidney Disease Education Program recommends calculating glomerular filtration rate from serum creatinine concentration [10]. The creatinine clearance test is used to monitor the progression of renal disease. The diagnosis of renal failure is usually suspected when serum creatinine is greater than the upper limit of the “normal” interval. In chronic renal failure and uremia, an eventual reduction occurs in the excretion of creatinine by both the glomeruli and the tubules [11, 12]

Urea is major nitrogenous end product of protein and amino acid catabolism, produced by liver and distributed throughout intracellular and extracellular fluid. In kidneys urea is filtered out of blood by glomeruli and is partially being reabsorbed with water [11]. The most frequently determined clinical indices for estimating renal function depends upon concentration of urea in the serum. It is useful in differential diagnosis of acute renal failure and pre renal condition where blood urea nitrogen-creatinine ratio is increased [13]. Temperament or mizaj refers to four different humors differentiating in individuals and, as a result, proposes specific therapy for their diseases [14]. Temperaments differ from person to person and which varying from age to age [15, 16]. Blood parameters may differ from person to person which indicates the different constituents in their body fluids as per their temperament. Here I contemplated “An analytical study of renal function in healthy young adults of different temperament.”

## 2. Material Methods

The present clinical study entitled “An analytical study of renal function in healthy young adults of different temperament” was conducted at OPDs of Deoband Unani Medical College Hospital and Research Centre Deoband from June 2017 to June 2018. The study was executed after obtaining approval of the study protocol from the Institutional Ethical Committee, Deoband. The study protocol comprises of following subheadings.

### Criteria for selection of cases

**Inclusion criteria:** Balghami, Damvi, Saudavi and Safravi mizaj volunteer are enrolled for the study; volunteer of both sexes; age: between 18-30 yrs; volunteer who follow the protocol, whereas

**Exclusion criteria:** volunteer of any disease; volunteer of renal disease; and age < 18 and > 30 years of age.

### Clinical evaluation of the temperament

History taking; examination: general physical examination and systemic examination; Ajnas-e-Ashra Chart.

### Selection criteria

Patients fulfilling the inclusion criteria were enrolled in the present clinical trial and then subjected to investigate and assessed clinically by the relevant history, general physical examination and other required parameters. A written voluntary informed consent was taken by the patient. In selection of patients, following parameters were taken into consideration.

### Subjective parameters

Damvi Mizaj, Balghami Mizaj, Safravi Mizaj and Saudavi Mizaj

### Objective parameters

Blood Urea, Serum Creatinine, and GFR.

### Assessment of Mizaj (Temperament)

Total 50 healthy young volunteer have been of either sex having Balgami, Damvi, Safravi & Saudavi Mizaj will related for the studies first we diagnoses the temperament by self designed proforma of Ajnas-e-Ashraf and then we investigate for renal function test of the volunteers.

### Study design

The study was open observational clinical study

### Sample size and duration of protocol

The sample size was fixed as 50 healthy volunteers and The duration of protocol is one and half year

### Allocation of subjects

The volunteer are divided or categorize into four category i.e. GROUP A - Damvi Mizaj volunteers (n=11); GROUP B - Balghami Mizaj volunteers (n=26); GROUP C - Safravi Mizaj volunteers (n=12), and GROUP D - Saudavi Mizaj volunteers (n=01). After the diagnosis of mizaj we investigate for renal function test of the volunteers. From this study we will find out, the range of RFT in different temperament with single follow-up.

### State of hydration

The fore keeping every related information regarding this in mind it has been decided to conduct a study of entitled “Analytical study of renal function in healthy your adult different temperament either any relation of renal function & test with any of the treatment so it has been described study to know in which treatment the renal function test is more than others.

### Assessment & Correlation

The assessment and correlation among four groups was based on subjective and objective parameters.

### Methods

The GCP was adhered to and regular monitoring was made as stated above.

### Documentation

The case record forms and consent forms properly documented throughout the study were submitted to the Dept. of Physiology Deoband Unani Medical College Hospital and Research Centre after completion of the study.

## 3. Result and Observation

All results and observation are showing in Table No 1-11.

### Statistical methods

Descriptive and inferential statistical analysis has been carried out in the present study. 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. 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.

#### Statistical software

The Statistical software namely SPSS 18.0, and R environment ver. 3.2.2 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc <sup>[17-20]</sup>.

#### 4. Discussion

The present clinical study entitled “An analytical study of renal function in healthy young adults of different temperament” was conducted at OPDs of Deoband Unani Medical College Hospital and Research Centre Deoband from June 2017 to June 2018. The study was executed after obtaining approval of the study protocol from the Institutional Ethical Committee, Deoband. The study protocol comprises of following subheadings.

**Age distribution of subjects studied:** In this study, the mean age of the subjects was with Mean  $\pm$  SD 32.22 $\pm$ 11.73, 30 (60%) were found in the age group of 20-30 years, followed 8(16%) in 31-40 years, 7 (14%) is 41-50 years and 5 (10%) in under 51-60 years of age.

**Gender distribution of subjects studied:** The present research data on gender reveals that the prevalence of subjects is more in males 39(72%) than females 11(22%).

**Occupation distribution of subjects studied:** Out of 50 cases in this study, occupation wise majority of cases were found to be Agriculture 30 (60%), followed by Teacher 15 (30%), and service 5(10%) each.

**Religion distribution of subjects studied:** Out of total study subjects 38(76%) were Hindu, 12(24%) as Muslim. No Community based study has relevant data on religion wise affliction of the temperament. This study observes that the majority of Hindu indicates due to their higher foot fall in the hospital OPD.

**Weight (Kg) distribution of subjects studied:** In this study, the mean weight of the subjects was with Mean  $\pm$  SD 58.68 $\pm$ 8.60, 9 (18%) were found in the age group of 40-50 years, followed 23(46%) in 51-60 years, 15 (30%) is 61-70 years and 3 (6%) in > 51-60 years of age.

**Temperament distribution of subjects studied:** Out of 50 research subjects 26 (52%) were found with *Balghami* mizaj, followed by 11(22%) *Damvi* mizaj, 12(24%) are *Safravi* mizaj and 1 (2%) is *Saudavi* Mizaj.

**Blood Urea distribution of subjects studied:** In this study, the mean Blood Urea level of the subjects was with Mean  $\pm$  SD 35.25 $\pm$ 9.40, 4 (8%) were found in the <20 mg/dl, followed 28 (56%) as 20-40 mg/dl, and 18 (36%) in > 40 mg/dl.

**Serum creatinine (mg/dl) distribution of subjects studied:** In this study, the mean Serum Creatinine level of the subjects was with Mean  $\pm$  SD 1.17 $\pm$ 0.50, 24 (48%) were found in the <1.1 mg/dl, followed 26(52%) as >1.1 mg/dl.

**GFR distribution of subjects studied:** In this study, the mean GFR level of the subjects was with Mean  $\pm$  SD 109.98 $\pm$ 10.69, 11 (22%) were found in the <100, ml/minute/m<sup>2</sup> followed 31(62%) as 100-120 ml/minute/m<sup>2</sup> and 8(16%) as >120 ml/minute/m<sup>2</sup>.

#### Clinical variables in relation to temperament of subjects studied:

Clinical variables of age, gender, religion, weight and occupation was studied in respect of mizaj categories. Age weight and gender seems to vary with Mizaj. Age has got specific relevance as the statistical difference was found to be significant (p = 0.02). In Unani medicine every stage of age from childhood, youth, to old age has got temperamental variations from *Ha'ar Ratab*, *Ha'ar Yabis* to *Barid Yabis* temperament, respectively <sup>[15]</sup>. So this study confirms the facts related to variation of mizaj according to age. Gender differences also point out its relation to Mizaj variation. Our study showed that six out of 11 females had *Balghami* mizaj whereas in males it was 20 out of 39. Comparison showed little difference between *Mizaj* variation (p = 1) The difference though not significant but is worth reporting as in Unani medicine females are claimed to contain more *shameen* (fat) than males <sup>[21]</sup> which renders then relatively cold and moist which employs that they tend to be *Balghami* <sup>[22]</sup> Weight variations are also considered to be determinant for Mizaj variation. Obese people tend to be *Balghami* in temperament <sup>[23, 24]</sup>. In our study it was noted that there was variation but statistically it was insignificant. Little variation shows the trend that heavier the subject *Balghami* is the Temperament which conforms the concept of Unani medicine. Other variables show not much Mizaj variation, though Unani medicine claims for the variation. The discord in the observation in regard to other variables may be because of less sample size which is 50 subjects for assessing four Mizaj categories. This limitation may be overcome by future research by taking large pool of samples. This preliminary study may be helpful by way of pointing towards the desired direction of research in this regard.

#### Blood urea/serum creatinine/GFR in relation to temperament of subjects studied:

Blood Urea distribution of Subjects studied the mean Blood Urea level of the subjects was with Mean  $\pm$  SD 35.25 $\pm$ 9.40, 4 (8%) were found in the <20 mg/dl, followed 28(56%) as 20-40 mg/dl, and 18 (36%) in > 40 mg/dl (Table. 11). However, there was difference of mean scores when temperament was taken into consideration. Mean score for *Balghami* was 36.14 $\pm$ 01.94, *Safravi* was 34.8 $\pm$ 2.17, *Damvi* was 33.15 $\pm$ 3.3, and *Saudavi* was 36°. The values were normal but higher end blood urea was found in *Balghami* temperament and lower end in *Damvi* temperament. This study showed that Mizaj variations effect the Blood Urea although values are in normal range.

Serum Creatinine (mg/dl) distribution of Subjects studied showed the mean Serum Creatinine level of the subjects was with Mean  $\pm$  SD 1.17 $\pm$ 0.50, 24 (48%) were found in the <1.1 mg/dl, followed 26(52%) as >1.1 mg/dl. However, there was difference of mean scores when temperament was

taken into consideration. Mean score for Balghami was  $1.00 \pm 0.10$ , Safravi was  $1.28 \pm 0.11$ , Damvi was  $1.41 \pm 0.15$ , and Saudavi was  $1.7^*$ . The values were normal but higher end creatine was found in saudavi temperament and lower end in Balghami temperament. This study showed that Mizaj variations effect the creatine although values are in normal range. GFR distribution of Subjects studied showed the mean GFR level of the subjects was with Mean  $\pm$  SD  $109.98 \pm 10.69$ , 11 (22%) were found in the  $<100$ , ml/minute/m<sup>2</sup> followed 31(62%) as 100-120 ml/minute/m<sup>2</sup> and 8(16%) as  $>120$  ml/minute/m<sup>2</sup>. However, there was difference of mean scores when temperament was taken into consideration. Mean score for Balghami was  $108.61 \pm 2.05$ , Safravi was  $108.83 \pm 2.73$ , Damvi was  $113.02 \pm 3.82$  and Saudavi was  $117^*$ . The values were normal but higher end GFR was found in Saudavi temperament and lower end in Balghami temperament. This study showed that Mizaj variations affect the GFR although values are in normal range. The observations have shown a peculiar trend of variation due to mizaj difference but there were not much statistical differences that can be considered significant. It may be because of less sample size which is 50 subjects for assessing four Mizaj categories. This limitation may be overcome by future research by taking large pool of samples. This preliminary study may be helpful by way of pointing towards the desired direction of research in this regard.

**Table 1:** Age distribution of Subjects studied

Age in years	No. of Subjects	%
20-30	30	60.0
31-40	8	16.0
41-50	7	14.0
51-60	5	10.0
Total	50	100.0

Mean  $\pm$  SD:  $32.22 \pm 11.73$

**Table 2:** Gender distribution of Subjects studied

Gender	No. of Subjects	%
Female	11	22.0
Male	39	78.0
Total	50	100.0

**Table 3:** Occupation distribution of Subjects studied

Occupation	No. of Subjects	%
Agriculture	30	60.0
Teacher	15	30.0
Service	5	10.0
Total	50	100.0

**Table 10:** Clinical variables in relation to Temperament of Subjects studied

variables	X				Total (n=50)	P value
	Balghami (n=26)	Damvi (n=11)	Safravi (n=12)	Saudavi (n=1)		
Gender						
• Female	6(23.1%)	2(18.2%)	3(25%)	0(0%)	11(22%)	1.000
• Male	20(76.9%)	9(81.8%)	9(75%)	1(100%)	39(78%)	
Religion						
• Hindu	17(65.4%)	10(90.9%)	10(83.3%)	1(100%)	38(76%)	0.349
• Muslim	9(34.6%)	1(9.1%)	2(16.7%)	0(0%)	12(24%)	
Age in years						
• 20-30	17(65.4%)	5(45.5%)	8(66.7%)	0(0%)	30(60%)	0.029*
• 31-40	6(23.1%)	0(0%)	2(16.7%)	0(0%)	8(16%)	
• 41-50	2(7.7%)	4(36.4%)	0(0%)	1(100%)	7(14%)	

**Table 4:** Religion distribution of Subjects studied

Religion	No. of Subjects	%
Hindu	38	76.0
Muslim	12	24.0
Total	50	100.0

**Table 5:** Weight (kg) distribution of Subjects studied

Weight (kg)	No. of Subjects	%
40-50	9	18.0
51-60	23	46.0
61-70	15	30.0
>70	3	6.0
Total	50	100.0

Mean  $\pm$  SD:  $58.68 \pm 8.60$

**Table 6:** Temperament distribution of Subjects studied

Temperament	No. of Subjects	%
Balghami	26	52.0
Damvi	11	22.0
Safravi	12	24.0
Saudavi	1	2.0
Total	50	100.0

**Table 7:** Blood Urea distribution of Subjects studied

Blood Urea	No. of Subjects	%
<20	4	8.0
20-40	28	56.0
>40	18	36.0
Total	50	100.0

Mean  $\pm$  SD:  $35.25 \pm 9.40$

**Table 8:** Serum Creatinine (mg/dl) distribution of Subjects studied

Serum Creatinine (mg/dl)	No. of Subjects	%
<1.1	24	48.0
>1.1	26	52.0
Total	50	100.0

Mean  $\pm$  SD:  $1.17 \pm 0.50$

**Table 9:** GFR distribution of Subjects studied

GFR	No. of Subjects	%
<100	11	22.0
100-120	31	62.0
>120	8	16.0
Total	50	100.0

Mean  $\pm$  SD:  $109.98 \pm 10.69$

• 51-60	1(3.8%)	2(18.2%)	2(16.7%)	0(0%)	5(10%)	
Weight (kg)						
• 40-50	7(26.9%)	1(9.1%)	1(8.3%)	0(0%)	9(18%)	0.102
• 51-60	13(50%)	4(36.4%)	5(41.7%)	1(100%)	23(46%)	
• 61-70	6(23.1%)	6(54.5%)	3(25%)	0(0%)	15(30%)	
• >70	0(0%)	0(0%)	3(25%)	0(0%)	3(6%)	
Occupation						
• Agriculture	15(57.7%)	8(72.7%)	6(50%)	1(100%)	30(60%)	0.858
• Teacher	8(30.8%)	3(27.3%)	4(33.3%)	0(0%)	15(30%)	
• Service	3(11.5%)	0(0%)	2(16.7%)	0(0%)	5(10%)	

Chi-Square/Fisher Exact Test

**Table 11:** Blood urea/Serum Creatinine/GFR in relation to Temperament of Subjects studied

Variables	Temperament				Total (n=50)	P value
	Balghami (n=26)	Damvi (n=11)	Safravi (n=12)	Saudavi (n=1)		
Blood Urea						
• <20	2(7.7%)	2(18.2%)	0(0%)	0(0%)	4(8%)	0.193
• 20-40	12(46.2%)	6(54.5%)	9(75%)	1(100%)	28(56%)	
• >40	12(46.2%)	3(27.3%)	3(25%)	0(0%)	18(36%)	
Serum Creatinine (mg/dl)						
• <1.1	15(57.7%)	5(45.5%)	4(33.3%)	0(0%)	24(48%)	0.413
• >1.1	11(42.3%)	6(54.5%)	8(66.7%)	1(100%)	26(52%)	
GFR						
• <100	5(19.2%)	3(27.3%)	3(25%)	0(0%)	11(22%)	0.432
• 100-120	18(69.2%)	4(36.4%)	8(66.7%)	1(100%)	31(62%)	
• >120	3(11.5%)	4(36.4%)	1(8.3%)	0(0%)	8(16%)	

Chi-Square/Fisher Exact Test

**5. Conclusion**

Age distribution of Subjects studied showed that In this study, the mean age of the subjects was 32.22, out of which 30 (60%) were found in the age group of 20-30 years, followed 8(16%) in 31-40 years, 7 (14%) is 41-50 years and 5 (10%) in under 51-60 years of age. The present research data on gender reveals that the prevalence of subjects is more in males 39(72%) than females 11(22%). Occupation distribution of Subjects studied showed that out of 50 cases in this study, occupation wise majority of cases were found to be Agriculturists 30 (60%), followed by Teacher 15 (30%), and service 5(10%) each. Religion distribution of Subjects studied showed that out of total study subjects 38(76%) were Hindu, 12(24%) as Muslim. This study observes that the majority of Hindu indicates due to their higher foot fall in the hospital OPD. Weight (kg) distribution of Subjects studied showed that the mean weight of the subjects was 58.68. 9 (18%) were found in the age group of 40-50 years, followed 23(46%) in 51-60 years, 15 (30%) is 61-70 years and 3 (6%) in > 51-60 years of age. Temperament distribution of Subjects studied showed that out of 50 research subjects 26 (52%) were found with *Balghami* mizaj, followed by 11(22%) are *Damvi Mizaj*, 12(24%) are *Safravi Mizaj* and 1 (2%) is *Saudavi Mizaj*. Blood Urea distribution of Subjects studied: In this study, the mean Blood Urea level of the subjects was 35.25, 4 (8%) were found in the <20 mg/dl, followed 28(56%) as 20-40 mg/dl, and 18 (36%) in > 40 mg/dl. Serum Creatinine (mg/dl) distribution of Subjects studied: In this study, the mean Serum Creatinine level of the subjects was 1.17, 24 (48%) were found in the <1.1 mg/dl, followed 26(52%) as >1.1 mg/dl. GFR distribution of Subjects studied: In this study, the mean GFR level of the subjects was 109.98, 11 (22%) were found in the <100, ml/minute/m<sup>2</sup> followed 31(62%) as 100-120 ml/minute/m<sup>2</sup> and 8(16%) as >120 ml/minute/m<sup>2</sup>. Clinical variables of age, gender, religion,

weight and occupation was studied in respect of mizaj categories. Age weight and gender seems to vary with *Mizaj*. Age has got specific relevance as the statistical difference was found to be significant (p = 0.02). In Unani medicine every stage of age from childhood, youth, to old age has got temperamental variations from *Ha'ar Ratab*, *Ha'ar Yabis* to *Barid Yabis* temperament, respectively. Blood Urea distribution of Subjects studied the mean Blood Urea level of the subjects was with 35.25, 4 (8%) were found in the <20 mg/dl, followed 28(56%) as 20-40 mg/dl, and 18 (36%) in > 40 mg/dl. However, there was difference of mean scores when temperament was taken into consideration. This study showed that Mizaj variations affect the Blood Urea although values are in normal range. Serum Creatinine (mg/dl) distribution of Subjects studied showed the mean Serum Creatinine level of the subjects was studied. However, there was difference of mean scores when temperament was taken into consideration. GFR distribution of Subjects studied showed the mean GFR level of the subjects was studied. There was difference of mean scores when temperament was taken into consideration. This study showed that Mizaj variations effect the Blood Urea although values are in normal range. The observations have shown a peculiar trend of variation due to Mizaj difference but there was not much statistical differences that can be considered significant. It may be because of certain limitations. This limitation may be overcome by future research by taking large pool of samples. This preliminary study may be helpful by way of pointing towards the desired direction of research in this regard.

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