Anxiety Assessment in Individuals of Bilious and Phlegmatic Temperament

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Abstract

Anxiety is a physiological state characterized by somatic, cognitive, emotional and behavioral components. As per the literature of Unani Medicine, anxiety belongs to *infia'lat-e-nafsaniyah* which is a part of *ajnas-e-ashrah* (ten parameters) for the assessment of *mizaj* (temperament) of an individual. According to ancient physicians, *infia'lat-e-nafsaniyah* are higher in the persons of bilious temperament than the persons of phlegmatic temperament. The present study was designed to assess the level of anxiety during normal and stressful conditions in persons of bilious and phlegmatic temperament by using Anxiety State Test (AST).

Volunteers were selected randomly from the student fraternity of Aligarh Muslim University and Aligarh city. 100 male and female volunteers of 18-35 years of age of both the temperaments were selected for the study and the AST score was determined. In normal condition the mean AST score was found to be 28.24 ± 3.998 and 25.30 ± 2.915 in bilious and phlegmatic subjects respectively. During stressful condition, the mean AST score was recorded as 44.40±7.149 and 35.64±3.729 of bilious and phlegmatic subjects, respectively. A significant difference between the two groups in both the conditions was recorded.

The individuals of bilious temperament have higher anxiety than their phlegmatic counterparts both in normal as well as stressful conditions.

Keywords: Anxiety, *Infia'lat-e-nafsaniyah, Ajnas-e-ashrah, Mizaj,* Temperament, Bilious, Phlegmatic

Introduction

Anxiety is a normal phenomenon which is characterized by a state of apprehension or unease arising out of anticipation of danger. It is an alerting signal that warns of impending danger and enables the person to take measures to deal with a threat. Normal anxiety becomes pathological when it causes significant subjective distress and/or impairment in functioning of an individual. Basically anxiety is of two types i.e. trait anxiety and state anxiety. Trait anxiety is related with the personality of an individual while the state anxiety is related with a specific state or condition (Ahuja, 2006).

The concept of *mizaj* (temperament) is a pillar of Unani Medicine on which the states of health and disease of human being and the entire Unani therapeutics including diagnosis, prevention and treatment of diseases are based. According to Unani system of medicine, there are four types of temperament viz. *safravi*

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(bilious), *damvi* (samguine), *balghami* (phlegmatic) and *saudavi* (melancholic) indicating the dominance of *safra* (bile), *dam* (blood), *balgham* (phlegm) and *sauda* (black bile), respectively (Majoosi, 1902). For the diagnosis of the temperament of an individual, a number of parameters have been devised by different Unani physicians. However, *Ajnas-e-Ashrah* (ten parameters) suggested by Ibn Sina (1993) to diagnose the temperament of an individual are widely accepted. It includes psychological (*infia'lat-e-nafsaniyah*), morphological and physiological parameters. Unani physicians have been applying the theory of *mizaj* in their practice with a fair degree of success since hundreds of years. They did their best despite having limited instrumental and technical facilities, to imply the theory of temperament in clinical and therapeutic practices but at present an evidence based data is required to prove its validity and relevance (Ahmad, 1980).

The present study was conducted on two groups of individuals having two different temperaments i.e. Bilious (*Safravi*) and Phlegmatic (*Balghami*). The two temperaments show different types of signs and symptoms as their physiological, physical, and psychological features are different from each other because of having *har* (hot) and *barid* (cold) temperament, respectively. The study was started with following objectives:

1. To find the correlation between anxiety and temperament, if any.
2. To find out whether the level of anxiety of bilious and phlegmatic subjects is same or there exists some variation within the physiological limits.
3. To institute anxiety as a parameter of temperament assessment.

In view of the importance of psychological parameters in the diagnosis of temperament of an individual and also in view of the variation of the characteristics of individual of *Safravi* (Bilious) and *Balghami* (Phlegmatic) temperament, it was hypothesized that anxiety will be comparatively higher in the persons of bilious temperament than the persons of phlegmatic temperament because anxiety has a direct relationship with *infia'lat-e-nafsaniyah* which has been described to be higher in the individuals of bilious temperament as compared to those having phlegmatic temperament (Majoosi, 1902; Masihi, 1963; Ibn Sina, 1993; Ferasat, 2005). The participants were categorized on the basis of temperament which was determined on the basis of *ajnase ashra* and then the level of anxiety was measured to know the difference between the two groups. The level of anxiety was also determined in male and fenale volunteers also.

Material and Methods

This study was carried out in the Department of Kulliyat, Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh.

Selection of volunteers

Volunteers were selected randomly from different batches of the students of Ajmal Khan Tibbiya College and from few other faculties of Aligarh Muslim University and other colleges of Aligarh city.

Sample

One hundred (100) healthy male and female volunteers having Bilious and Phlegmatic temperaments were randomly selected.

Inclusion criteria

Only healthy volunteers of Bilious and Phlegmatic temperaments of both the sexes in the age group of 18–35 years were included in the study. The reason for selecting this age group is that this age lies in *Sin-e-Namu* (growing age) and *Sin-e-Shabab* (adulthood) and the individuals in this age group mostly remain healthy and fit.

Exclusion criteria

- The volunteers having Saudavi (Melancholic) and Damvi (Sanguine) temperament were excluded from the study.
- Volunteers below 18 years and above 35 years of age.
- Volunteers suffering from any physical, mental or psychiatric disorder.

For the selection of healthy volunteers, detailed clinical history, physical, general and local examinations were done.

Informed consent

An informed consent form was provided to the volunteers during study prior to starting the measurement. The purpose of the informed consent form was to obtain permission from each of the volunteers for their willingness to take part in this study. The form indicated exactly what the study demands, what the volunteers expect from the study, the minimal risks and benefits of their participation, and guarantees of confidentiality. It had also stated the volunteer is free to withdraw from the study at any time without giving any specific reason.

Determination of temperament

The assessment of temperament (*mizaj*) of the volunteers was made on the basis of *Ajnas-e-Ashra (*ten determinants*)*, mentioned in classical Unani literature. The proforma of the temperament was given in tabulated form to the volunteers (Mizaj Assessment Proforma).

Categorization of the participants

After determination of the temperament, the volunteers selected for study were divided into two groups according to their temperament.

Group A: Bilious temperament (*Safravi Mizaj*)
Group B: Phlegmatic temperament (*Balghami Mizaj*)

After categorization of volunteers, the anxiety level and various physiological parameters were determined during two conditions i.e. (i) when the volunteers had no sessional test or examination (normal condition) and (ii) when they had sessional test or the examination (stressful condition).

Assessment of anxiety

For the assessment of anxiety the Anxiety State Test (AST) which is actually a part of Sensation Seeking and Anxiety State Test (SSAST) developed by Neary and Zuckerman (1976) was used. The tool consists of 36 statements in which 15 items were regarding Sensation Seeking, and 15 items for Anxiety. The remaining 6 items were the items from anxiety scale that did not meet the factor analysis criteria. For Anxiety State Test (AST), the scoring varies from 1 (not at all) to 5 (very much) for each item (range= 15 to 75). The item number 5, 9, 14, and 25 are scoring reversed, i.e. 1 (very much) to 5 (not at all). Neary (1975) has shown high internal consistency and low retest reliabilities of the SSAST (Anxiety State Test).

Observations and Results

Out of 100 volunteers, 50 were bilious (*safrawi mizaj*) and remaining 50 were of phlegmatic temperament (*balghami mizaj*). There was equal distribution of male and female volunteers in each group.

During the normal condition the mean AST score of the individuals of bilious temperament was found to be 28.24± 3.998 while that of the persons of phlegmatic temperament was 25.30±2.915. During stressful condition the mean AST score of the persons of bilious temperament was recorded to be 44.40±7.149 while that of the phlegmatic volunteers it was 35.64±3.729, indicating that the persons of bilious temperament have comparatively more anxiety than the persons of phlegmatic temperament in both normal as well as stressful condition (Table 1, Fig. 1).

During normal condition, the mean of AST score of males of bilious temperament was found to be 26.92±3.402, while that of females of the same temperament it was recorded to be 29.56±4.174. During normal condition the mean of AST score

Table 1: AST Score in Volunteers of Bilious and Phlegmatic Temperament (Mean ±SD)

Temperament	No. of Volunteers	Mean ± SD	
		Normal Condition	Stressful Condition
Bilious	50	28.24± 3.998	44.40 ± 7.149
Phlegmatic	50	25.30 ± 2.915	35.64 ± 3.729
Total	100	26.77 ± 3.782	40.02 ± 7.180

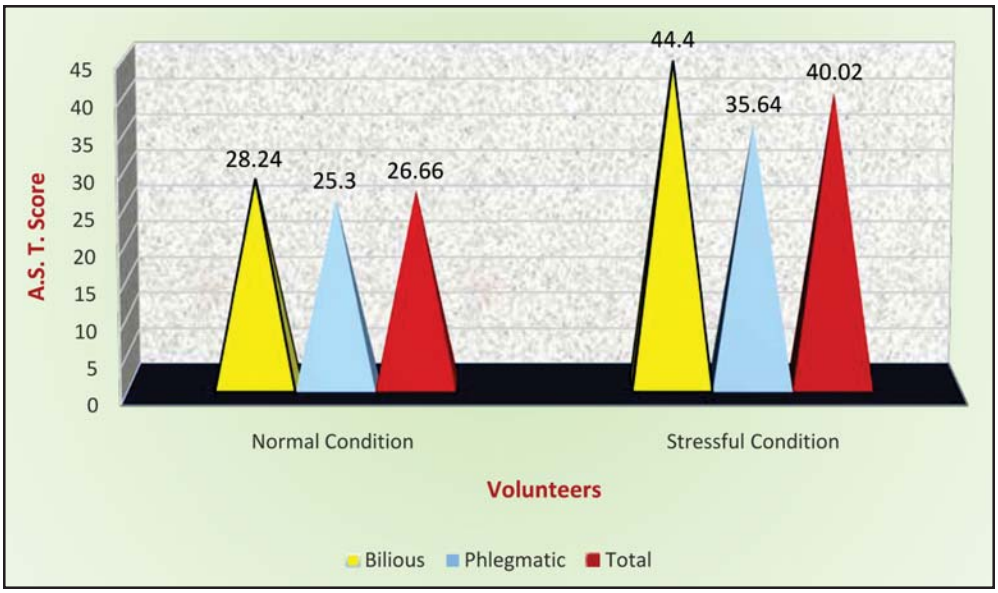

Fig. 1: AST Score in Volunteers of Bilious and Phlegmatic Temperament

of males of phlegmatic temperament was 24.44±2.770 which increased to 26.16±2.853 in female candidates (Table 2, Fig. 2).

Table 2: AST Score in Two Genders of Bilious and Phlegmatic Temperament

Temperament	No. of Male Volunteers	No. of Females Volunteers	Mean ± SD of Males		Mean ± SD of Females	
			Normal Condition	Stressful Condition	Normal Condition	Stressful Condition
Bilious	25	25	26.92 ± 3.402	40.92 ± 3.785	29.56 ± 4.174	47.88 ± 8.048
Phlegmatic	25	25	24.44 ± 2.770	35.20 ± 3.884	26.16 ± 2.853	36.08 ± 3.593
Total	50	50	25.68 ± 3.316	38.06 ± 4.77	27.86 ± 3.933	41.98 ± 8.577

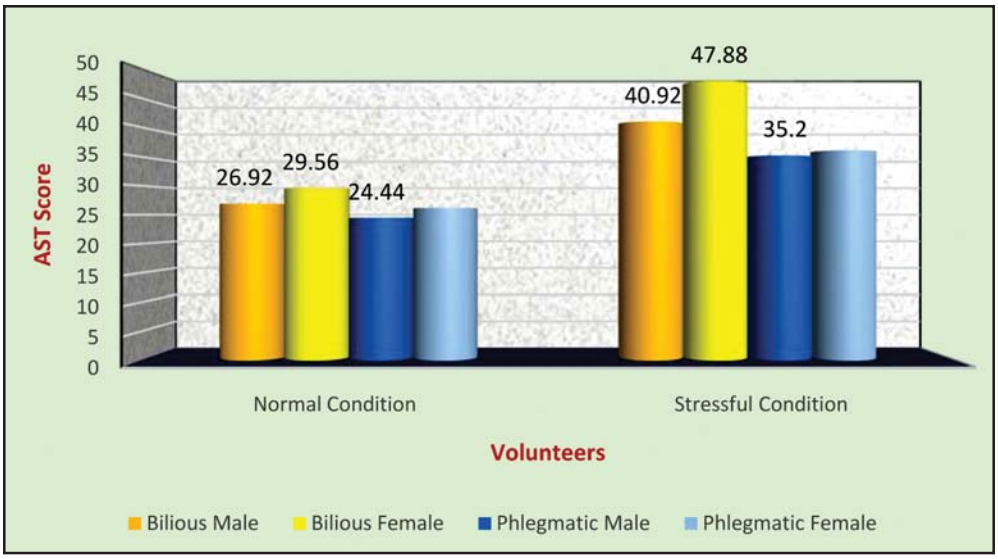

Fig. 2: AST Score in two Genders of Bilious and Phlegmatic Temperament Expressed as Mean

During stressful condition, the mean of AST score of males of bilious temperament was 40.92±3.785, while that of females it increased to 47.88± 8.048. During stressful condition the mean of AST score of males of phlegmatic temperament was 35.20±3.884 while that of females of the same temperament it was found to be 36.08±3.593 (Table 3, Fig. 3).

Statistical significance

The unpaired t-test was applied to determine the significance of the findings, if any. A significant difference in AST score of the individuals of bilious and phlegmatic temperament was found during normal as well as stressful condition. It was also found that the findings in respect of the volunteers of two temperaments were significantly different in normal and stressful condition (Table 3).

Table 3: Significance of AST Score in Volunteers of Bilious and Phlegmatic Temperament

AST Score between	Significance
Bilious vs Phlegmatic during normal condition	$t = 4.202$, $p < 0.01$
Bilious vs Phlegmatic during stressful condition	$t = 7.682$, $p < 0.01$
Bilious in normal condition vs Bilious in stressful condition	$t = 13.951$, $p < 0.01$
Phlegmatic in normal condition vs Phlegmatic in stressful condition	$t = 15.445$, $p < 0.01$

During normal condition the AST score between the males and females of bilious temperament and also between the males and females of phlegmatic temperament was significant indicating that females have higher AST score. It also revealed that during normal condition the AST score between males of bilious and phlegmatic temperament and also between the females of bilious and phlegmatic temperament is significant (Table 4).

Table 4: AST Score in Two Genders of Bilious and Phlegmatic Temperament During Normal Condition

AST Score between	Significance
Bilious Male vs Bilious Female	t = 2.451, p= 0.0179
Phlegmatic Male vs Phlegmatic Female	t = 2.163, p= 0.0356
Bilious Male vs Phlegmatic Male	t = 2.826, p= 0.0068
Bilious Female vs Phlegmatic Female	t = 3.362, p = 0.0.0015

During stressful condition the AST score between the males and females of bilious temperament was found significant while between male and female volunteers of phlegmatic temperament it was not found to be significant. A significant difference was also recorded in the AST score between males of bilious and phlegmatic temperament and also between the females of bilious and phlegmatic temperament (Table 5).

Table 5: AST Score in Two Genders of Bilious and Phlegmatic Temperament During Stressful Condition

AST Score between	Significance
Bilious Male vs Bilious Female	t = 3.913, p= 0.0003
Phlegmatic Male vs Phlegmatic Female	t = 0.8316, p= 0.4097
Bilious Male vs Phlegmatic Male	t = 5.274, p< 0.0001
Bilious Female vs Phlegmatic Female	t = 6.694, p< 0.0001

Mizaj Assessment Proforma

Name of Volunteer: _____ Father's Name: _____

Age: _____ Gender: _____

Height: _____ Weight: _____

Occupation: _____ Mobile No.: _____

Address: _____

Parameter (Evidence)	Damwi (Sanguineous)	Balghami (Phlegmatic)	Safrawi (Bilious)	Saudawi (Melancholic)
Morphological				
1. Skin texture/ Temperature Score: 01	Warm and smooth ☐	Soft and moist ☐	Hard and hot ☐	Rough and cold ☐
2. Complexion Score:0.5	Reddish ☐	Whitish ☐	Pale ☐	Blackish ☐
3. Body built Score:5	Muscular ☐	Fatty ☐	Moderate ☐	Lean and thin ☐
4. Texture of hairs Score:0.5	Thick and lusty ☐	Thin and smooth ☐	Curly ☐	Straight ☐
5. Growth and distribution of hairs Score:0.5	Rapid, Average ☐	Slow, Scanty ☐	Moderate/ Profuse ☐	Excessive ☐
6. Colour of hairs Score:0.5	Blackish ☐	Brownish ☐	Yellow-black (Golden) ☐	Black and white (Mixed) ☐
Physiological				
7. Urine Score:01	Moderate in quantity ☐	White, more in quantity ☐	Yellow, less in quantity ☐	Turbid, less in quantity ☐
8. Tolerate Well Score:01	Dryness ☐	Summer ☐	Cold ☐	Dampness ☐
9. Remains well in Score:03	Spring ☐	Summer ☐	Winter ☐	Autumn ☐
10. Appetite Score:01	Strong appetite (can skip a meal) ☐	Less appetite (feel heaviness after eating) ☐	Strong appetite (can't skip a meal) ☐	Irregular appetite ☐

Parameter (Evidence)	Damwi (Sanguineous)	Balghami (Phlegmatic)	Safrawi (Bilious)	Saudawi (Melancholic)
11. Thirst Score:01	Average (+++) ☐	Poor (+) ☐	Increased (++++) ☐	Low (++) ☐
12. Digestion Score:01	Average ☐	Slow ☐	Strong ☐	Irregular ☐
13. Movements and activities Score:03	Average in physical activity ☐	Dull laziness ☐	Brisk, Hyper active ☐	Less ☐
14. Sleep Score:01	Average ☐	Excess sleep ☐	Disturbed sleep ☐	Insomnia ☐
Psychological				
15. Dream Score:01	Blood, Red objects ☐	Water, Snow ☐	Fire, Yellow objects ☐	Black, Fearful dreams ☐
16. Anger/Joy Score:01	Comes on easily and easily lost ☐	Comes on hardly ☐	Frequent, Severe and persists for long ☐	Infrequent but persist ☐
17. Responsee to external stimuli in adverse condition Score:01	Aggressively respond ☐	Weakly respond ☐	Bravely respond ☐	Cowardly respond ☐
18. Decision taking power Score:01	Take boldly ☐	Hesitate in taking decisions ☐	Take quickly ☐	Afraid in taking decisions ☐
19. Memory Score:01	Good retention also good ☐	Not good ☐	Good but can't retain for long ☐	Don't learn easily but excellent retention ☐

Total Collection :

Damvi : _____ Safravi : _____

Balghami : _____ Saudavi : _____

Diagnosed Temperament : _____

Anxiety State Test (AST)

S.1- I feel afraid.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.2- I feel secure.

(1) Very much (2) Definitely (3) Somewhat (4) Slightly (5) Not at all

S.3- I feel desperate.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.4- I feel steady.

(1) Very much (2) Definitely (3) Somewhat (4) Slightly (5) Not at all

S.5- I feel upset.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.6- I feel contented.

(1) Very much (2) Definitely (3) Somewhat (4) Slightly (5) Not at all

S.7- I feel nervous.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.8- I feel frightened.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.9- I feel tense.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.10- I feel shaky.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.11- I feel calm.

(1) Very much (2) Definitely (3) Somewhat (4) Slightly (5) Not at all

S.12- I feel fearful.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.13- I f terrified.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.14- I feel panicky.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

S.15- I feel worried.

(1) Not at all (2) Slightly (3) Somewhat (4) Definitely (5) Very much

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AST Score: .....

Discussion

AST score was recorded in the volunteers having bilious and phlegmatic temperament during normal and stressful condition. It was found that the mean AST score during normal condition was higher in bilious group (28.24±3.998) than phlegmatic group (25.30 ± 2.915). Similarly the mean AST score during stressful condition was higher in bilious temperament 44.40 ±7.149 than phlegmatic temperament35.64 ± 3.729. The results of comparison of AST score between the persons of bilious and phlegmatic temperament during normal as well as during stressful condition were extremely significant.The findings also showed that AST score of bilious subjects during stressful condition was higher as it amounted to 44.40 ± 7.149 from the normal value of 28.24 ±3.998. The mean AST score of phlegmatic temperament during stressful condition was more (35.64 ± 3.729) than the normal condition (25.30 ± 2.915). The AST score between the stressful and normal conditions of the persons of both bilious and phlegmatic temperament were found to be significant statistically.

AST score was also recorded according to sex of the volunteers during both normal as well as stressful condition. In this regard our analysis showed that mean of AST score during normal condition was lower in bilious males (26.92±3.402) than bilious females (29.56±4.174). A comparison of AST score between the males and females of bilious temperament was found significant during the normal condition. The AST score during stressful condition was also found lower in bilious males (40.92±3.785) than bilious females (47.88±8.048). During the stress the AST score of the two genders of bilious temperament was found significantly different and was found increased in female volunteers. The AST score during normal condition was lower in phlegmatic males than phlegmatic females. However, during stressful condition the AST score of two genders of phlegmatic temperament was found non-significant. The findings further suggested that the AST score of the same gender of opposite temperaments during normal condition was higher in bilious males than the phlegmatic males. Almost similar pattern was observed in case of the female volunteers indicating that individuals of bilious temperament and the females are more susceptible to be afflicted with anxiety.

The findings of the study clearly indicated that persons with bilious temperament have a larger tendency to get affected with anxiety than their phlegmatic counterparts in normal conditions. However, during the stressful condition both have almost equal chance of being afflicted with anxiety. Similarly the blious females have more anxiety than their male counterparts during both normal and stressful conditions. The level of anxiety in phlegmatic females was comparatively higher than the phlegmatic males during normal condition but there was no significant difference in the level of anxiety between phlegmatic females and

males during stressful condition. The findings as a whole suggested that biliousness may induce both trait anxiety and state anxiety (Ahuja, 2006) while the phlegmatic temperament do not have the direct relationship with anxiety. Since anxiety is related with *infia'lat-e-nafsaniyah* which is found in higher concentration in bilious individual, therefore, the chances of anxiety are high. This study also indicated that anxiety may also be included as an important parameter for the assessment of temperament along with *Ajnase Ashra*.

Conclusion

It can be concluded that the level of anxiety in bilious males is comparatively higher that phlegmatic males and that the bilious females have more chances to be afflicted with anxiety than the phlegmatic females during both normal and stressful conditions. The study validated the Unani concept that biliousness is directly associated with anxiety.

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