Developing and standardization of a structured questionnaire to determine the temperament (Mizaj) of individuals

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Temperament (Mizaj) plays an important role in the maintenance of health and prevention of disease and forms the basis of pathology, diagnosis and treatment in Iranian traditional medicine. In Iranian traditional medicine different characteristics have been ascribed to different types of Mizaj. Yet no standard instrument for identifying Mizaj of individuals has been developed. Therefore, this study was conducted in order to develop and standardize a structured questionnaire to determine the Mizaj of individuals. Two types of structured questionnaires were developed first for determining the innate Mizaj that is acquired by birth and the second for the acquired. The first questionnaire was made of 26 items and the second of 56 items. Participants included 197 individuals referring to Sib Diet Clinic. The validity and reliability assessment tests showed that content validity index was equal to one, Cronbach's alpha was equal to 0.912 for innate Mizaj assessment questionnaire and 0.825 for acquired Mizaj assessment questionnaire. Inter Cluster Correlation was above 0.9 for all the four types of Mizaj. The findings of this study show that the developed questionnaires had a good level of reliability and validity in determining Mizaj of individuals.

Keywords: Questionnaire, Mizaj, Temperament, Validity, Reliability

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Traditional medicine had been important in treatment of disease since long ago and recently has re-emerged and is gaining importance in treatment of disease especially chronic diseases in many countries including Iran. The basis of Iranian traditional medicine is based on four elements theory (everything are made up of fire, weather, water and soil), developed in ancient Persia around 2000 BC. The four elements theory means that these four elements represent the basic division of matter which is found in universe. These four elements influence each other and produce unique quality which called Temperament (Mizaj). The four element theory is not usually used in isolation but in conjunction with the other theories that guide traditional Iranian medicine. They are used to explain how the body works (physiology) and the pathological changes in disease, also, it guide how to treat the diseases. Mizaj is the representation of quality of each element. The word temperament is the English translation of Mizaj, which is derived from the Latin word ‘Tempero’ meaning to mix together.

Mizaj of human body is determined by humors (body fluids) which are composed of different elements. Each element corresponds to a certain humor and the resulted Mizaj. The four humors are the metabolic agents of the four elements in the human body. All four of these humors, or vital fluids, are present in the bloodstream in varying quantities. The four humor are Sanguine Mizaj (hot and moist), Phlegmatic Mizaj (cold and moist), Choleric Mizaj (hot and dry), and Melancholic Mizaj (cold and dry).

It is believed that Mizaj is a unique quality and the number of Mizaj is equal to the number of living individuals in the world. However for the ease of assessment, all kinds of Mizaj have been divided into nine major groups in Iranian traditional medicine. These nine groups are based on different degrees of warmness and wetness and includes one moderate in central equilibrium or medium region of the four spectrum of Mizaj and four simple Mizaj (warm, cold, moist, and dry) and four combined Mizaj (warm and moist, warm and dry, cold and moist, cold and dry). Mizaj are responsible for the nutrition, growth, and metabolism of the organism.
plays an important role in the maintenance of health and prevention of disease and forms the basis of pathology, diagnosis and treatment\textsuperscript{3,12-14}.

In Iranian traditional medicine, different characteristics have been ascribed to different types of Mizaj for example volume of muscle mass of body, or the speed of growth of hair and nails in an individual or skin color, shape of face of individuals, level of activities, rhetoric skill, defecation status, and even individual traits and personality like being wise or lazy, indecency, imagination and optimism\textsuperscript{4,16-17}. There are two types of Mizaj, one is innate which is instinctive and individuals are born with it and one is acquired which is affected through the life due to nutrition, problems, complications, diseases, and so on\textsuperscript{4, 9-10}. Different theory has been suggested to explain the association between Mizaj and individuals’ appearance or personality. Some enrooted Mizaj of individuals to the neuro-hormonal system of each individual that is inhered and is under influence of environmental factors. Another explanation related Mizaj to neuro-endocrine system which is associated with metabolic rate of individuals and their level of energy\textsuperscript{16-17}. Also function of adrenal gland and its effect on sodium absorption\textsuperscript{17-18} and sympathetic and parasympathetic nervous systems which are affected by food that is consumed or other environmental factors\textsuperscript{5,17-19}, or effect of food items on pH of blood and its effect on blood glucose level are other theories behind effects of food on Mizaj\textsuperscript{5,18-20}.

In ancient time, all physicians and even usual people were able to identify Mizaj of individuals considering their face, appearance and behavior, therefore no instrument was needed and created for determining Mizaj\textsuperscript{5,20}. Yet, no standard instrument for identifying Mizaj of individuals has been developed, and physicians who apply traditional medicine identify Mizaj of individuals based on their experience and knowledge of ancient medicine, which may lead to false diagnosis and following false treatment of patients. Therefore, this study was conducted in order to develop and standardize a structured questionnaire to determine the innate and acquired Mizaj of individuals.

Methodology

Designing the questionnaire

In order to develop a questionnaire, the available literature of traditional medicine of Iran including “The Canon of Medicine” of Avicenna\textsuperscript{3}, Alhavi book (by Rhazes)\textsuperscript{10}, Zakhireye Khwarazmshahi (by Jorjani)\textsuperscript{4}, Kamel-al-Sanaah (by Ahwazi)\textsuperscript{21}, Makhzanul-Advia (by Aghili Khorasani)\textsuperscript{22}, “Mofareh Al Gholooob” (by Arzani)\textsuperscript{23}, “and Tahsil Al-Elaj and Resale Hafez Al-Sehha (by Mohammad Taghi Shirazi)\textsuperscript{17} were reviewed. The questionnaires were designed based on the defined characteristics of each Mizaj in these books. Two types of structured questionnaires were developed; first for determining the innate Mizaj that is acquired by birth and the second was developed to determine the acquired Mizaj which is influenced by food, life style and environmental factors and can be modified\textsuperscript{24}.

The first questionnaire was made of 26 items including assessment of skin color (in covered section of body), head hair color at time of adolescence or childhood, the structure of face, the forehead size, the ratio of eyes to face, the color of iris, color and status of sclera, the size and shape of nose and nostril, shape and size of lips, mouth and cheeks and their ratio to face, shape of chin, length of tongue, length of neck, diameter of neck, status of vessels (at room temperature), shape of muscles of arms, shape of hands, appears of shoulders, length of shoulders and its diameter before any cosmetic operation. Each questions had four options each related to one of the four Mizaj. Each question had a score of 1 and therefore there were total of 26 scores. The Mizaj with the highest score among other Mizaj has been considered as the dominant Mizaj of an individual.

The second questionnaire made up of 56 items and was develop to determine the acquired nature based on all the characteristics that were used to describe each Mizaj in traditional medicine book. The questions were divided into five groups; first group of questions were related to sensation tendencies with 7 questions (skin temperature, feeling cold or warm in winter or summer, desirable level of hotness of water while bathing, mouth sensation while wakening from night sleep, hair fall pattern and hair texture, appearance of tongue, age group) second group were related to food choices and tendencies with 8 questions (level of drinking water, texture of food choice like liquid or fired or bulky food, taste of food preference, the reaction to hunger, digestion function, reaction to eating too much watermelon, cucumber or yogurt, reaction to eating too much walnut or spices, feeling toward eating food) third group were related to behavioral tendency with 15 items (being enthusiastic, sleeping pattern, reaction
to being tired, reaction to depressive situations, reaction to noise, aggressiveness, leadership and management skill, rhetoric skill, being organized, being sociable, sexual behavior, communication skills, social activity, being hasty and voice characteristics) forth group were related to personality with 25 questions (follow up level, generosity, decision making, bravery, seeking diversity, being ambitious, impressionability, risk taking, being fancy, being careful, patience, going to extreme, memory, being emotional, pessimistic, idealism, determination and perseverance, introversion, profundity, suspicion, being conservative, realistic, moralistic, flexibility and being methodical) and fifth group were related to some group of diseases of health condition that may be seen in each Mizaj. Dryness of tongue, hollow eyes, skin disease, vitiligo, hyperthyroidism, headache, constipation, gallstones, varicose, hemorrhoid, insomnia, hot foot, tachycardia, stomach reflex, hirsutism, skin pimples and acne, Apathous stomatitis are more seen in individuals with choleric Mizaj. Heart attacks, stroke, blood pressure, allergies, tinnitus, excessive sweating and moles are more seen in sanguine Mizaj, MS, high level of saliva, flatulence, frequent urination, nervous bladder, enuresis, kidney cyst, swelling of the prostate, renal blood pressure, bone pain, brittle nails, osteoporosis, hypothyroidism, ovarian cyst, asthma, gout, sinusitis, kidney stones, early white hair growth are more seen in phlegmatic Mizaj. Fibroma, eczema, dry skin, constipation, obsession, colitis, nightmare and insomnia, stomach ache, mole, sharp hearing and sharp smelling, buzzing in the ears, black eye, varicose leg, hemorrhoid, eczema, psoriasis, lupus, hallucination, bipolar disorder and cancers are more prevalent among individuals with Melancholic Mizaj.

As the share of different groups of the above mentioned tendencies and characteristics is different in making the acquired Mizaj of each individual, therefore, based on the review of traditional medicine literature and opinion of experts, the score of each group of questions were different. The questions related to sensation tendencies (7 items) had a total score of 55.3 and all items had equal score of 7.9 each, the questions related to food choices and tendencies (8 items) had a total score of 9.6 and all items had equal score of 1.2 each. The questions related to behavioral tendency (15 items) had a total score of 11.5 and all items had equal score of 0.766 each. The personality related questions (25 items) had a total score of 9.6 and all items had equal score of 0.384 each. Questions related to four different groups of diseases (4 items) had a total score of 14 and all questions had equal score of 3.5 each.

Each questions had four options each related to one of the four Mizaj. Based on traditional medicine books, each individual’s acquired and innate Mizaj is made of a combination of all four different types of Mizaj but the dominating Mizaj is considered as the individual acquired Mizaj.

The questionnaires validated by using experts’ opinion. Three options were given for each question as “essential”, “useful but not essential” and “not necessary”, based on Lawshe method. As there is no golden standard for determining Mizaj, therefore in this study face validity was determined but not content validity.

Participants

Participants included 197 individuals referring to Sib Diet Clinic. The inclusion criteria included age between 18-70 yrs, and not being under medication for any diseases. The exclusion criteria were being known with any chronic diseases that required medication and not willing to participate in the study.

Data collection tools

Data collection tools included two authors made questionnaires for determining the innate and acquired Mizaj, a data collection form to collect demographic information. Body weight was measured using an electronic weighing scale, model SECA made in South Korea with the accuracy of measurement of 50 gm. The height of participants was measured using a stadiometer, model SECA. Individuals were classified as obese if their Body Mass Index (BMI) was above 30 (kg/m²) and overweight if their BMI was between 25(kg/m²) to 30(kg/m²).

Statistical analysis

The study was conducted in two phases. In the first phase (pilot) in order to assess the reliability of questionnaire, test-re-test technique was used. Questionnaires were filled by 15 cases and again after 15 days the re-test was done. Kappa test was used to assess the agreement level before and after the test. Cronbach’s alpha and Inter Cluster Correlation (ICC) were measured to assess the level of inter-reliability of questionnaires.
In the second phase, descriptive statistics like mean (SD) and frequency (percentage) was used. Chi square test and ANOVA test were used to assess the association between different studied variables and Mizaj of individuals.

All analyses were performed using statistical package for social sciences (SPSS) version 19.0 for windows (IBM Corporation, New York, United States). The significant level was set at P<0.05.

**Ethical consideration**

All participants were informed of the study purpose and gave written consent to participate in the study. Data were kept confidential.

**Results**

**Reliability assessment results**

The face validity of questionnaires were obtained by using opinions of five experts in the field of traditional medicine, all the characteristics of each Mizaj was confirmed by all the experts and 100% agreement was obtained on all the questions and all the questions were identified as “essential” to be a part of the questionnaires. Therefore, the content validity ratio (CVR) of both questionnaires were calculated as 1 for all questions and CVI also was equal to 1 based on Lawshe method. The reliability assessment test showed that Cronbach’s alpha was equal to 0.912 for innate Mizaj assessment questionnaire and 0.825 for acquired Mizaj assessment questionnaire. The result of ICC test for acquired Mizaj assessment questionnaire is shown in Table 1. ICC test measure was above 0.9 for all the four types of Mizaj. As the nature of responses to the questions in innate Mizaj assessment questionnaire was constant without any change during life, therefore, ICC of innate Mizaj assessment questionnaire was considered as 100% for all the four Mizaj (Table 1).

The Kappa level was 0.901 (p<0.001) for acquired Mizaj assessment questionnaire and was considered as equal to 1 for innate Mizaj assessment questionnaire.

<table>
<thead>
<tr>
<th>Mizaj score</th>
<th>Numbers</th>
<th>ICC</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choleric</td>
<td>15</td>
<td>.967</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Sanguine</td>
<td>15</td>
<td>.901</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Phlegmatic</td>
<td>15</td>
<td>.938</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Melancholic</td>
<td>15</td>
<td>.986</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

**Mizaj pattern**

There were a total of 197 participants in the study out of it 14 were male (7.1%) and the rest were female. Mean age was 36.6 ± 11.8 (rang 13 to 66), 43.7% of individuals (n=86) were in the age group of 25-40 yrs, 40.1% of individuals (n=79) were above 40 yrs and the rest were below 25 yrs.

Mean BMI was 28.4 ± 4.9, 39.1% of individuals (n=69) were obese, 39.1% of individuals (n=77) were above overweight and the rest were normal. Table 2 shows the pattern of innate and acquired Mizaj among participants and their relation with each other.

Assessment of study variables and Mizaj of individuals is shown in Table 3. There was a significant association between sex and acquired Mizaj (p=0.012). More than 85% of women had phlegmatic Mizaj, while 64.3% of male had phlegmatic Mizaj. There was no significant association between sex and innate Mizaj (p=0.399).

Obesity did not show any association with innate or acquired Mizaj (p>0.05). Age (as continues variable or as a categorical variable) did not show any association with innate Mizaj (p>0.05) but there was a significant association between age (as continues variable or as a categorical variable) and acquired Mizaj (p<0.001). As age increased, the percentage of Melancholic Mizaj increases (36.7 % vs. 3.1% in age group >40 and <25 yrs, respectively) and the percentage of Choleric Mizaj decreased (19.0 % vs. 40.6% in age group >40 and <25 yrs, respectively).

Height had a significant association with innate Mizaj (p=0.001) but not with acquired Mizaj (p=0.524). Mean height among individuals with Choleric Mizaj was 173.1 ± 8.3 and mean height among individuals with Melancholic Mizaj was 157.2 ± 8.4. (Table 3)

**Discussion**

Determining Mizaj of individual forms the basis of diagnosis and treatment of individuals in Iranian traditional medicine. This study was the first study which attempted to offer two different standard questioners for determining the acquired and innate nature of individuals. Results of this study showed that both questionnaires had a high level of reliability in determining Mizaj of individuals.

The finding of this study showed that phlegmatic Mizaj was more prevalent among females and Choleric or Sanguine Mizaj was more prevalent.
Table 2—The pattern of innate and acquired Mizaj among participants and their relation with each other

<table>
<thead>
<tr>
<th>Mizaj score</th>
<th>Choleric</th>
<th>Sanguine</th>
<th>Phlegmatic</th>
<th>Melancholic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choleric</td>
<td>0</td>
<td>3</td>
<td>48</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Innate</td>
<td>0.0%</td>
<td>5.9%</td>
<td>94.1%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Sanguine</td>
<td>3</td>
<td>9</td>
<td>62</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>Phlegmatic</td>
<td>4.0%</td>
<td>12.0%</td>
<td>82.7%</td>
<td>1.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Melancholic</td>
<td>3.3%</td>
<td>16.7%</td>
<td>80.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>2.5%</td>
<td>10.7%</td>
<td>84.3%</td>
<td>2.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 3—Association between individuals’ characteristics and their innate and acquired Mizaj

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mizaj</th>
<th>Choleric</th>
<th>Sanguine</th>
<th>Phlegmatic</th>
<th>Melancholic</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>2(14.3)</td>
<td>3(21.4)</td>
<td>9(64.3)</td>
<td>0(0.0)</td>
<td>0.012*</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3(1.6)</td>
<td>18(9.8)</td>
<td>157(85.8)</td>
<td>5(2.7)</td>
<td>0.811*</td>
</tr>
<tr>
<td>Obesity</td>
<td>Normal</td>
<td>1(2.0)</td>
<td>7(13.7)</td>
<td>40(78.4)</td>
<td>3(5.9)</td>
<td>0.261*</td>
</tr>
<tr>
<td></td>
<td>Obese/Overweight</td>
<td>4(2.7)</td>
<td>14(9.6)</td>
<td>126(86.3)</td>
<td>2(1.4)</td>
<td>0.247*</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;25</td>
<td>1(3.1)</td>
<td>5(15.6)</td>
<td>26(81.3)</td>
<td>0(0.0)</td>
<td>0.600*</td>
</tr>
<tr>
<td></td>
<td>25-40</td>
<td>2(2.3)</td>
<td>8(9.3)</td>
<td>75(87.2)</td>
<td>1(1.2)</td>
<td>0.787*</td>
</tr>
<tr>
<td></td>
<td>&gt;40</td>
<td>2(2.5)</td>
<td>8(10.1)</td>
<td>65(82.3)</td>
<td>4(5.1)</td>
<td>0.012*</td>
</tr>
</tbody>
</table>

Comparing these questionnaires with the 39-items Mizaj Questionnaire of Mojahedi et al.15, it should be noted that in Mizaj questionnaire of Mojahedi et al.15 there was no differentiation between innate or acquired Mizaj. In Iranian traditional medicine creating balance and harmony between acquired Mizaj and innate Mizaj is a key point to promote health and treatment of disease, therefore developing two different questionnaires to determine innate and acquired Mizaj separately can have an important clinical application in prevention and treatment of diseases.

In developing this questionnaire some questions that responding to them may be difficult or inaccurate (based on individuals perception and feeling) or unacceptable, culturally were not included.

among males. This finding is in agreement with available literature in Iranian traditional medicine that male have warmer Mizaj compared to female.2,4-5, 10,12, 14, 16-17.

In this study no association was found between obesity and type of Mizaj, which is inconsistence with the literature of traditional medicine which relates high level of fat in body composition to phlegmatic nature.20. This inconsistency may be due to the fact that most individuals in this study were obese or overweight.

This study did not show any association between age and acquired nature but the innate nature, Melancholic Mizaj was more prevalent among those above 40 and Sanguine Mizaj was more prevalent among young age group. This finding is in consistency with the available literature in Iranian traditional medicine which stated that with increase in age the acquired Mizaj of individuals turned to colder and drier Mizaj which prone individuals to increased risk of diseases.16,21.

Comparing these questionnaires with the 39-items Mizaj Questionnaire of Mojahedi et al.15, it should be noted that in Mizaj questionnaire of Mojahedi et al.15 there was no differentiation between innate or acquired Mizaj. In Iranian traditional medicine creating balance and harmony between acquired Mizaj and innate Mizaj is a key point to promote health and treatment of disease, therefore developing two different questionnaires to determine innate and acquired Mizaj separately can have an important clinical application in prevention and treatment of diseases.

In developing this questionnaire some questions that responding to them may be difficult or inaccurate (based on individuals perception and feeling) or unacceptable, culturally were not included.
Conclusion

In conclusion, the finding of this study showed that this first developed questionnaires for determining the innate and acquired Mizaj had a good level of reliability and validity; however it suffers from some limitations. The results of this study are obtained by study on participants who referred to Taam Asrar Clinic that may not be representative of the general population and may affect extrapolation of the results of this study to the total population. Also, however the experts that participated in validity assessment unanimously agreed with all the questions to be essential, but it may not be the same among all the experts in this field. Assessment of both acquired nature and innate nature are of the merits of this study, however large number of questions may influence practicality of these questionnaire. Further studies on larger and different population are required. Also, some clinical trials for Mizaj modification could show better results of the level of accuracy of this questionnaire.

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