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Major and Minor Criteria of Heart Mizaj (Temperament) Diagnosis from the Perspective of Persian Medicine: An Expert Panel Study

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Abstract

Background: Determining both general and organ-specific Mizaj is a crucial step in the diagnosis and treatment within Persian medicine (PM). Developing a standardized instrument for assessing the Mizaj of body organs, particularly the heart, is a research priority in PM.

Objectives: The present study aims to extract major and minor indices of heart Mizaj based on PM literature and expert opinions as an initial step towards standard development.

Methods: This qualitative study was designed using a hybrid model that includes both theoretical and experimental phases. Initially, heart Mizaj indices were extracted from ten written PM sources and categorized. Additionally, 23 PM experts were interviewed, and ten participated in expert panel sessions. Each expert scored the importance of each index on a scale of 0 - 3, and the practical method for determining each index was discussed. Final decisions on indices were based on average scores (< 1: Index removed, 1 - 2: Minor criterion; ≥ 2: Major criterion).

Results: From the 30 primary heart Mizaj indices identified on the hotness axis, 15 were classified as major and 10 as minor. The wetness/dryness axis comprised 14 indices, with six categorized as major and five as minor. Across both axes, indices pertaining to mental and emotional states emerged as some of the most significant and frequently noted.

Conclusions: The indices extracted in this preliminary study highlight their importance and provide methods for the practical diagnosis of heart Mizaj criteria. These findings can facilitate the development of a standardized tool for diagnosing heart Mizaj.

Keywords: Persian Medicine, Personalized Medicine, Mizaj, Heart, Questionnaires

1. Background

In recent decades, personalized medicine has emerged as an effective approach to health promotion, emphasizing genomic, epigenomic, environmental, and pathophysiological individual differences (1, 2). However, the utilization of individual differences for prevention and treatment has a long-standing history rooted in the traditional medical systems of China, India, and Persia (3-5). Persian medicine (PM) is a

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traditional medical school with a history spanning several millennia. This system describes individual differences through the concept of Mizaj (temperament), which encompasses a set of physical, psychological, and physiological characteristics (6-9). Mizaj is determined based on two pairs of qualities: Hotness/coldness and wetness/dryness, by evaluating specific indices in individuals. It is used to select appropriate lifestyle recommendations or therapeutic medicines (6-9). In addition to the general Mizaj of the body, each organ has its specific Mizaj, with the heart, brain, and liver being key in determining the body's overall Mizaj (10-12). Each individual possesses a specific Mizaj, and deviations from the normal range result in Mizaj diseases, known as Sū'-e Mizāj (dystemperament) (6, 11). Specific diagnostic indices have been proposed to determine the Mizaj and Sū'-e Mizāj of the body and each organ (4, 10). Some Sū'-e Mizājes of the heart share similarities with common heart diseases, including cardiac arrhythmias and heart failure. From the PM perspective, the heart, beyond its established physiological roles, plays a crucial part in regulating various mental and emotional states, such as anger and courage, particularly in its mutual relationship with the liver and the brain (9, 10). The Mizaj of the heart is determined through several indices, including pulse characteristics, chest size, general strength and weakness, warmness/coldness of the chest and hands, and behavioral conditions (10-13). Cardiovascular diseases rank as the primary causes of mortality, prompting extensive research into their associations with genetic, ethnic, nutritional, and anthropometric factors (14). Evidence-based PM strategies, including lifestyle modifications and therapies based on Mizaj, can enhance medical knowledge (15). Evidence suggests that therapeutic interventions tailored to Mizaj using standard diagnostic scales are more effective (15, 16). According to PM literature, treatment efficacy for heart diseases may vary based on the heart Mizaj of individuals, marking a potential advancement in heart health management (4, 9). However, evaluating this opportunity is not feasible due to the lack of standard tools for determining heart Mizaj. Developing a standard heart Mizaj scale requires specifying the priority of indices and providing a practical method for evaluating them (4). In recent years, numerous studies have evaluated the importance of Mizaj indices, some resulting in the development of standard general and organ-specific Mizaj diagnostic tools. However, to our knowledge, no research has been conducted in the field of heart Mizaj diagnostic indices (4-6).

2. Objectives

The present study aimed to extract the major and minor criteria of heart Mizaj from PM written sources and expert opinions, as a prelude to designing a standard heart Mizaj diagnostic tool, including self-report questionnaires and clinical checklists

3. Methods

This qualitative research was designed using a hybrid model that included both theoretical and experimental stages (17). The theoretical stage involved a comprehensive library study of written PM sources and queries in reliable scientific databases. In the experimental stage, semi-structured interviews were conducted with PM experts regarding their clinical experience. Due to the limited information available, data were analyzed using the conventional content analysis method. To quantify the importance of each index, data obtained from the first and second stages were discussed in expert panel meetings, and major and minor indices of heart Mizaj were eventually specified using a scoring system.

3.1. Literature Review

Ten authentic PM sources, written between the 10th and 18th centuries and recognized as the golden era of PM, were selected, and relevant chapters were thoroughly examined. Additionally, keywords such as "Mizaj" and "heart" were searched in the Noor Comprehensive Software of Traditional Medicine within the scope of the mentioned sources to ensure all content related to heart Mizaj was covered. Indices were organized into two separate tables for the hotness/coldness and wetness/dryness subdomains. In the second stage of the literature review, keywords including "heart", "Mezaj", "Mizaj" and "Heart Mizaj" were searched without any time limit in databases such as Science Direct, PubMed, Magiran, SID, Scopus, IranMedex, and Google Scholar.

3.2. Interviews

Experts with at least five years of clinical and research experience in PM and Mizaj diagnosis, particularly heart Mizaj, were invited to participate from all universities of medical sciences in Iran. Since the gender of the experts did not affect interview outcomes, any invited PM specialist, regardless of gender, could participate in the study based on the inclusion criteria. Experts expressed their opinions in two phases to reduce bias: (1) Heart Mizaj assessment indices based on clinical experience, without referencing PM literature; (2) the significance of these indices in relation to PM literature. All extracted

phrases from literature and interviews were organized in the relevant section of the content table based on their relationship to one of the domains or subdomains, with a specific code as a separate index.

3.3. Expert Panel

Interviewed PM specialists were also invited to participate in expert panel sessions to evaluate the significance and practical use of the extracted indices. At the beginning of each session, data related to each index, along with practical definitions, were presented, and an initial text was drafted for discussion. Experts shared their opinions on the importance of each index in diagnosing heart Mizaj and provided comments to refine the text. Additionally, definitions and practical methods of evaluation were discussed, leading to a comprehensive and applicable definition for each index. The details of phrases were repeatedly revised based on expert opinions to achieve group consensus. At the end of each session, experts scored each index on a scale of 0 to 3 (0: Lack of applicability, 1: Low priority, 2: Medium priority, 3: High priority), based on its importance and application in determining heart Mizaj. The average scores for indices were calculated, with averages of 2 - 3 classified as major criteria and 1 - 2 as minor criteria. Scores below 1 were not ignored in assessing heart Mizaj but were considered less significant for this study and were therefore excluded.

3.4. Inclusion/Exclusion Criteria

The inclusion criteria for experts required at least five years of clinical and research experience in the field of PM. Participants who were unwilling to be interviewed or did not attend more than 20% of expert panel meetings were excluded. The lack of participation from some experts may be considered a potential bias due to the absence of their insights. The criterion for inclusion of heart Mizaj indices was their mention in written sources or interviews of PM experts.

4. Results

Out of 28 invited experts, 23 participated, comprising 17 men and 6 women, with an average age of 43 (± 5) years and an average of 10 years of clinical experience from six universities across the country. According to written PM sources, the Mizaj of the heart in a healthy state is hotter and drier compared to other body organs. However, it can vary among individuals (10). Any deviation from the normal spectrum in terms of the hotness/coldness and wetness/dryness axes can lead to Sū'-e Mizāj of the heart, which constitutes a major group of heart diseases. Most sources provided a consistent explanation of heart Mizaj diagnostic indices related to hotness/coldness and wetness/dryness, with no significant variation among them (10-13). Among the 30 primary heart Mizaj indices on the hotness axis, 15 major and 10 minor criteria were retained based on the expert team's scoring, while the rest were eliminated. The wetness/dryness axis consisted of 14 criteria, from which six major and five minor criteria were extracted (Table 1). Subsequently, practical definitions were established for the remaining criteria to unify diagnostic methods and enhance applicability.

4.1. Pulse Characteristics

All PM sources and experts emphasized pulse indices as essential criteria for identifying heart Mizaj. The examination room should be quiet, with both the physician and patient seated, and the examinee's hand aligned with the heart. The examiner should place the tips of four closed fingers (excluding the thumb) of their right hand on the radial artery of the examinee's right hand, while the physician's left hand supports the examinee's forearm (10-13). Pulse indices are scored separately.

4.1.1. Pulse Strength

To assess pulse strength, the examiner places the fourth finger on the radial artery and applies firm pressure. A strong pulse pushes against the fingers, indicating a healthy heart, while a weak pulse ceases, suggesting illness. Individuals with a hot temperament (Mizaj) typically have a stronger pulse.

4.1.2. Pulse Length

To evaluate pulse length, the tips of the four fingers are placed on the radial artery with moderate pressure. If the pulse area exceeds the length of the fingers, it is considered long, indicating hotness of heart Mizaj. When the pulse length matches the length of the fingers, it is moderate, favoring a moderate heart Mizaj. If the pulse is felt in less than four fingers, it is short, signifying coldness of the heart (10-13).

4.1.3. Pulse Height

To assess pulse height, the tips of the four fingers are placed on the radial artery at the same level. If the pulse is felt with superficial placement of the fingers, it is high-set (Shahegh), indicating hotness of the heart. If detected with moderate pressure, the heart Mizaj is moderate. A low-set (Monkhafez) pulse, only detected with high pressure, indicates heart coldness (13).

4.1.4. Pulse Width

This index is evaluated by comparing the detected width of the radial artery with the width of the examiner's fingertip. An average width indicates moderate heart Mizaj. A wide pulse (more than two-thirds of the fingertip width) signifies wetness, while a narrow pulse (less than one-third of the fingertip width) indicates dryness of the heart (10-13).

4.1.5. Vessel Consistency

A flexible artery wall, where fingers sink easily when applying pressure, indicates a soft pulse and wetness of the heart. Conversely, if the artery wall resists pressure, the pulse is firm, indicating dryness. The state between these extremes suggests a moderate Mizaj in terms of wetness/dryness (10-13).

4.1.6. Pulse Speed

The filling and emptying time of the artery in each heartbeat, known as pulse speed, was one of the most controversial indices in the expert panel. A fast pulse, with a short filling time, contrasts with a slow pulse (13). Some experts argued against its practicality in clinical settings. Nevertheless, due to its importance in determining heart hotness/coldness, it was retained as a minor criterion. High pulse speed indicates hotness, medium speed indicates moderation, and slow speed indicates coldness (10-13).

4.1.7. Pulse Rate

This index is measured by recording the time between two pulse beats, known as the heart rate (10-13). Although easily measurable, it was disregarded by the expert panel due to potential diagnostic interferences.

Finally, pulse strength and length were considered major criteria, while pulse height and speed were set as minor criteria for determining hotness/coldness. Vessel consistency and pulse width were considered major criteria for assessing the wetness/dryness of the heart.

4.2. Respiration

In most reviewed sources, respiration is considered an index of the hotness/coldness status of the heart (10-13). However, experts believed this index was not applicable for determining heart Mizaj. Among the depth, speed, frequency, and temperature of breath, only the depth of breathing was retained as a minor criterion, while others were omitted. The depth of breathing is assessed with the patient at rest. Deep breathing indicates heat, short breathing suggests coldness, and average depth indicates moderate heart Mizaj (10-13).

4.3. Chest Size

Persian medicine sources mention body dimensions as indices of the hotness/coldness status of heart Mizaj. Compared with individuals of the same age and sex, chest size and the ratio of chest size to the head and neck are important indices of heart Mizaj (10-13). The expert team considered chest size a major criterion for determining the hotness/coldness of the heart. A wide chest signifies hotness, a medium chest indicates moderate Mizaj, and a small chest suggests coldness of the heart (10-13).

4.4. Muscle and Fat Mass

Body physique, known as Sahnah in PM, assesses the soft tissues of the body, including muscle and fat (10-13). This index was considered a major criterion for determining the hotness/coldness of the heart and a minor criterion for determining dryness of the heart. Muscularity indicates hotness, low muscle mass signifies coldness, and an average state suggests moderate heart Mizaj. Meanwhile, obesity/thinness of the chest compared with individuals of the same age and sex was considered a minor criterion in assessing wetness/dryness of the heart. A fat chest (with abundant soft tissue) indicates wetness, an average amount suggests moderate Mizaj, and a thin chest with little muscle indicates heart dryness (10-13).

4.5. Tactile Examination

Skin temperature and moisture on the chest and body, compared with other individuals of the same age and gender, were proposed as diagnostic indices for hotness/coldness and wetness/dryness of Mizaj, respectively. However, due to various intervening factors, the expert team deemed this index a minor criterion in clinical application. This index is evaluated by examining the patient while lying calmly on the bed in standard conditions of temperature, humidity, and coverage. The physician should stand on the right side of the patient and examine the skin on the heart, wrist, and forearm with their right palm. Warmness of the chest and body to the touch indicates hotness, while coldness indicates cold Mizaj. Additionally, softness of the skin suggests wetness, while roughness favors dryness, and the state between these two suggests moderate heart Mizaj (10-13). Wrists and forearms are key indicators in tactile examination due to easy access.

Table 1. Summary of Major and Minor Indices of Heart Mizaj

Index	Hot		Cold		Dry		Wet	
	Major	Minor	Major	Minor	Major	Minor	Major	Minor
Pulse	Strong; long	High-set; Fast	Weak; short	Low-set; Slow	Firm	Narrow	Soft, wide	-
Chest size	Wide	-	Small	-	-	-	-	-
Respiration	-	Deep	-	Shallow	-	-	-	-
Body physique	Muscularity	-	-	Low muscle mass	Thin chest	-	Muscular or fatty chest	-
Tactile exam	Chest warmness	Body warmness	Chest coldness	Body coldness	-	Chest toughness	-	Chest softness
Chest hair (in men)	-	Hairy	-	Sparse hair	-	-	-	-
Impressibility (air and scents)	Desire to breathe cool air	Desire to smell cold scents	-	Desire to breathe warm air; desire to smell hot scents	-	Bothered by breathe dry air	-	Bothered by breathe humid air
Physical function	Strength	Agility	Weakness	Slowness	-	-		-
Mental and emotional states	Not much influenced by issue; brave; rapid onset of anger; intense anger; happy; hopeful; hurriedness; initiative	High vitality; optimistic; bold	Influenced by the smallest issues; timid; slow onset of anger; mild anger; sad; hopeless; patience; not taking initiative	Low vitality; pessimistic; Shy	Enmity; Rapid occurrence/ disappearance of emotional reactions (anger, happiness)	Stubborn; bad-tempered	Benevolent; slow occurrence/ disappearance of emotional reactions (anger, happiness)	Compatible; good-natured

In case of discrepancy between the tactile assessments of the chest and the wrists/forearms, the chest examination takes priority in diagnosis.

4.6. Chest Hair

The density of chest hair compared with other individuals of the same age and gender is a sign of hotness. Scanty chest hair indicates heart coldness, while average density suggests moderation (10-13). The expert team considered this index a minor criterion for determining the hotness/coldness of the heart, applicable only in men.

4.7. Impressibility

The desire to breathe cool air suggests hotness, while finding pleasure in breathing warm air indicates heart coldness. A state between these two suggests moderation. Conversely, discomfort from inhaling dry air favors dryness, while discomfort in a humid environment indicates wetness of the heart. Not being affected by either condition suggests moderate heart Mizaj. Enjoying hot or cold scents favors coldness or hotness of the heart, respectively, while indifference to both suggests moderation (11-13). Being influenced by different temperatures and scents was considered a major and minor criterion for hotness/coldness of the heart, respectively. Additionally, being influenced by dry or humid air was considered a minor criterion for determining the dryness of the heart.

4.8. Physical Functions

Strength and agility in performing daily tasks are signs of hotness or moderation, while weakness and slowness suggest coldness of the heart (10-13). The index of strength was considered a major criterion, and agility a minor criterion, in determining the hotness/coldness of the heart. Given that some of these indices are subjective, their assessment requires the use of checklists or standard questionnaires, which can be considered as the next steps in designing and standardizing a heart Mizaj diagnostic tool.

4.9. Psychological Indices

Psychological indices are essential in diagnosing heart Mizaj. Considering the numerous indices mentioned in books and interviews, they were scored separately. Courage, frequent and intense anger, hopefulness and optimism, joy and cheerfulness, hurriedness, boldness, and taking initiative are signs of hotness, while opposite characteristics suggest coldness of the heart. Rapid onset and decline of emotional reactions indicate wetness, while slow onset and decline favor dryness of the heart. Additionally, resentment, stubbornness, and irritability indicate dryness, while benevolence, lack of stubbornness, and cheerfulness

favor wetness of heart Mizaj (10-13). The number of major and minor criteria in each domain was determined based on diversity in written sources and expert interviews, as well as scoring by the expert panel. Therefore, a greater number of criteria in a domain does not necessarily indicate greater weight for that domain. Evaluating the weight of each domain in heart Mizaj requires further research.

5. Discussion

The application method and importance of each Mizaj index are foundational in designing standard Mizaj diagnostic tools (4, 6, 18). Our study aimed to identify indices of heart Mizaj. After three stages — literature review, PM expert interviews, and expert panel discussions — 15 major and 10 minor criteria were extracted for hotness/coldness, along with 6 major and 5 minor indices for wetness/dryness of the heart. Several studies have explored Mizaj diagnostic indices, with only two determining the major and minor indices for body organs. In 2019, Hakimi et al. extracted major and minor criteria for liver Mizaj through a similar three-stage process, though they did not present definitions and evaluation methods (19). In 2021, Saeidi et al. identified major and minor criteria for diagnosing uterus Mizaj using a method akin to our study (20). Farsani et al. demonstrated a direct relationship between Mizaj and basal metabolic rate, blood pressure, heart rate, and peripheral temperature (21). Since heart Mizaj significantly influences overall body Mizaj, our findings support the selected heart Mizaj indices. The relationship between Mizaj indices and neurohormonal function has been previously reported (22). The results of these studies can be used to assess the effectiveness of indices in determining general/heart Mizaj.

A standardized tool is essential for quantifying heart Mizaj indices, particularly in pulse assessment, where a mechanical device can standardize the process. This would mitigate inconsistencies caused by environmental factors, physical/emotional conditions of examiners, and varying examination techniques (23). This topic has been mentioned in traditional Chinese medicine (TCM) and PM but is in the early stages of research, with some pulse assessment devices having been designed (24, 25). Other medical schools, such as TCM, also attribute most mental states to the heart. Lee et al. state that while most emotional states, such as sadness, happiness, anxiety, surprise, and thinking, are related to the brain in contemporary medicine, they are controlled by the heart in East Asian medicine (26). We suggest further studies to explore the correlation between the brain, the heart, and different psychological states. Modern physiology recognizes a complex mutual interaction between the nervous and cardiovascular systems, known as the heart-brain axis (27, 28). Relevant clinical surveys will provide new opportunities to evaluate the mutual relationship between these two important body organs.

The present study aimed to identify criteria for heart Mizaj according to written sources and PM specialists. It is the first preliminary methodical study in the standardization of heart Mizaj indices, conducted with the highest level of PM expert participation. The findings can be implemented in clinical practice and provide valuable insights for practitioners. It is suggested that the applicability of the indices be clinically measured in future studies, so they can be used in heart Mizaj checklists with fewer items. We faced several limitations: (1) Persian medicine written sources did not specify the importance and weight of each index in determining heart Mizaj; (2) Persian medicine written sources have not provided practical explanations for assessing some indices (10-13). We rely on written sources due to historical gaps in PM science transmission and have sought clinical insights from experts to address this limitation.

5.1. Conclusions

The present study extracted the major and minor criteria for determining heart Mizaj based on written PM sources and expert consensus. The results of this research are an important step in aligning PM diagnosis and treatment and designing a standard scale for heart Mizaj diagnosis. This scale can be used in future research to investigate the relationship between heart Mizaj and heart diseases.

Footnotes

Authors' Contribution: M. A., M. M., and N. G.: Study concept and design; M. A., M. M., N. G., M. A. V., R. M., M. M. P., E. P., M. Sh., R. Gh., Z. M., Gh. H., and S. B.: Analysis and interpretation of data; F. M.: Drafting of the manuscript; M. A., M. M., and M. Ash.: Critical revision of the manuscript for important intellectual content; H. Sh. N.: Statistical analysis.

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Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to their large scope.

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