



Agreement Between Clinical Judgment and Standardized Questionnaires in Temperament (Mizaj) Assessment in Persian Medicine

Fereshteh Pirooz^{1,2,3}, Roshanak Ghods^{1,2,*}, Mohsen Saberi Isfeedvajani^{1,2,3,4}

¹ Institute for Studies in Medical History, Persian and Complementary Medicine, Iran University of Medical Sciences, Tehran, Iran

² Department of Traditional Medicine, School of Persian Medicine, Iran University of Medical Sciences, Tehran, Iran

³ Student Research Committee, Iran University of Medical Sciences, Tehran, Iran

⁴ Legal Medicine Research Center, Legal Medicine Organization, Tehran, Iran

*Corresponding Author: Institute for Studies in Medical History, Persian and Complementary Medicine, Iran University of Medical Sciences, Tehran, Iran. Email: ghods.r@iums.ac.ir

Received: 3 December, 2025; Revised: 2 June, 2026; Accepted: 7 June, 2026

Abstract

Background: Mizaj assessment is fundamental to diagnosis and therapeutic decision-making in Persian medicine (PM). Despite the development of standardized self-report questionnaires, inconsistencies between clinical judgment and questionnaire-based classifications remain a methodological concern.

Objectives: This study evaluated the level of agreement between clinical Mizaj assessment (CMA) and two commonly used Mizaj questionnaires.

Methods: In this descriptive-analytical cross-sectional study, 350 healthy healthcare workers aged 20 to 60 years were enrolled. A PM specialist determined Mizaj using the Ajnas-e-Ashara framework through CMA. Participants then completed the 10-item Mojahedi Mizaj Questionnaire (MMQ) and the 20-item Salmanezhad Mizaj Questionnaire (SMQ). Pairwise agreement between methods was assessed using the kappa coefficient.

Results: The distribution of Mizaj categories varied across methods. The highest agreement was observed between the CMA and the SMQ for Hotness (kappa = 0.512; 95% CI, 0.422 - 0.602) and between the CMA and the MMQ for Coldness (kappa = 0.512; 95% CI, 0.368 - 0.656). The lowest agreement was observed between the CMA and the SMQ for Balance in Dryness and Wetness (kappa = 0.081; 95% CI, -0.023 to 0.185). Agreement between the two questionnaires (SMQ and MMQ) ranged from kappa = 0.132 to 0.366. Overall, inter-method agreement ranged from slight to moderate across temperament dimensions.

Conclusions: The observed agreement between the clinical and questionnaire-based methods ranged from slight to moderate, suggesting that each approach captures different aspects of Mizaj. Integrating clinical evaluation with standardized instruments may provide a more comprehensive and reliable framework for assessing temperament.

Keywords: Iranian Traditional Medicine, Temperament, Integrative Medicine, Mizaj, Medical Practice

1. Background

Persian medicine (PM) is recognized as one of the major traditional medical systems worldwide (1). Within PM, Mizaj (temperament) is a fundamental concept underlying health preservation, disease prevention, and therapeutic decision-making. Although the term “Mizaj” literally means “mixture,” in PM it refers to the qualitative outcome of interactions among the four

primary elements: water, earth, fire, and air. Each element is characterized by active (hotness/coldness) and receptive (dryness/wetness) qualities (2). These interactions result in distinct Mizaj categories that explain individual differences in physical, physiological, and behavioral characteristics (3, 4). Mizaj is considered both an inherent constitutional trait (Mizaj-e-jebelli) and a dynamic characteristic that may change over time

Copyright © 2026, Pirooz et al. This open-access article is available under the Creative Commons Attribution 4.0 (CC BY 4.0) International License (<https://creativecommons.org/licenses/by/4.0/>), which allows for unrestricted use, distribution, and reproduction in any medium, provided that the original work is properly cited.

How to Cite: Pirooz F, Ghods R, Saberi Isfeedvajani M. Agreement Between Clinical Judgment and Standardized Questionnaires in Temperament (Mizaj) Assessment in Persian Medicine. Shiraz E-Med J. 2026;27(4):e168654. doi: <https://doi.org/10.5812/semj-168654>

under the influence of environmental and lifestyle factors. These factors include residential climate, dietary habits, sleep patterns, the level and types of physical activity, stress management and psychosocial conditions, patterns of social interaction, and maintenance of essential principles along with appropriate elimination of waste materials (Setteh-zarurieh) (5, 6).

In clinical practice, PM specialists determine Mizaj through a comprehensive evaluation of 10 categories of indicators collectively known as Ajnas-e-Ashara (the 10 essential determinants of temperament). These indicators include tactile quality, body habitus (obesity-leanness), hair characteristics, skin color, physical body structure, responsiveness to external factors, sleep-wake patterns, quality of waste elimination, bodily functions, and mental and emotional states (7).

In recent decades, an increasing body of quantitative and qualitative research has expanded the operational understanding of both general and organ-specific Mizaj assessment based on classical PM sources (8, 9); however, important practical limitations remain.

To improve standardization, Mojahedi et al. developed a 10-item self-report Mizaj questionnaire in 2014 (10), followed by a 20-item questionnaire introduced by Salmannezhad et al. in 2018 to address limitations of the earlier tool (11). Nevertheless, inconsistencies between questionnaire-based assessments have been reported, occasionally yielding discordant or even contradictory results. This variability represents a methodological challenge for both clinical practice and research and underscores the need to evaluate the level of agreement among different approaches to Mizaj assessment.

2. Objectives

The present study was designed to evaluate the level of agreement among commonly used Mizaj assessment methods in PM, including clinical judgment by a PM physician and two standardized self-report questionnaires. By examining the extent to which these approaches yield comparable classifications, the findings may clarify their methodological alignment and potential applicability in both research and clinical settings. This study was designed as an exploratory inter-method agreement analysis and does not constitute a validation or superiority study.

3. Methods

3.1. Study Design and Participants

This descriptive-analytical, comparative cross-sectional study was conducted from October 2023 to February 2025. The study included healthcare workers aged 20 to 60 years from a medical center in Tehran who attended annual health monitoring appointments at occupational health units. After the study objectives were fully explained and written informed consent was obtained, participants were recruited using convenience sampling. The inclusion criteria were age 20 to 60 years, both sexes, no definite history of serious or life-threatening diseases, and absence of motor, cognitive, verbal, or hearing impairments that would limit communication with the volunteer. The exclusion criteria were any debilitating underlying disease and any cognitive, speech, or communication impairment that could interfere with the interview process.

3.2. Data Collection

During the sampling period, a PM specialist conducted an approximately 1-hour interview with each participant. The interview included verification of the inclusion criteria, collection of a detailed medical history, and a clinical Mizaj assessment (CMA) of each volunteer's Mizaj at the time of the visit. This assessment was based on the Ajnas-e-Ashara (10 criteria), and each indicator within Ajnas-e-Ashara was scored on a 3-point scale (0 = absent, 1 = moderate, 2 = prominent) for both active and receptive qualities. CMA was performed before questionnaire completion to minimize the risk of incorporation bias.

After the clinical assessment, participants were provided with two standardized self-report Mizaj questionnaires to complete; therefore, the physician was blinded to the questionnaire results during the clinical evaluation.

The 10-item Mojahedi Mizaj Questionnaire (MMQ) (Supplementary files) has primarily been validated for the 20- to 40-year age group. The MMQ consists of eight items (Questions 1 - 8) assessing Hotness-Coldness and two items (Questions 9 - 10) assessing Wetness-Dryness (Supplementary 1). Reported sensitivity ranges from 0.52 to 0.65, and specificity ranges from 0.67 to 0.97. The content validity index (CVI) ranges from 0.70 to 1.00, and the Cronbach alpha coefficient is 0.71. Each item has

three response options scored as 1 (Cold for Questions 1 - 8 and Wet for Questions 9 - 10), 2 (Balanced for Questions 1 - 10), and 3 (Hot for Questions 1 - 8 and Dry for Questions 9 - 10). Mizaj classification is determined based on the sum of scores and predefined cutoff points. For Hotness-Coldness (sum of items 1 - 8), a score of 14 or lower indicates Cold Mizaj, 15 to 18 indicates Balanced Mizaj, and 19 or higher indicates Hot Mizaj. For Wetness-Dryness (sum of items 9 - 10), a score of 3 or lower indicates Wet Mizaj, 4 indicates Balanced Mizaj, and 5 or higher indicates Dry Mizaj (10).

The Salmanezhad 20-item Mizaj Questionnaire (SMQ) (Supplementary files) has been validated for individuals aged 20 to 60 years. The SMQ consists of 15 items (Questions 1 - 15) evaluating Hotness-Coldness and five items (Questions 16 - 20) assessing Wetness-Dryness. Reported sensitivity and specificity range from 0.63 to 0.80 and 0.57 to 0.85, respectively. Cronbach alpha coefficients range from 0.69 to 0.74. The scale-level content validity index (S-CVI) is 0.93, and the intraclass correlation coefficient (ICC) for total scores between two assessment stages is 0.901 (95% CI, 0.841 - 0.938). Each item has five response options scored as 1 or 2 (Cold for Questions 1 - 15 and Wet for Questions 16 - 20), 3 (Balanced for Questions 1 - 20), and 4 or 5 (Hot for Questions 1 - 15 and Dry for Questions 16 - 20). Mizaj classification is determined based on total scores and predefined cutoff points. For Hotness-Coldness (sum of items 1 - 15), a score of 46 or lower indicates Cold Mizaj, 47 to 49 indicates Balanced Mizaj, and 50 or higher indicates Hot Mizaj. For Wetness-Dryness (sum of items 16 - 20), a score of 14 or lower indicates Wet Mizaj, 15 to 16 indicates Balanced Mizaj, and 17 or higher indicates Dry Mizaj (11). Both questionnaires were designed to determine "Sahih Mizaj" (healthy temperament) and cannot identify "Sue Mizaj" or imbalanced temperament.

Subsequently, agreement analysis was performed based on pairwise comparisons among the three methods.

3.3. Sample Size

The sample size in the parent study was calculated to examine the association between Mizaj and selected biomedical indicators, resulting in a target sample of 383 participants. The present agreement analysis was conducted as a secondary analysis using the same dataset. Although the sample size was determined by

the parent study, a post hoc adequacy check using the formula proposed by Donner and Eliasziw (1992) (12) showed that $N = 350$ was sufficient to estimate a kappa of 0.6 with a precision of ± 0.15 at the 95% confidence level (required $n = 349$), which is adequate to distinguish moderate from fair agreement.

3.4. Statistical Analysis

Data were analyzed using SPSS version 27. The kappa coefficient was used to assess agreement between Mizaj assessment methods, and chi-square tests were used to examine associations between categorical variables. In this study, P values less than 0.05 were considered statistically significant.

4. Results

A total of 437 individuals were screened, of whom 350 met the eligibility criteria and completed the study protocol. Among the 350 participants, 85 (24.3%) were female and 265 (75.7%) were male.

According to the MMQ, "Balance in active and receptive qualities" was the most frequent Mizaj (29.1%), whereas "Cold and Wet" was the least frequent (2.6%). According to the SMQ, "Hot and Wet" was the most frequently reported Mizaj (26.9%), whereas "Dry" was the least frequent (4.6%). CMA similarly identified "Balance in active and receptive qualities" as the most common category (26.6%) and "Cold" as the least common category (4%).

All participants were aged 20 - 60 years. When grouped according to PM age categories as "Adolescent" (20 - 30 years), "Young Adult" (31 - 40 years), and "Middle-aged" (41 - 60 years), the 41- to 60-year age group had the highest frequency, with 235 participants (67.2%). In this group, "Hot and Wet" was the dominant Mizaj, with a prevalence of 23.8%. Most participants (82.9%) had a university education (Table 1).

Table 2 presents the results of the pairwise comparative analysis of the three Mizaj assessment methods and the percentage agreement among the results of these methods for the nine Mizaj types. Data in this table were initially analyzed using the chi-square test. Because all items in the table were statistically significant ($P < 0.001$), the kappa coefficient was subsequently used to assess the level of agreement.

Across the entire table, the highest kappa values (kappa = 0.512) were observed in two comparisons:

Table 1. Demographic Characteristics and Temperament Distribution of Study Participants^a

| Characteristic | No. (%) | H | C | W | D | H&W | H&D | C&W | C&D | B |
|--------------------------------|------------|------|------|------|------|------|------|------|-----|------|
| Gender | | | | | | | | | | |
| Female | 85 (24.3) | 9.4 | 7.1 | 17.6 | 7.1 | 16.5 | 3.5 | 16.5 | 8.2 | 14.1 |
| Male | 265 (75.7) | 13.2 | 6.4 | 12.5 | 6.8 | 22.6 | 12.1 | 3.8 | 2.6 | 20 |
| Age (y) | | | | | | | | | | |
| 20 - 30 | 34 (9.7) | 20.6 | 11.8 | 5.9 | 17.6 | 8.8 | 5.9 | 2.9 | 8.8 | 17.6 |
| 31 - 40 | 81 (23.1) | 9.9 | 4.9 | 18.5 | 7.4 | 18.5 | 11.1 | 7.4 | 3.7 | 18.5 |
| 41 - 60 | 235 (67.2) | 11.9 | 6.4 | 13.2 | 5.1 | 23.8 | 10.2 | 7.2 | 3.4 | 18.7 |
| Level of education | | | | | | | | | | |
| Under diploma and diploma | 60 (17.1) | 13.3 | 6.6 | 18.3 | 5 | 18.4 | 10 | 6.7 | 3.3 | 18.4 |
| University degree | 290 (82.9) | 12.1 | 6.6 | 12.8 | 7.2 | 21.7 | 10 | 6.9 | 4.1 | 18.6 |
| Mizaj assessment method | | | | | | | | | | |
| MMQ | | 11.4 | 4.6 | 15.1 | 14 | 11.1 | 9.1 | 2.6 | 2.9 | 29.1 |
| SMQ | | 14 | 8.3 | 8.3 | 4.6 | 26.9 | 10.6 | 14 | 6.3 | 7.1 |
| CMA | | 12 | 4 | 14.3 | 4.9 | 18.9 | 10.8 | 4.3 | 4.3 | 26.6 |

^a Abbreviations: MMQ, Mojahedi Mizaj Questionnaire; SMQ, Salmanezhad Mizaj Questionnaire; CMA, Clinical Mizaj Assessment; H, Hot; C, Cold; D, Dry; W, Wet; B, Balance temperament.

Table 2. Pairwise Comparisons Between Three Mizaj Assessment Methods^a

| Method of Assessment and Mizaj | No. (%) | Count of Agreement (%) | Kappa Value (95% CI) |
|--------------------------------|------------------------------------|------------------------|-------------------------|
| Hotness | | | |
| MMQ vs CMA | MMQ: 112 (32); CMA: 148 (42.29) | 79 (22.57) | 0.383 (0.273 - 0.493) |
| SMQ vs CMA | SMQ: 182 (52); CMA: 148 (42.29) | 122 (34.86) | 0.512 (0.422 - 0.602) |
| MMQ vs SMQ | MMQ: 112 (32); SMQ: 182 (52) | 89 (25.43) | 0.347 (0.255 - 0.439) |
| Balance in Hot and Cold | | | |
| MMQ vs CMA | MMQ: 202 (57.71); CMA: 157 (44.86) | 114 (32.57) | 0.263 (0.153 - 0.373) |
| SMQ vs CMA | SMQ: 70 (20); CMA: 157 (44.86) | 48 (13.71) | 0.202 (0.110 - 0.294) |
| MMQ vs SMQ | MMQ: 202 (57.71); SMQ: 70 (20) | 53 (15.14) | 0.132 (0.058 - 0.206) |
| Coldness | | | |
| MMQ vs CMA | MMQ: 36 (10.29); CMA: 45 (12.86) | 23 (6.57) | 0.512 (0.368 - 0.656) |
| SMQ vs CMA | SMQ: 98 (28); CMA: 45 (12.86) | 36 (10.29) | 0.397 (0.287 - 0.507) |
| MMQ vs SMQ | MMQ: 36 (10.29); SMQ: 98 (28) | 30 (8.57) | 0.350 (0.242 - 0.458) |
| Dryness | | | |
| MMQ vs CMA | MMQ: 92 (26.29); CMA: 70 (20) | 46 (13.14) | 0.441 (0.329 - 0.553) |
| SMQ vs CMA | SMQ: 72 (20.57); CMA: 70 (20) | 36 (10.29) | 0.382 (0.262 - 0.502) |
| MMQ vs SMQ | MMQ: 92 (26.29); SMQ: 72 (20.57) | 42 (12) | 0.366 (0.252 - 0.480) |
| Balance in Dry and Wet | | | |
| MMQ vs CMA | MMQ: 158 (45.14); CMA: 151 (43.14) | 89 (25.43) | 0.241 (0.137 - 0.345) |
| SMQ vs CMA | SMQ: 105 (30); CMA: 151 (43.14) | 52 (14.86) | 0.081 (-0.023 to 0.185) |
| MMQ vs SMQ | MMQ: 158 (45.14); SMQ: 105 (30) | 61 (17.43) | 0.162 (0.060 - 0.264) |
| Wetness | | | |
| MMQ vs CMA | MMQ: 100 (28.57); CMA: 129 (36.86) | 67 (19.14) | 0.388 (0.286 - 0.490) |
| SMQ vs CMA | SMQ: 173 (49.43); CMA: 129 (36.86) | 95 (27.14) | 0.358 (0.262 - 0.454) |
| MMQ vs SMQ | MMQ: 100 (28.57); SMQ: 173 (49.43) | 74 (21.14) | 0.282 (0.188 - 0.376) |

^a Abbreviations: MMQ, Mojahedi Mizaj Questionnaire; SMQ, Salmanezhad Mizaj Questionnaire; CMA, Clinical Mizaj Assessment; CI, confidence interval.

between the CMA and the SMQ for Hotness (95% CI, 0.422 - 0.602) and between the CMA and the MMQ for Coldness (95% CI, 0.368 - 0.656).

For the CMA-SMQ comparison, the highest agreement was observed for Hotness (kappa = 0.512), whereas the

lowest agreement was observed for the Balance in Dry and Wet (kappa = 0.081).

For the CMA-MMQ comparison, the highest agreement was observed for Coldness (kappa = 0.512),

whereas the lowest agreement was observed for the Balance in Dry and Wet ($\kappa = 0.241$).

In comparisons between the two questionnaires (SMQ and MMQ), the highest agreement was observed for Dryness ($\kappa = 0.366$), whereas the lowest agreement was observed for the Balance in Hot and Cold ($\kappa = 0.132$).

5. Discussion

The present study was designed to evaluate the level of agreement between commonly used methods of Mizaj assessment in PM, including clinical judgment by a PM physician (CMA) and two standardized self-report questionnaires (MMQ and SMQ). By determining the extent to which these approaches yield comparable temperamental classifications, the findings help clarify their methodological alignment and clinical applicability.

According to the interpretation criteria proposed by Landis and Koch (1977) (13), κ values between 0.41 and 0.60 represent moderate agreement, values between 0.21 and 0.40 represent fair agreement, and values between 0.00 and 0.20 represent slight agreement. In this study, most coefficients fell within the slight to moderate ranges, reflecting heterogeneous alignment between assessment approaches across different temperament dimensions. This indicates that, although certain dimensions show partial overlap, none of the approaches are fully interchangeable. This pattern suggests that clinical and self-report assessments capture complementary but distinct aspects of the temperament construct.

When comparing CMA with the MMQ, the highest agreement was observed for the Coldness dimension ($\kappa = 0.512$; 95% CI, 0.368 - 0.656), representing moderate agreement. This suggests a moderate level of correspondence between MMQ and CMA classifications of Cold temperament, possibly because both approaches emphasize relatively observable physiological and somatic indicators. By contrast, the lowest agreement in this pair occurred for Balance in Dry and Wet ($\kappa = 0.241$), which falls within the fair agreement range. Although this level of agreement was somewhat stronger than that observed between CMA and SMQ for the same dimension, it remained limited. This relatively weak correspondence may be due to restricted item coverage in the MMQ, which primarily evaluates wetness and dryness through indices such as

obesity or leanness and skin texture (10), and may therefore fail to capture subtler clinical signs recognized by physicians during face-to-face assessments.

When comparing CMA with the SMQ, the highest concordance was observed for the Hotness dimension ($\kappa = 0.512$; 95% CI, 0.422 - 0.602), indicating moderate agreement. This finding suggests that both methods identify individuals with Hot temperament features in a relatively similar manner. One possible explanation is that manifestations of hotness, such as thermal sensation, behavioral tendencies, and other perceptible features, may be more readily recognized by both respondents and clinicians. In contrast, the weakest alignment in this pair was found for Balance in Dry and Wet ($\kappa = 0.081$; 95% CI, -0.023 to 0.185), corresponding to slight agreement. The confidence interval overlapping zero further indicates that this agreement may not be statistically meaningful. This weak correspondence suggests that questionnaire-based self-perceptions are limited in capturing the clinical cues physicians use to judge moisture balance. Possible contributors include self-report bias, uncertainty in respondents' self-perception, and a mismatch between qualitative clinical markers and questionnaire item content.

Agreement between the two questionnaires (MMQ and SMQ) was the lowest among all pairwise comparisons, ranging from $\kappa = 0.132$ to 0.366, corresponding to slight to fair agreement. The strongest alignment occurred for Dryness ($\kappa = 0.366$), whereas the weakest was found for Balance in Hot and Cold ($\kappa = 0.132$). Although both tools are grounded in similar theoretical concepts derived from PM, they appear to differ in item weighting, response scaling, and interpretive thresholds. This finding indicates that standardized questionnaires developed for Mizaj assessment should not be considered interchangeable, as they may diverge considerably in their classification outcomes. The consistently modest κ values point to both methodological and conceptual differences among the tools. Clinical evaluation incorporates multisensory and interpretive cues, including visual observation, palpation, and narrative context (14-16). In contrast, questionnaires operationalize temperament through structured self-report domains, which may improve reproducibility but can also oversimplify complex temperamental nuances.

As a result, reliance on questionnaire data alone may lead to misclassification, particularly in borderline or mixed cases. These observations support a complementary rather than competitive role for clinical and questionnaire-based assessments. In practice, questionnaires may serve as efficient screening instruments, whereas comprehensive clinical evaluation remains essential for confirmation and therapeutic decision-making. The broader implications are consistent with evidence from psychometric studies showing that even widely validated temperament-related tools, such as the Persian TCI 140, exhibit differential factor structures and internal consistencies across cultural contexts, underscoring the inherently multidimensional nature of temperament measurement (17).

Although assessment agreement was the primary focus of the present study, the findings related to Mizaj distribution and demographic patterns also offer useful contextual insight. The most frequent categories in both CMA and MMQ were Balance in active and receptive qualities, whereas the SMQ more often identified Hot and Wet temperament. Similar distributions have been reported among patients with metabolic syndrome in Qazvin, although differences in sampling strategy and health status may explain part of the divergence. Another Iranian study by Parvizi et al. (18) in Shiraz identified Wet as the dominant temperament, a difference that may be influenced by climate and dietary habits. Variations from the findings reported by Aziz et al. in India (19) may likewise reflect ecological conditions as well as differences in the studied populations (20).

With respect to age, classical PM doctrines associate youth with Hot and Wet temperament and aging with Cold and Dry temperament. Although some age-related shifts were observed in the present study, the trends were less distinct than traditional expectations. This discrepancy may be related to modern lifestyle and psychosocial factors, such as sedentary behavior, dietary modification, sleep disturbance, and mental stress (20-23). These secondary observations further illustrate the complex interaction between inherited constitution and environmental modulation in contemporary populations.

5.1. Limitations

This study has several limitations. The evaluation was conducted by a single PM specialist, reflecting routine clinical practice; although this limits estimation of interrater reliability, future multi-rater studies should address this gap. Because no independent external gold standard exists for Mizaj assessment, the findings should be interpreted as reflecting agreement between methods rather than diagnostic validity. Although incorporation bias is a concern in agreement studies, it was mitigated here because clinical assessment was completed before, and independently of, questionnaire administration. The study population consisted predominantly of male healthcare workers, which may limit generalizability. Finally, as with all kappa-based analyses, the observed coefficients may have been influenced by the prevalence and distribution of temperament categories.

5.2. Conclusions

The findings of the present study show that inter-method agreement in Mizaj assessment is limited and generally remains within the slight to moderate range. The physician's clinical judgment showed closer alignment with the Salmanezhad questionnaire for Hotness and with the Mojahedi questionnaire for Coldness, while very weak or near-zero agreement in some domains, particularly Balance in Dry and Wet, indicates that certain aspects of Mizaj remain difficult to standardize across instruments. Further refinement of self-report content, larger validation studies, and cross-cultural calibration of diagnostic criteria are needed to improve methodological coherence. Integrating multiple sources of data, including clinical observation, physiological indicators, and psychometric profiles, may provide a more faithful operationalization of the multifaceted concept of Mizaj in both research and clinical practice.

Acknowledgements

The authors would like to thank the staff of the treatment center for their cooperation and support during the data collection process. We also sincerely appreciate all participants who generously contributed their time and effort to take part in this study.

Supplementary Material

Supplementary material(s) is available [here](#) [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

AI Use Disclosure: For the purpose of Translation, the Chatgpt was used Moderate in the Abstract section.

Authors' Contribution: R. Gh. and F. P. contributed to conceptualization, methodology, validation, investigation, writing the original draft, review and editing, and visualization. F. P. contributed to data collection. R. Gh. contributed to supervision, project administration, and funding acquisition. M. S. contributed to methodology and formal data analysis.

Conflict of Interests Statement: The authors do not declare any conflicts of interests for this study.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: The study was approved by the Ethics Committee of Iran University of Medical Sciences (approval number: IR.IUMS.REC.1402.063 - 2023 - 04030).

Funding/Support: This study was funded by Iran University of Medical Sciences (IUMS), Tehran, Iran; (Grant No. 25768).

Informed Consent: Informed consent was obtained from all participants.

References

- Ikram RRR, Abd G, Mohd K, Abdullah N. An analysis of application of health informatics in traditional medicine: A review of four traditional medicine systems. *Int J Med Inform.* 2015;**84**(11):988-996. [PubMed ID: 26160148]. <https://doi.org/10.1016/j.ijmedinf.2015.05.007>.
- Mojahedi M, Alipour A, Saghebi R, Mozaffarpur SA. The relationship between Mizaj and its indices in Persian medicine. *Iran Red Crescent Med J.* 2018;**20**(5). e57820. <https://doi.org/10.5812/ircmj.57820>.
- Jabin F. A guiding tool in Unani Tibb for maintenance and preservation of health: a review study. *Afr J Tradit Complement Altern Med.* 2011;**85**(55). [PubMed ID: 22754067]. [PubMed Central ID: PMC3252723]. <https://doi.org/10.4314/ajtcam.v8i5S.7>.
- Ansari MA, Qadeer A. Mizāj (Temperament) of A'ḍā Mufrada (Simple Organs): History and Course; A Review. *Int J Creat Res Thoughts.* 2018;**6**:1173-1179. <https://doi.org/10.13140/RG.2.2.35745.25447>.
- Norouzi M, Haghdoost AA, Karimiafshar M, Setayesh M. Comparability of Traditional Persian Medicine with the New Concepts of Personal and Precision Medicine: A Qualitative Study. *J Tradit Integr Med.* 2024;**9**. <https://doi.org/10.18502/tim.v9i2.15866>.
- Nafisi VR, Ghods R, Shojaedini SV. A Novel Pulse-Taking Device for Persian Medicine Based on Convolutional Neural Networks. *J Med Signals Sens.* 2022;**12**(4):285-293. [PubMed ID: 36726423]. [PubMed Central ID: PMC9885508]. https://doi.org/10.4103/jmss.jmss_133_21.
- Nafisi V, Ghods R. Thermal image-based temperament classification by genetic algorithm and adaboost classifier. *J Med Signals Sens.* 2022;**12**(1):32. [PubMed ID: 35265463]. [PubMed Central ID: PMC8804589]. https://doi.org/10.4103/jmss.JMSS_71_20.
- Arji G, Safdari R, Rezaeizadeh H, Abbassian A, Mokhtaran M, Hossein Ayati M. A systematic literature review and classification of knowledge discovery in traditional medicine. *Comput Methods Programs Biomed.* 2019;**168**:39-57. [PubMed ID: 30392889]. <https://doi.org/10.1016/j.cmpb.2018.10.017>.
- Alizadeh M, Gorji N, Ghods R, Shirzad M, Alizadeh Vaghasloo M, Mokaberinejad R, et al. Major and Minor Criteria of Heart Mizaj (Temperament) Diagnosis from the Perspective of Persian Medicine: An Expert Panel Study. *Shiraz E-Med J.* 2025;**11**(5). <https://doi.org/10.5812/semj-150032>.
- Mojahedi M, Naseri M, Majdzadeh R, Keshavarz M, Ebadini M, Nazem E, et al. Reliability and validity assessment of Mizaj questionnaire: a novel self-report scale in Iranian traditional medicine. *Iran Red Crescent Med J.* 2014;**16**(3). e15924. [PubMed ID: 24829785]. [PubMed Central ID: PMC4005447]. <https://doi.org/10.5812/ircmj.15924>.
- Salmanezhad H, Mojahedi M, Ebadi A, Mozaffarpur SA, Alipoor A, Saghebi R, et al. Design and validation of Mizaj identification questionnaire in Persian medicine. *Iran Red Crescent Med.* 2018;**20**(In Press):9. <https://doi.org/10.5812/ircmj.66709>.
- Donner A, Eliasziw M. A goodness-of-fit approach to inference procedures for the kappa statistic: Confidence interval construction, significance-testing and sample size estimation. *Stat Med.* 1992;**11**(11):1511-1519. [PubMed ID: 1410963]. <https://doi.org/10.1002/sim.4780111109>.
- Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics.* 1977;**33**(1):159-74. [PubMed ID: 843571]. <https://doi.org/10.2307/2529310>.
- Dolatshahi P, Moeini R, Mokabberinejad R, Ahmad Dar F, Alizadeh M, Mojahedi M. A Review of Cold-Wet Mizaj and Phlegm Dominance Indices in Persian Medicine. *Shiraz E-Med J.* 2024;**25**(8). e138252. <https://doi.org/10.5812/semj-138252>.
- Spence JD. The need for clinical judgement in the application of evidence-based medicine. *BMJ Evid Based Med.* 2020;**25**(5):172-177. [PubMed ID: 31806620]. <https://doi.org/10.1136/bmjebm-2019-111300>.
- Mrcgp RJMM. Evidence and clinical judgement. *J Eval Clin Pract.* 1998;**4**(2):89-92. [PubMed ID: 9839634]. <https://doi.org/10.1111/j.1365-2753.1998.tb00072.x>.
- Hajirezaei S, Mohammadi A, Cloninger R, Cummings J, Abasi I, Soleimani M. Psychometric Properties of the Persian Version of the Revised Temperament and Character Inventory (TCI-140) in a Psychiatric Outpatient Sample in Iran. *Iran J Psychiatry Behav Sci.* 2023;**17**(4). e127391. <https://doi.org/10.5812/ijpbs-127391>.
- Hashempur MH, Parvizi MM, Molayemat M, Rezaee M, Shirazi Yeganeh B, Rampp T. ABO/Rh Blood Groups and the Temperament (Mizaj) Based on Traditional Persian Medicine Perspective: A Cross-sectional Study. *Galen Med J.* 2023;**12**:1. [PubMed ID: 39553410]. [PubMed Central ID: PMC11568426]. <https://doi.org/10.31661/gmj.v12i1.3062>.
- Aziz A, Bhat SA, Rather SA. Temperament/Mijaz of people suffering with sciatica: A descriptive research. *Galen Med J.* 2023;**12**(3):1-3. <https://doi.org/10.33545/2616454X.2023.v7.i3a.241>.

20. Afshary M, Gedaali Q, Asadi Z. Analysis of the Temperament of Bushehr Historical Houses with Emphasis on the Effects of the Environment on the temperament of the space. *J Urban Sustain Dev.* 2023;**3**:1-22. <https://doi.org/10.22034/usd.2023.702399>.
21. Mohammadi Farsani G, Naseri M, Hosseini S, Saboor-Yaraghi AA, Kamalinejad M, Mohammadi Farsani T, et al. The Evaluation of basic and neurohormonal parameters in hot or cold temperament person proposed in Iranian Traditional Medicine: an observational study. *J Contemp Med Sci.* 2020;**6**(4):176-180. <https://doi.org/10.22317/jcms.v6i4.709>.
22. Kim K, Zheng Y, Joyce BT, Jiang H, Greenland P, Jacobs DR, et al. Relative contributions of six lifestyle- and health-related exposures to epigenetic aging: the Coronary Artery Risk Development in Young Adults (CARDIA) Study. *Clin Epigenetics.* 2022;**14**(1). 85. [PubMed ID: 35799271]. [PubMed Central ID: PMC9264709]. <https://doi.org/10.1186/s13148-022-01304-9>.
23. Tong HL, Alnasser A, Alshahrani NZ, Bawaked RA, AlAhmed R, Alsukait RF, et al. The use of mobile technologies to promote physical activity and reduce sedentary behaviors in the Middle East and North Africa region: systematic review and meta-analysis. *J Med Internet Res.* 2024;**26**. e53651. [PubMed ID: 38502160]. [PubMed Central ID: PMC10988381]. <https://doi.org/10.2196/53651>.