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Original Research Article

Distribution of temperament/mizāj among patients with knee osteoarthritis: a cross-sectional study

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ABSTRACT

Background: Knee osteoarthritis (KOA) is a common degenerative joint disorder with multifactorial etiology. While established risk factors such as age, obesity, and mechanical stress are well known, constitutional factors like temperament (Mizāj) described in Unani medicine remain underexplored. Hence the present study was conducted to describe the distribution of Mizāj among patients with KOA.
Methods: A hospital-based cross-sectional study was conducted at the Regional Research Institute of Unani Medicine (RRIUM), Srinagar, from April to October 2021. A total of 60 patients aged 40-70 years with clinically and radiologically confirmed KOA (Kellgren-Lawrence grade I and II) were included. Mizāj was assessed using a structured proforma based on classical Unani parameters. Data were analyzed using SPSS version 20.0. Descriptive statistics (frequencies and percentages) were calculated, and the Chi-square test was applied, with $p<0.05$ considered statistically significant.
Results: Balghamī Mizāj was observed in 52 (86.67%) patients, followed by Damawī Mizāj in 5 (8.33%) and Ṣafrāwī Mizāj in 3 (5%). No cases of Sawdāwī Mizāj were found. The difference in the distribution of temperament was not statistically significant ($\chi^2=2.21$, df=2, $p=0.509$).
Conclusions: KOA was found to be more prevalent among patients with Balghamī Mizāj and may therefore be considered a predominantly phlegmatic disorder (Marad-i-Balghamī) or a manifestation of phlegmatic distemperament (Sūʾ-e-Mizāj Balghamī). However, in view of the lack of statistically significant association and the cross-sectional nature of the study, these findings should be interpreted with caution, and further analytical studies are warranted to substantiate this observation.

Keywords: Cross-sectional study, Knee osteoarthritis, Mizāj, Temperament, Unani medicine

INTRODUCTION

Knee osteoarthritis (KOA) is a chronic, progressive musculoskeletal disorder characterized by degeneration of articular cartilage, osteophyte formation, subchondral sclerosis, and synovial changes. Clinically, it presents with pain, tenderness, reduced range of motion, crepitus and morning stiffness lasting less than 30 minutes.[1,2] It represents one of the most common causes of disability among older adults, with reported prevalence ranging from 22% to 39% in India.[3-5] The etiology of KOA is multifactorial, involving biomechanical, metabolic, genetic, and environmental factors. Established risk factors include advancing age, female gender, obesity, occupational stress, and repetitive joint loading. Despite extensive research in these domains, the role of constitutional predisposition remains relatively underexplored.

In Unani system of medicine osteoarthritis (Waja'al-Mafāṣil) is defined as the pain occurring in the joints. When this pain affects multiple joints, such as those in the hands and feet, it is generally referred to as osteoarthritis.

However, when the pain is localized specifically in the knee joints, it is termed as knee osteoarthritis (KOA).[6]

In the Unani system of medicine, health and disease are governed by the balance of four humours viz. Dam (blood), Balgham (phlegm), Ṣafrā' (yellow bile), and Sawdā' (black bile) and their qualitative expression as Mizāj (temperament). The disease is primarily associated with elevated levels of phlegm (Balgham), which subsequently combines with yellow bile (Ṣafrā') and blood (Dam). The excessive presence and interaction of these humours are believed to result in Waja'al-Mafāṣil (osteoarthritis).[7] There is an emerging interest in the role of psychological and temperament-related factors in influencing disease progression and management. This study explored the potential associations between different temperaments, often classified through the framework of Mizāj, and knee osteoarthritis. The link between temperament and knee osteoarthritis highlights the importance of a comprehensive treatment strategy. By recognizing how individual temperaments influence pain perception, activity levels, and emotional resilience, healthcare providers can better tailor interventions to meet patients' unique needs. Such an approach may enhance the effective management of knee osteoarthritis and underscores the importance of considering temperamental factors in the holistic care of individuals with chronic conditions.

Therefore, the present study was undertaken to describe the distribution of Mizāj among patients with knee osteoarthritis.

METHODS

This hospital-based cross-sectional descriptive study was conducted at the Regional Research Institute of Unani Medicine (RRIUM), Srinagar, Kashmir, from April 2021 to October 2021. The study was carried out alongside a randomized controlled trial at the same institute during the same period. The collected data were analysed using SPSS software (version 20.0).

Study participants

A total of 60 patients aged 40-70 years with clinically and radiologically confirmed knee osteoarthritis (Kellgren and Lawrence grade I and II) were included. Participants were recruited through purposive sampling from outpatient and inpatient departments.

Inclusion criteria

Age between 40-70 years. Clinically and radiologically diagnosed KOA. Kellgren and Lawrence grade I or II

Exclusion criteria

Advanced KOA (grade III or IV), pregnant or lactating women, history of knee surgery, presence of systemic diseases (e.g., diabetes mellitus, cardiovascular disorders, renal or hepatic impairment)

Assessment of Mizāj

Temperament (Mizāj) was assessed using a structured proforma derived from classical Unani literature. Parameters included physical characteristics, behavioral traits, physiological tendencies, and environmental preferences. Based on cumulative scoring, participants were categorized into one of four temperament types: Damawī, Balghamī, Ṣafrāwī, or Sawdāwī (Table 1).

Table 1: Proforma for assessing Mizāj.[8]

Parameters	Damawī		Balghamī		Ṣafrāwī		Sawdāwī	
Complexion	Reddish/wheat brown	1	Chalky/whitish	0.75	Pale/ yellowish	0.5	Blackish	0.25
Body built	Muscular and broad	1	Fatty and broad	0.75	Hot and dry	0.5	Skeletal	0.25
Touch	Hot and soft	1	Cold and soft	0.75	Hot and dry	0.5	Cold and dry	0.25
Hair	Blackish	1	Brownish	0.75	Yellowish	0.5	Black and white	0.25
Movement	Active	1	Dull	0.75	Hyperactive	0.5	Less active	0.25
Diet most liked	Cold and dry	1	Hot and dry	0.75	Cold and moist	0.5	Hot and moist	0.25
Most suitable weather	Spring	1	Summer	0.75	Winter	0.5	Autumn	0.25
Sleep	Normal	1	Excess	0.75	Inadequate	0.5	Insomnia	0.25
Pulse	Normal rate	1	Slow	0.75	Rapid	0.5	Slow	0.25
	70-80/min		60-70/min normal volume		80-100/min normal volume		60-70/min low volume	
Emotions	Normal	1	Calm and quiet	0.75	Angry	0.5	Nervous	0.25
Total points								

Range of temperament in numbers: Damwī = 7.51-10.00, Balghamī = 5.10-7.50, Safrāwī = 2.51-5.00, Sawdāwī = 0.00-2.50.

Data analysis

Data were entered into Microsoft Excel and analysed using SPSS version 20.0. Categorical variables were expressed as frequencies and percentages. The Chi-square test was used to compare distributions between groups, with a significance level set at $p<0.05$.

Ethical considerations

The study was conducted after obtaining ethical clearance from the institutional ethics committee of RRIUM Srinagar (IEC No. RRIUM-SGR/MD-2018/CT/WR/OA/BD) and was registered under CTRI (CTRI/2021/03/032178). Informed consent was obtained from all participants.

RESULTS

A total of 60 patients with knee osteoarthritis were included in the study. The distribution of Mizāj revealed that the majority of participants were classified as Balghamī (86.67%), followed by Damawī (8.33%) and Ṣafrāwī (5%). No participant was categorized under Sawdāwī Mizāj (Table 2, Figures 1 and 2).

Table 2: Distribution of patients with respect to Mizāj among test and control groups.

Mizāj	Control		Test		Total	
	N	%	N	%	N	%
Damawī	4.00	13.33	1.00	3.33	5.00	8.33
Balghamī	25.00	83.33	27.00	90.00	52.00	86.67
Ṣafrāwī	1.00	3.33	2.00	6.67	3.00	5.00
Total	30.00	100.00	30.00	100.00	60.00	100.00

Chi-Square=2.21, Df=2, p value (Monte-Carlo significance) =0.509.

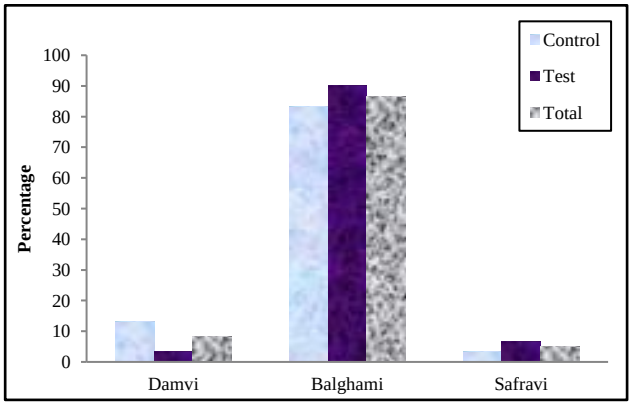

Figure 1: Distribution of patients with respect to Mizaj.

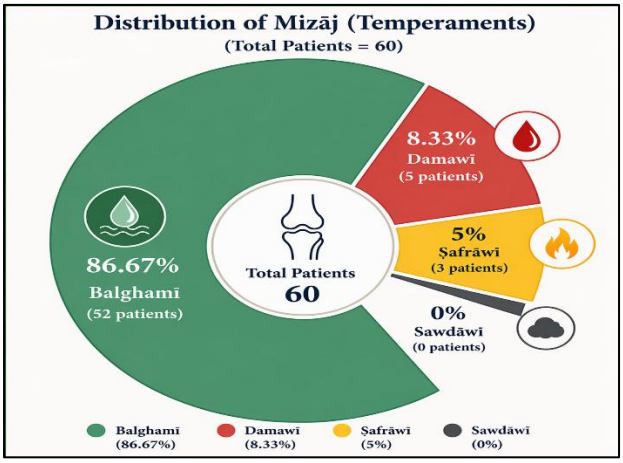

Figure 2: Distribution of temperaments.

This study revealed that patients with a phlegmatic temperament are more likely to develop knee OA, which is in accordance with the writings of Unani physicians like Ibn-e-Sinā7, Razi9, Majoosi8,10 et al. in their classical texts that Balgham (Phlegm), followed by Dam (Sanguine), and then Ṣafrā' (Bilious) are among the aetiological humours responsible for the development of knee OA.[1,7-12] However, derangement of all four humours has been shown to cause knee OA.

Since the comparison of temperament distribution between study groups showed no statistically significant difference (Chi-square=2.21, df=2, p=0.509), indicating that the observed variation may be attributable to chance (Table 2).

These findings represent the distribution pattern of Mizāj within the sampled population and should be interpreted as descriptive.

DISCUSSION

Sixty (60) diagnosed cases of knee OA were assessed for their temperament during a study conducted at RRIUM Srinagar. For statistical analysis, recorded data was entered in a spread sheet and SPSS version 20.0. Variables were expressed in terms of percentage. In our study, we found that from both the test and control groups, 86.67% were having Balghamī Mizāj, 8.33% Damawī Mizāj, and 5% Ṣafrāwī Mizāj, while no case was found with Sawdāwī Mizāj.

The present study aimed to describe the distribution of Mizāj among patients with knee osteoarthritis. A

predominance of Balghamī temperament was observed; however, this finding was not statistically significant and should be interpreted with caution.

Classical Unani literature attributes joint disorders to humoral imbalance, particularly involving Balgham. This study revealed that knee OA is associated with the temperament (Mizaj) as knee OA was seen more common in patients with a phlegmatic temperament, followed by those with sanguine and choleric temperaments. These findings can be supported in several ways. The cold nature of Balghamī Mizāj can lead to joint stiffness and discomfort, making regular exercise difficult. Reduced physical activity can result in muscle weakness, which provides less support to the joints and increases the risk of injury and osteoarthritis (OA). Additionally, the moist quality of Balghamī individuals may contribute to inflammation, worsening joint pain, and leading to cartilage breakdown over time.[6,7,11]

Individuals with a sanguine temperament often exhibit an enthusiastic disposition, which may lead to engagement in high-impact sports or activities that stress joints. Their participation increases susceptibility to injuries, which can contribute to the development of osteoarthritis (OA). Likewise, individuals with a choleric temperament may adhere to rigorous exercise regimens and participate in competitive sports, thereby increasing the likelihood of joint injuries and wear over time. Furthermore, choleric individuals may encounter heightened levels of stress, which can trigger inflammatory responses in the body, potentially exacerbating the symptoms of OA.[6,7,11] The current study revealed that knee osteoarthritis is more prevalent among patients with a phlegmatic temperament, followed by those with a sanguine or choleric temperament, and least common in individuals with a melancholic temperament. This finding aligns with the insights of eminent Unani physicians as written in classical texts, however the current study does not provide empirical evidence to validate these concepts within a modern epidemiological framework.

Thus, the results should be considered exploratory and hypothesis-generating. Future studies employing analytical designs with appropriate control groups and multivariable analysis are necessary to further investigate the relationship between Mizāj and knee osteoarthritis.

The study has certain limitations. The cross-sectional design precludes causal inference. The absence of a control group limits comparison with the general population. The small sample size and single-center setting reduce generalizability and may introduce selection bias.

Additionally, key confounding factors such as age, gender, body mass index, and occupational stress were not adjusted for. The assessment of Mizāj involves subjective elements, and inter-rater reliability was not evaluated. Exclusion of patients with common comorbidities may also limit external validity.

These limitations suggest that the findings should be interpreted cautiously and validated in larger, multicentric studies.

CONCLUSION

This study describes the distribution of Mizāj among patients with knee osteoarthritis, with a predominance of Balghamī temperament observed in the study population. However, no statistically significant difference was identified.

Given the limitations of the study design, these findings do not establish an association between Mizāj and knee osteoarthritis. Further well-designed analytical studies are required to explore this relationship within an integrative medicine framework.

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