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THE RATIO OF FEV1/FVC IN YOUNG HEALTHY ADULTS WITH REFERENCE TO DIFFERENT MIZAJ: AN OBSERVATIONAL CROSS-SECTIONAL STUDY

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Abstract: **Background: The ratio of Forced Expiratory Volume in 1 second (FEV1) to Forced Vital Capacity (FVC) is crucial in evaluating respiratory function and diagnosing pulmonary conditions. While environmental and genetic factors are well-documented, less is known about the potential influence of temperamental types, or Mizaj, on lung function. Mizaj, derived from traditional medical concepts, categorizes individuals based on physical and psychological characteristics, which may affect health outcomes, including respiratory performance. This study investigates the FEV1/FVC ratio in young adults with reference to different Mizaj.**

Objective: The aim was to investigate to what extent different ratios of FEV_1 /FVC were associated with different mizaj and determine if Mizaj influences lung function.

Methods: This observational cross-sectional study was conducted among 100 young adults categorized into four Mizaj types: Damvi, Balghami, Safravi, and Saudavi. Spirometric measurements, including FEV1 and FVC, were taken, and the FEV1/FVC ratio was calculated for each participant. Data were analyzed using one-way ANOVA to compare the FEV1/FVC ratio across Mizaj groups, with post-hoc pairwise comparisons performed for statistical significance.

Results: The study revealed significant FEV1/FVC ratio differences across the different Mizaj. The Damvi group exhibited the highest mean FEV1/FVC ratio, suggesting better lung function than other Mizaj groups. The Saudavi group showed the lowest mean FEV1/FVC ratio, indicating potentially reduced pulmonary function. Post-hoc analysis revealed significant differences between Damvi and Saudavi ($p < 0.05$), while no significant differences were observed between other Mizaj pairs.

Conclusion: The FEV1/FVC ratio differs significantly between Mizaj types, with Damvi individuals showing better lung function than Saudavi individuals. These findings suggest that the Mizaj type may influence pulmonary function, and further research is needed to explore the underlying mechanisms and their clinical implications.

Keywords: **FEV1/FVC ratio, Mizaj, Lung function, Young adults, Respiratory health, Observational study.**

1. INTRODUCTION

Unani medicine is one of the oldest forms of treatment in the world, and it originated in Greece. This system of medicine flawlessly deals with various states of health and diseases of the body. This system describes seven essential components of the body, which are called Umoor-e-tabiya namely Arkan or elements, comprising earth, water, air, and fire as different states of matter and the building blocks of everything in the universe; Mizaj (temperament); Akhlat (humors); Aza (organs); Arwaah (life, spirit or vital breath); Quwa (energy); and Afa'al (action)1. The framework of this system is based on the concept of Mizaj(temperament) and; Arwaah (life, spirit, or vital breath)

The concept of Mizaj is fundamental to traditional Unani medicine, representing an individual's inherent temperament and constitution. It is crucial for diagnosing, preventing, and treating health conditions. Unani principles, developed over centuries and influenced by ancient Greek, Persian, and Indian traditions, focus on the balance of four bodily fluids: Dam (sanguine), Balgham (phlegmatic), Safra (choleric), and Sauda (melancholic). Maintaining the right proportions of these fluids, or homeostasis, is essential for good health. If disturbed, it leads to disease. The management of any illness involves correcting the altered Mizaj, making it necessary to evaluate a patient's or organ's Mizaj before starting treatment.[1,2]

The Heart and Lungs

The heart and lungs are central to the Vital Faculty and work closely together. Thelungs act like bellows, pumping fresh, raw pneuma to the heart. This fuels the heart, which functions like a furnace, converting the raw pneuma into Vital Force and Innate Heat. These vital principles are then infused into the blood. The enriched blood is pumped throughout the body, reaching every cell, organ, and tissue via thearteries and circulatory network.

Quwat-e-Haywaniyah is those faculties that furnish vitality (Hayat) to the organs, enabling them to receive Quwat-e-Nafsaniyah (mental power) to accomplish various life activities. The organs concerned with this faculty are vital organs *(a'za' haywaniyah*).

Aly Abbas argues that "*Quwat Haywaniyah*" refers to the faculties that sustain life,with the heart being the central organ. These faculties originate in the heart, travelthrough the arteries, and extend throughout the body, providing life to all organs. Among these faculties, one important power is *"Quwat Fa'ilah*," or efficient power,which facilitates the contraction and relaxation of the heart and arteries. *Quwat Haywaniyah* is essential for maintaining the life of the organs, and this life is supported through two key processes:

1. ***Respiration*** involves inhaling air, allowing the lungs to absorb "Ruh" (soul) while exhaling carbon dioxide (CO_2) as a waste product.
2. ***Blood circulation***, driven by the heart, transports absorbed "Ruh" and "akhlat Latifah" (nutrients) to the body's cells. These nutrients are metabolized by "*QuwatTabi'yah*" to produce energy needed for various bodily functions. Carbon dioxide from nutrient oxidation is returned to the lungs via venous blood and expelled during exhalation.[3]

AL -ARWAH (pneuma /Spirits)

Al-Arwah (pneuma/spirits) is one of the body's *Umūr Tabi'iyya* (factors of existence). (pleural- *arwāḥ*) represents such constituents that the body receives from atmospheric air, without which sustenance of life cannot be imagined. [4]

Definition of Pneuma (Ruh)

Majusi and some physicians have described Ruh as a non-physical entity and held it as a vehicle of nafs.

Ibn Sina says, "The air is an element (unsur) for our body and arwah. He says further "This air is a constituent of our body and soul, In addition, it is a sort of help which constantly reaches to the soul and sustains it. He states at another palace that Ruh is produced by delicate and vaporous parts of humour in the same way as organs are formed by dense and earthen parts of humour."

According to *Galen,* "Ruh is a part of atmospheric air which entered the lungs from the air through the respiration and then into the heart."

Abu Sahl Masihi has the same opinion as Galen about Ruh. He writes: "Ruh is inhaled inside through the respiration and there it undergoes some changes and gets converted into Ruh-e-haywani (animal soul)".

Hakim Ali Gilani accepts that the production of the Ruh begins in the lungs.

S.I. Ahmad defines: "Ruh is a gaseous substance, obtained from the inspired air; it helps in all the metabolic activities of the body; it burns the *Akhlat-e-Latifah* to produce all kinds of Quwa (powers) and Hararat Gariziah (innate heat); it is the source of vitality for all the organs of the body"[5]

QUWA (FACULTIES) AND RUH

The Tibb asserts that the proper functioning of Quwa (faculties) relies on the continuous supply of Ruh. A lack of this supply halts Quwa's functions. When Ruh aids in the oxidation of Akhlat Latifah (glucose, amino acids, fatty acids, and glycerol), it generates significant energy in the form of adenosine triphosphate (ATP), which is essential for all chemical, physical, and mechanical processes in the body. This energy sustains Quwa Tabi'yah, Quwa Nafsaniyah, and Quwa Haywaniyah, ensuring that bodily faculties function as long as ATP is available.

Ibn Sina states that, according to Aristotle, the initial focus of human nature (Mabda' al-awal) is on Ruh, which leads to the production of Quwa. However, the functions of these faculties depend on the energy produced by Ruh, not Ruh itself. Some physicians mistakenly equate this energy with Ruh and fail to recognize that it originates from the lungs using inspired air, with Akhlat Latifah and Ruh together producing Quwat (energy).[6]

PULMONARY FUNCTION TESTS

Pulmonary function tests permit a precise and reproducible assessment of the functional state of the respiratory system. With the help of specific pulmonary function tests, quantification of the severity of the disease becomes easier as well as assessing its natural history and the response to therapy. Although pulmonary function tests can specifically demonstrate a lung function that has been deranged by disease, most of these tests have their strengths and weaknesses e.g. variation can be caused by age, sex, height, occupation, smoking, climatic condition, and the degree of air pollution. Forced spirometry is one of the best volume (load)assessment tests. This simple test provides a written record of slow vital capacity and/or forced vital capacity (FVC %) forced expiratory volume in 1st second (FEV1%), and peak expiratory flow rate (PEFR). Consequently, simple breath pulmonary function tests are used extensively in assessing the pattern of ventilatory impairment in restrictive and obstructive groups of pulmonary diseases.[7]

FEV1/FVC RATIO

The **FEV1/FVC ratio** also called the **modified Tiffeneau-Pinelli index**[8] is a calculated ratio used to diagnose obstructive and restrictive lung disease.[9,10] It represents the proportion of a person's vital capacity that can expire in the first second of forced expiration (FEV1) to the full, forced vital capacity (FVC).[11]The FEV1/FVC ratio was first proposed by E.A. Haensler in 1950.[12]The FEV1/FVC index should not be confused with the FEV1/VC index (Tiffeneau-Pinelli index) as they are different. However, both are intended to diagnose airway obstruction. Current recommendations for diagnosing pulmonary function include the modified Tiffeneau-Pinelli (Haensler) index.[13] It is recommended that this index be represented as a decimal fraction with two digits after the decimal point (for example, 0.70). Normal values are approximately 75%.[14]Predicted normal values can be calculated online and depend on age, sex, height, ethnicity, and the research study they are based upon.

A derived value of FEV1% is **FEV1% predicted**, defined as FEV1% of the patient divided by the average FEV1% in the population for any person of similar age, sex, and body composition.

In obstructive lung disease, the FEV1 is reduced due to an obstruction of air escaping from the lungs. Thus, the FEV1/FVC ratio will be reduced[11] More specifically, according to the National Institute for Clinical Excellence, the diagnosis of COPD is made when the FEV_1/FVC ratio is less than 0.7 or[15] the FEV_1 is less than 75% of predicted;[16]however, other

authoritative bodies have different diagnostic cutoff points.[17]The Global Initiative for Chronic Obstructive Lung Disease criteria also requires that values are given after bronchodilator medication to make the diagnosis. According to the European Respiratory Society (ERS) criteria, it is *FEV1% predicted* that defines when a patient has COPD—that is when the patient's FEV1% is less than 88% of the predicted value for men or less than 89% for women[17]

In restrictive lung disease, the FEV1 *and* FVC are equally reduced due to fibrosis or other lung pathology (not obstructive pathology). Thus, the FEV1/FVC ratio should be approximately normal or even increased due to a decrease in the magnitude of FVC compared to FEV1 (because of the decreased compliance associated with fibrosis in some pathological conditions).[11]

Accurate determination of the prevalence of Chronic obstructive pulmonary disease (COPD) is needed so that the allocation of healthcare resources may have the desired impact. Further, to determine whether plans such as smoking cessation programs or therapy are effective in decreasing COPD incidence and prevalence, reliable spirometric indices that can accurately detect the disease state and its changes are necessary.

The ratio of Forced expiratory volume in one second (FEV_1) to Forced vital capacity (FVC) has been the parameter of choice to define the presence of airflow limitation. However, its interpretation has been a matter of intense debate because its ultimate value depends not only on the degree of airflow obstruction but also on the value of the FVC, which in turn is heavily influenced by the duration of the expiratory time. With slow lung emptying, as occurs with aging and especially in individuals with airflow obstruction, FVC is sensitive to the expiratory time: the longer the expiratory time, the larger the FVC and the smaller the FEV_1/FVC.[18-24]

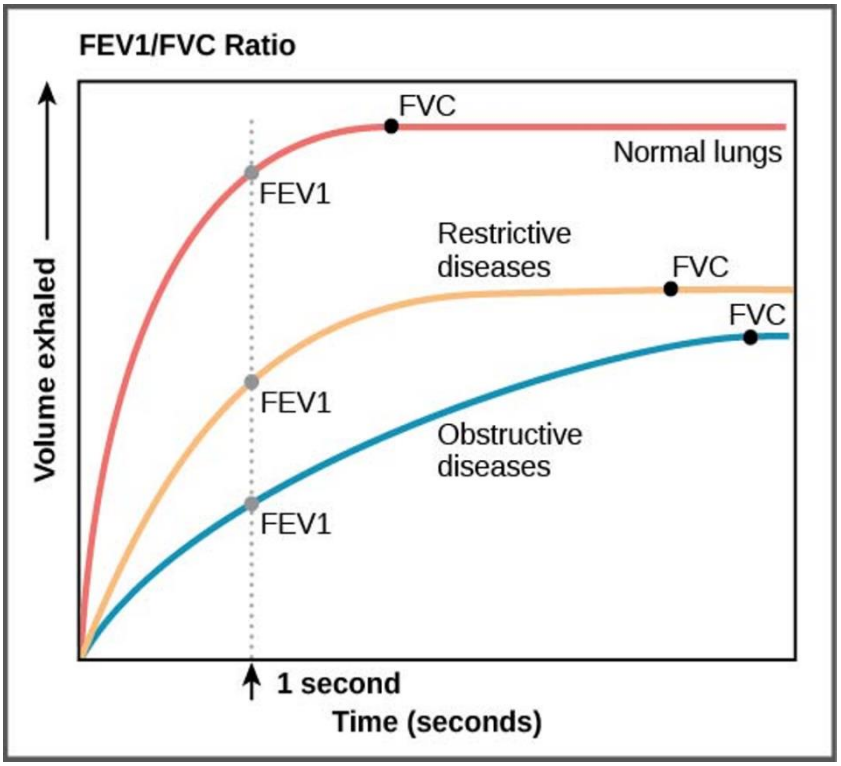


FIG 1: FEV1/FVC RATIO[25]

TABLE 1: Obstructive and Restrictive Patterns

MEASUREMENT	OBSTRUCTIVE PATTERN	RESTRICTIVE PATTERN
Forced vital capacity (FVC)	Decreased or normal	Decreased
Forced expiratory volume in 1 second (FEV1)	Decreased	Normal or increased
FEV1/FVC ratio	Decreased	Normal
Total lung capacity (TLC)	Normal or increased	Decreased

Aims and Objectives of the Study:

Aim:
To investigate the ratio of Forced Expiratory Volume in the first second (FEV1) to Forced Vital Capacity (FVC) in young adults with reference to different Mizaj (temperamental types), to explore potential variations in lung function related to this traditional classification.

Objectives:

1. To measure the FEV1/FVC ratio in young adults categorized by different Mizaj (e.g., Sanguine, Choleric, Melancholic, Phlegmatic).
2. To assess whether there are any significant differences in lung function (FEV1/FVC ratio) between individuals of different Mizaj.
3. To determine if Mizaj type influences the prevalence or severity of obstructive or restrictive lung conditions in young adults.
4. To contribute to understanding how traditional temperamental classifications may relate to respiratory health outcomes.
5. To provide insights for personalized approaches to pulmonary health based on Mizaj classification in young adults.

Need of study: In India, the increasing prevalence of pulmonary disorders due to smoking, pollution, and biomass fuel use highlights the need for reviewing pulmonary function tests. The FEV1/FVC ratio is essential for assessing lung function and diagnosing diseases. There is growing interest in how temperamental types, or Mizaj, influence health outcomes, yet empirical evidence on its relationship with pulmonary function, particularly in young adults, is limited. This study aims to reassess pulmonary function values in a normal Indian population and explore variations across different Mizaj types, enhancing our understanding of how temperament affects pulmonary health and guiding future research.

Hypothesis:

1. **Null Hypothesis (H_0):** There is no significant difference in the FEV1/FVC ratio among young adults of different Mizaj (Sanguine, Phlegmatic, Choleric, Melancholic).
2. **Alternative Hypothesis (H_1):** There is a significant difference in the FEV1/FVC ratio among young adults of different Mizaj (Sanguine, Phlegmatic, Choleric, Melancholic).

2. MATERIALS AND METHODS

❖ **Study area:** Healthy students from A &U Tibbia College Karol Bagh, NewDelhi.110005

❖ **Study Design:** Randomized Observational cross-sectional study.

❖ **Sample Size:** 100

❖ **Duration of the study:** 6 months

Inclusion Criteria:

- Healthy young adults aged 18–25 years.
- Both males and females.
- Participants who consent to the study after understanding the purpose and procedure.

Exclusion Criteria:

- Individuals with chronic respiratory conditions (e.g., asthma, COPD).
- Any abnormalities of the vertebral column and thoracic cage
- Smokers or individuals with significant exposure to environmental pollutants.
- Those with any comorbidity that may affect pulmonary function (e.g., cardiovascular diseases, neurological disorders).
- Pregnant women.

Materials and Equipment:

1. **Spirometer**
2. **Standardized Mizaj Assessment Tool**
3. **Demographic and Health Questionnaire**
4. **Statistical Software**

Methodology:

1. **Participant Recruitment and Consent:**

o Participants will be recruited and briefed about the study purpose, procedures, and potential risks. Written informed consent will be obtained from each participant before participation.

2. **Mizaj Classification:** Mizaj Questionnaire design

The questionnaire utilized in this study aimed to assess Mizaj (body type), namely Damvi (Sanguineous), Safravi (Bilious), Balghami (Phlegmatic), and Saudavi (Melancholic). The basis for this questionnaire was Ajnas e Ashra, which encompasses ten classical parameters. These parameters include. 1. Malmas (Tactus): Sense of touch 2. Lahm-was-Shahm (Flesh and fats): Physical attributes related to flesh and fats 3. Ashaar (Hair rate of growth, color, distribution): Characteristics of hair, such as growth rate, color, and distribution 4. Laun-e-Badan (Body Complexion): Overall complexion of the body 5. Hayyat-e-Aza (Physique): General physique and body structure 6. Kaifiat-e-Infaal (Responsiveness of organs): How organs respond to external stimuli 7. Afal-E-Aza (State of functions): Functioning state of bodily organs 8. Fuzlaat-E-Badan (Body waste): Disposal of body waste9. Nom-Wa-Yaqza (Sleep and wakefulness): Patterns of sleep and wakefulness 10. Infalat-E-Nafsaniya (Psychic Reactions): Psychological reactions and responses.

These parameters were derived from Unani classical literature and formulated by the Central Council for Research in Unani Medicine (CCRUM), under the Ministry of AYUSH, New Delhi. Participants responded to the questionnaire based on their characteristics, and scores were computed. The Mizaj that obtained the highest score was considered the dominant Mizaj, influencing their anatomical, physiological, and psychological aspects [26].

3. **Pulmonary Function Testing (Spirometry):** Each participant will undergo spirometry testing to measure Forced Vital Capacity (FVC), Forced Expiratory Volume in the first second (FEV1), and the FEV1/FVC ratio. The test will follow standard protocols to ensure maximum effort during forced exhalation, with at least three attempts made to ensure accuracy and reproducibility. The highest values from these attempts will be recorded.

4. **Data Collection:** Demographics, Mizaj classification, and spirometry results will be recorded.

5. **Statistical Software**: Descriptive statistics (mean, standard deviation) will be used to summarize the data. The FEV1/FVC ratios will be compared between different Mizaj groups using one-way ANOVA, depending on the data distribution, with a p-value of <0.05 considered statistically significant. Post-hoc pairwise comparisons will be performed, reporting pairwise mean differences with 95% confidence intervals. Additionally, a two-sample t-test will be used where appropriate for further comparisons.

Ethical Considerations:

Ethical approval and informed consent were obtained, maintaining confidentiality for all participant data.

3. STATISTICAL ANALYSIS AND RESULTS

TABLE: 2 DISTRIBUTION OF SUBJECTS ACCORDING TO THE MIZAJ INDIFFERENT GENDER

MIZAJ	MALE	FEMALE	TOTAL
DAMVI	17(53.12%)	15(46.88%)	32
BALGHAMI	10(45.45%)	12(54.55%)	22
SAFRAVI	16 (53.33%)	14(46.67%)	30
SAUDAVI	6 (47%)	10 (53%)	16
TOTAL	49(49%)	51(51%)	100

TABLE 3: DISTRIBUTION OF MEAN ± STANDARD DEVIATION OF MEAN FEV1/FVC RATIO ACCORDING TO DIFFERENT MIZAJ

MIZAJ	PEFR (MEAN±S.D)
DAMVI	97.19 ± 4.35
BALGHAMI	92.77 ± 7.56
SAFRAVI	96.01 ± 6.94
SAUDAVI	91.46 ± 6.64

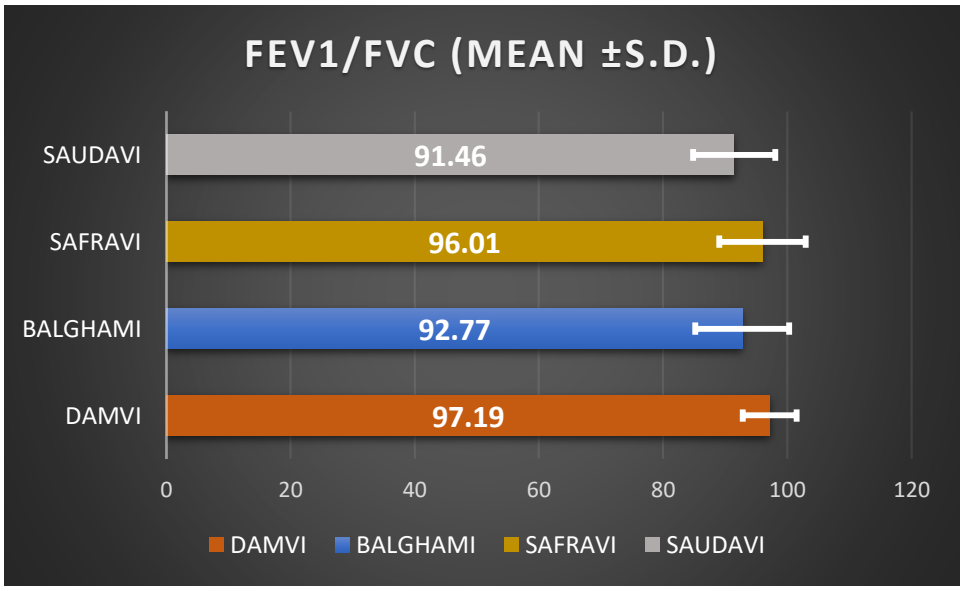
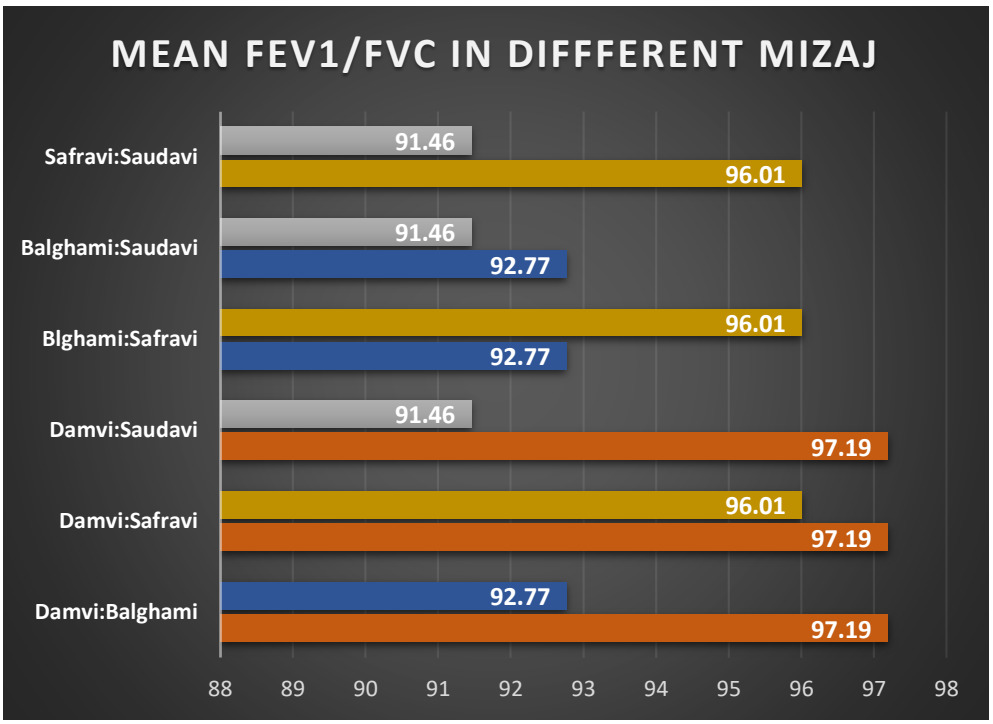


TABLE 4: ONE-WAY ANOVA TEST IN DIFFERENT MIZAJ

Sources	Sum of squares	Degree offreedom	Meansquare	F-stat	p-value
Betweengroups	435.7069	3	145.2356	3.5975	**.016698**
Withingroups	3512.297	87	40.3712		
Total	3948.0039	90			

TABLE 5: POST-HOC PAIRWISE COMPARISONS WITH TURKEY HSD AND Q TEST FOR STATISTICAL SIGNIFICANCE(P<0.05) BETWEEN DIFFERENT MIZAJ MEANS

COMPARISON	MEANVALUE	HSD.05=5.1716 HSD.01=6.3292	TURKEYHSD Q.05= 3.7044 Q.01= 4.5336	SIGNIFICANT p-value <0.05
Damvi: Balghami	MDam= 97.19 MBal = 92.77	4.42	3.17	.12052
Damvi: Safravi	MDam =97.19 MSaf =96.01	1.18	0.84	.93300
Damvi: Saudavi	MDam=97.19 MSaud=91.46	5.73	**4.11**	**.02370**
Balghami:Safravi	MBal =92.77 MSaf=96.01	3.25	2.33	.35945
Balghami:Saudavi	MBal=92.77 MSaud=91.46	1.31	0.94	.91042
Safravi: Saudavi	MSafra=96.01 MSauda=91.46	4.56	3.25	.10405



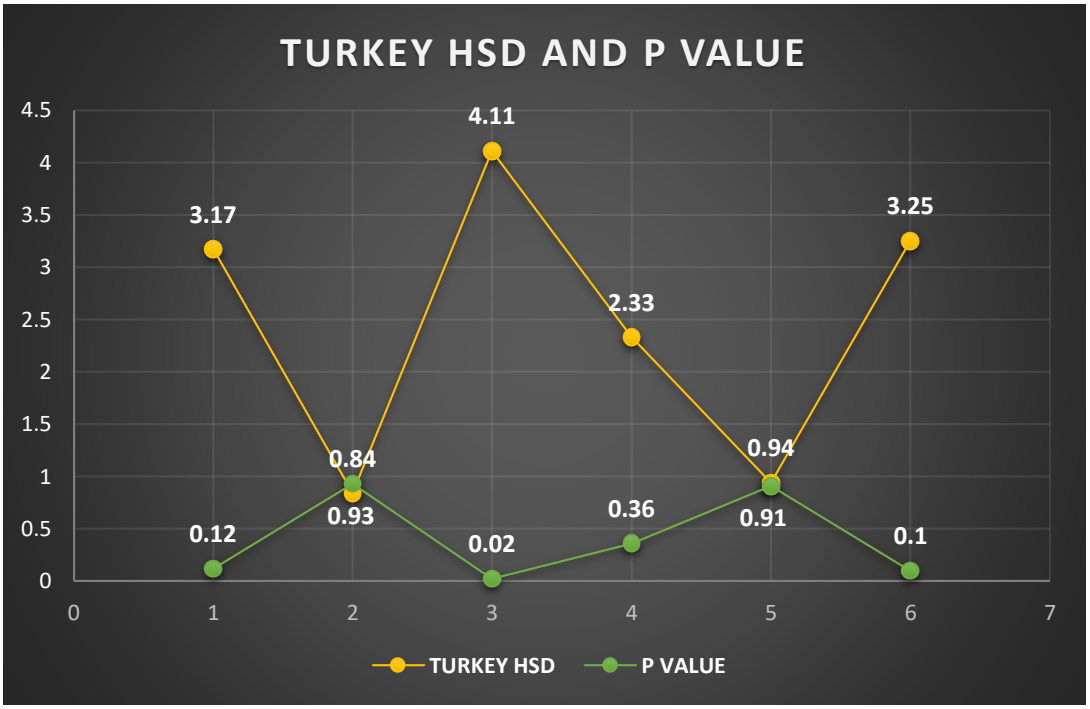


TABLE 6: PAIRWISE MEAN DIFFERENCE WITH 95% CONFIDENTIAL INTERVAL

COMPARISON	$MEAN_1 - MEAN_2$	95 % CI
DAMVI: BALGHAMI	4.42	(2.71, 6.13)
DAMVI: SAFRAVI	1.18	(-0.43, 2.79)
DAMVI: SAUDAVI	5.73	(4.18, 7.28)
BALGHAMI: SAFRAVI	-3.24	(-5.26, -1.22)
BALGHAMI: SAUDAVI	1.31	(-0.65, 2.97)
SAFRAVI: SAUDAVI	4.55	(2.67, 6.43)

Comparison of Mean Differences (from greatest to least):

Damvi - Saudavi: Mean difference = 5.73 (95% CI: 4.18, 7.28)

Safravi - Saudavi: Mean difference = 4.55 (95% CI: 2.67, 6.43)

Damvi - Balghami: Mean difference = 4.42 (95% CI: 2.71, 6.13)

Damvi - Safravi: Mean difference = 1.18 (95% CI: -0.43, 2.79)

Balghami - Saudavi: Mean difference = 1.31 (95% CI: -0.65, 2.97)

Balghami - Safravi: Mean difference = -3.24 (95% CI: -5.26, -1.22)

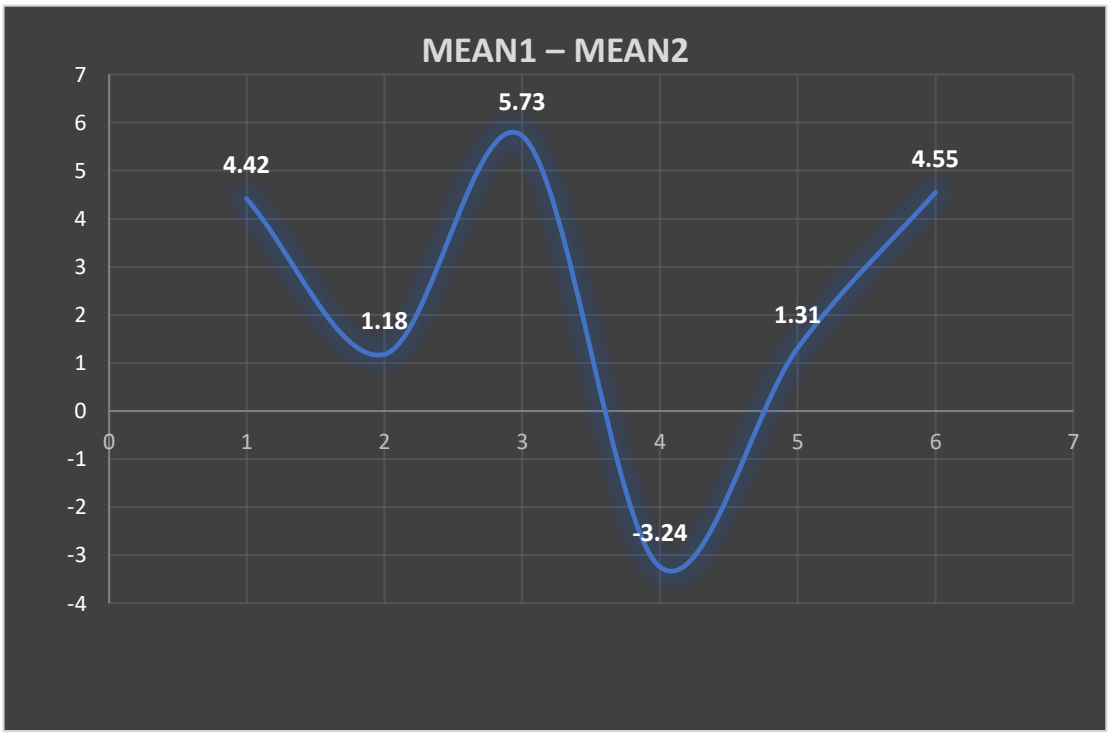


TABLE 7: DISTRIBUTION OF MEAN AND STANDARD DEVIATION OF MEAN FEV1/FVC VALUE IN HOT (DAMVI & SAFRAVI) AND COLD (BALGHAMI & SAUDAVI)MIZAJ

MIZAJ	MEAN VALUE (MEAN ±S.D.)
HOT(Damvi & Safravi)	96.58 ± 5.81
COLD(Balghami & Saudavi)	92.49 ± 11.10

TABLE 8: STATISTICAL SIGNIFICANCE BETWEEN DIFFERENT MIZAJ A/C TO HOTAND COLD TWO-SAMPLE t-TEST CALCULATION

PARAMETER	VALUE
POOLED STANDARD DEVIATION (s_p)	8.86
DIFFERENCE IN MEANS ($\bar{x}_1 - \bar{x}_2$)	4.09
CALCULATED t-STATISTIC (t)	2.21
DEGREE OF FREEDOM (df)	90
CRITICAL t- VALUE ($\alpha = 0.05$, two-tailed)	1.99
RESULT	P -value <0.05 REJECT H_0 (SIGNIFICANT DIFFERENCE)

4. DISCUSSION

The **Unani system** connects each Mizaj type to certain physical traits and health conditions, which can impact functions such as lung capacity and FEV1/FVC_ratio. In the context of Unani medicine, Hot Mizaj (Safravi and Damvi) are often associated with higher energy levels, increased metabolic activity, and better lung function. On the other hand, Cold temperaments (Balghami and Saudavi) are linkedto slower metabolic processes, susceptibility to respiratory congestion, and generally weaker lung function. The Unani system of medicine, which is rooted inthe teachings of Hippocrates and later refined by Persian scholars, particularly IbnSina, revolves around the four humors (phlegm, blood, yellow bile, and black bile),which correspond to the body's balance of Hot, Wet, Cold, and Dry qualities. The temperaments (also known as Akhlat in Unani) are classified into four types basedon these qualities, and each temperament is believed to have an impact on physicaland mental health, including respiratory function.[27]

The significant difference in FEV1/FVC ratio values across the four Mizaj groups suggests that Mizaj may impact pulmonary function, specifically regarding airflow. The highest mean FEV1/FVC ratios were observed in the **Damvi** group (97.19 ± 4.35), followed by **Safravi** (96.01 ± 6.94), while the **Balghami** (92.77 ± 7.56) and **Saudavi** (91.46 ± 6.64) groups had lower FEV1/FVC ratios values. These differences could reflect varying temperamental types' influence on respiratory health, possibly linked to differences in lifestyle, physical constitution, or other physiological factors inherent to each Mizaj.

Table 4 A one-way ANOVA test assessed the differences in the FEV1/FVC ratio values across the four Mizaj groups. The ANOVA results showed a significant difference in FEV1/FVC ratios between the groups, with an F-statistic of 3.5975 and a p-value of 0.016698. Since the p-value (0.016698) is less than the standard significance level of 0.05, we reject the null hypothesis, which states that there is no difference in FEV1/FVC ratio values among the Mizaj.

Table 5 Turkey HSD and Q tests reveal a statistically significant difference in FEV1/FVC ratios between the **Damvi** and **Saudavi** Mizaj types, with the **Damvi** group demonstrating higher FEV1/FVC ratios. However, no significant differences were found between the other Mizaj groups. These results suggest that the Mizaj type may influence respiratory function, but only certain Mizaj pairs show a statistically significant difference in FEV1/FVC ratios.

Table 6 shows the pairwise mean differences for PEFR between different Mizaj types, along with their corresponding 95% confidence intervals (CI): **Damvi - Saudavi** shows the most significant difference in lung function with the largest mean difference of 5.73. **Balghami - Safravi** shows the smallest mean difference (-3.24), with Safravi having better lung function. **Damvi-Safravi**, **Balghami-Saudavi**, and **Damvi-Balghami** show moderate differences, with **Damvi-Safravi** and **Balghami-Saudavi** lacking statistical significance.

Table 7 shows that the *HOT* category (Damvi & Safravi) has a higher mean value (96.58) with moderate variability (SD = 5.81). In contrast, the *COLD* category (Balghami & Saudavi) has a lower mean (92.49) and greater variability (SD = 11.10), suggesting a more diverse range of data.

Table 8 calculated t-statistic of 2.21 exceeds the critical t-value of 1.99, with a p-value less than 0.05, indicating that there is a statistically significant difference between the means of the *HOT* (Damvi & Safravi) and *COLD* (Balghami & Saudavi) groups. Since the t-statistic exceeds the critical value and the p-value is less than 0.05, we reject the null hypothesis, confirming a significant difference between the *HOT* and *COLD* groups.

5. CONCLUSION

The present study provides compelling evidence of significant differences in FEV1/FVC ratios among different Mizaj types (Damvi, Balghami, Safravi, and Saudavi), suggesting that Mizaj may play a role in influencing pulmonary function, particularly concerning airflow dynamics. The Damvi group exhibited the highest mean FEV1/FVC ratio (97.19 ± 4.35), followed by Safravi (96.01 ± 6.94), while the Balghami (92.77 ± 7.56) and Saudavi (91.46 ± 6.64) groups demonstrated lower mean values. Results from the one-way Anova confirmed a statistically significant difference in FEV1/FVC ratios across the Mizaj groups, with a particularly notable distinction between the Damvi and Saudavi groups. However, no significant differences were observed between other Mizaj pairs.

The analysis of data showed that the HOT category (Damvi & Safravi) exhibited higher mean values compared to the COLD category (Balghami & Saudavi). The t-test results further confirmed a significant difference between the HOT and COLD groups, rejecting the null hypothesis and confirming a significant difference between the HOT and COLD groups. These results suggest that Mizaj, particularly the distinction between HOT and COLD types, may notably influence respiratory health. The Damvi group, in particular, demonstrated superior pulmonary function, as evidenced by higher FEV1/FVC ratio values.

These findings suggest a potential link between Mizaj and pulmonary function, warranting further research to explore the physiological and environmental factors contributing to these differences. Future studies could also investigate how Mizaj-related differences in respiratory function might inform personalized healthcare or preventive measures for respiratory conditions.

LIMITATIONS:

- The study's cross-sectional nature limits the ability to infer causality.
- The potential for bias in Mizaj classification based on subjective assessments.
- Environmental and lifestyle factors (such as diet and physical activity) may influence pulmonary function but may not be fully controlled in the study.

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CONFLICT OF INTEREST

There are no conflicts of interest to declare. No financial, personal, or professional benefits were received in connection with the preparation of this research paper.

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