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The effect of Temperament (Mizaj) Based on Persian Medicine on Thermal comfort of aging in sanatoriums in Mazandaran province

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Abstract

Introduction: The process of aging is a gradual decrease in the function of the body's systems, including the heart and blood vessels, respiration, urinary-genital system, endocrine glands, and the body's immune system. This study aimed to assess the effect of Temperament based on Persian medicine on the thermal comfort of aging in sanatoriums in Mazandaran province in Iran.

Methods: This cross-sectional study was conducted at Rasht Azad University from June 2022 to December 2023. In the field section, the living space (sanatoriums) of older people who are under actual conditions (without interfering with the temperature conditions) in the mild and humid plain climate of Iran was investigated. Ninety-six aging adults above 65 years old were included. Sex, age, temperament (Mizaj) based on Persian medicine, and thermal comfort in four seasons were assessed.

Results: Ninety-five participants were included, and 54 (54.5%) were aging females. The distribution of Mizaj regarding sex was similar (P=0.647), and most of the participants, 49 (51.6%), had a cold temperament. There was a significant relationship between Temperament and thermal comfort (P<0.01). There was a significant relationship between gender and thermal comfort (P<0.01).

Conclusion: The results showed that the Temperament and gender of aging adults can play a central role in determining the amount of coverage of people and their thermal comfort. More long-term studies are needed to investigate more precisely the effect of Temperament on people's thermal sensations.

Keywords: Temperament, Mizaj, thermal comfort.

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Introduction

The process of aging is a gradual decrease in the function of the body's systems, including the heart and blood vessels, respiration, urinary-genital system, endocrine glands, and the body's immune system [1-3]. Aging turns a healthy adult into a weak person with a decrease in various physiological capacities and increased susceptibility to many diseases and death. Aging has become a significant global phenomenon due to the increase in the world's elderly population. Studies have estimated that aging will reach 15% of the people in Iran by 2030. There will also be an increasing demand for sanatoriums, hospital beds, healthcare workers, and experts in aging medicine [2, 3].

According to Iranian medicine sources, temperament is characterized as a moderate quality produced by the interaction of quadruple features (fire, air, water, and soil) possessing unique dual qualities [4-6]. The diagnosis of temperament is crucial in diagnosing health and diseases in Iranian medicine. Temperament is one of the most essential topics in the foundations of Iranian medicine, which exists in all world phenomena, including living things, objects, seasons, foods, and climates. It also causes perceptual, emotional, and behavioral differences in people. It can directly affect the comfort of people [7-8]. These four qualities are warmth, coldness, dryness, and wetness. What is meant by warmth or coldness is not only tangible warmth and coldness. Warmth coldness is a

spectrum of current or effective quality, and dryness and dryness is a spectrum of passive or reactive quality. The more the movement and, consequently, the heat of an entity, the more effective and practical it is towards the environment or whatever it faces. In the same way, the more quality there is in the inventory, the more passive and effective it is [8].

Thermal comfort is a crucial factor in determining the amount of user satisfaction and consumed energy within a building. Thermal comfort is a condition in which the comfort of the thermal environment is provided for humans [9-11]. In Iran, the thermal comfort range has permanently been appointed based on foreign data. This matter results in disharmony between the pre-design estimated cooling and heating load and the actual loads after construction. Whereas if the thermal comfort range gets determined based on the users' active role and the introduction of the opportunity for them to adapt themselves to the environment thermally, a more precise estimation of the environmental thermal status may be achieved in the very early stages of the design process. Therefore, the question that arises is how Iranians adapt themselves to the surrounding thermal environment, which factors affect the thermal conception of their surroundings, and how these factors result in the occupants' adaptation to the space they are occupying[12-15].

Thermal comfort studies can be discussed from different perspectives. Thermal adaptation is the gradual process of adapting to conditions and responding to thermal stimuli, which is classified into three categories: physical, physiological, and psychological adaptation. Therefore, thermal comfort is not only influenced by climatic factors, but other variables affect it. In spaces where a person is present for a long time, thermal adaptation may be determined according to other aspects of the area. It is necessary to decide what other variables affect thermal perception and comfort in addition to weather conditions[16]. The essential point is that a part of a person's thermal adaptation is possible with the possibility of behavioral adaptation and changes in physical characteristics. Identifying these factors can help to choose the right ideas in the design process to create the opportunity for compatible behaviors. More importantly, a predictive model will be available that can determine the thermal perception of each person based on physical and environmental components and take steps to provide comfortable conditions [12-16].

In various studies, the behavioral adaptation of people under the influence of different components has been stated. Some cases include climatic details, including temperature, wind speed and direction, humidity, radiation intensity, ambient carbon dioxide level, context-related components, psychological, physiological, and social components, and spatial characteristics that also affect the perception of thermal comfort [17-19].

The comfort of the older adults admitted to the sanitarium is subjective and influenced by environmental factors and personal differences. Elderly individuals might feel different and hotter or more remarkable in the same environment but could adapt to it and afford their comfort with lower costs. The results of this paper help to understand why people have different thermal perceptions under the same environment and may lead to identifying the essential nonenvironmental factors that impact the perceived feeling of health, well-being, and educational performance. Therefore, it influences decision-making during the design and maintenance of sanatorium buildings. This study aimed to assess the effect of Temperament (Mizaj) based on Persian medicine on the thermal comfort of aging in sanatoriums in Mazandaran province in Iran.

Methods

This cross-sectional study was conducted at Rasht Azad University from June 2022 to December 2023. In the field section, the living space (sanatoriums) of older people who are under actual conditions (without interfering with the temperature conditions) in the mild and humid plain climate of Iran was investigated. Sanatoriums chosen from Ramsar and Chalus city from Mazandaran province, Iran.

Ninety-six aging adults above 65 years old were included. We excluded all cases with severe underlying diseases such as diabetics, heart diseases, kidney diseases, etc. Sex, age, temperament (Mizaj) based on Persian medicine, and thermal comfort in four seasons were assessed. In addition to the thermal responses and the measurement of internal and external physical conditions (with the help of the required tools), individual information of each respondent about determining temperament and thermal perception was collected.

To measure thermal opinions, the questionnaire was prepared based on the existing standards, which have the following main parts. The first part includes general information about people and estimation of coverage and activity of people. Other parts were set to estimate the thermal sensation, thermal preference, thermal expectation, and thermal behaviors of the users, respectively. The purpose of this questionnaire is to obtain information about their thermal opinions, their expectations and experiences from the space, and their perception of their thermal behaviors. A seven-point scale was used to predict thermal sensation and expectation. In

this scale: =-3 is cold, =-2 is cool, =-1 is relatively cool, =0 is neutral temperature, =+1 is relatively warm, =+2 is lukewarm, and +3 is hot. A 5-point scale was used to evaluate thermal satisfaction. Acceptability was directly questioned. These questions were repeated to evaluate humidity and wind flow. On the other hand, questions about the duration of people's lives in the desired climate were raised and divided into three categories: under one year, between one to three years, and over three years. Nativeness, place of birth, and place of residence were also questioned.

In this research, the data needed to determine people's temperament were collected with the help of a standard questionnaire (Mojahedi Mizaj questionnaire) and a traditional medicine expert. Subjects were classified into four groups: warm temperament, cold temperament, and balanced temperament [5]. The temperament questionnaire was distributed to older people only once, and it took about 20 minutes to fill.

Statistical analysis

Data were analyzed by SPSS-26 software. Descriptive statistics such as frequency, percent, mean, and standard deviation were used to present data. ANOVA, independent t-test, Mann-Weithney test, and Chi-2 were used for assessing differences between levels of variables. A P-value less than 0.05 was considered for statistical significance.

Results

Ninety-five participants were included, and 54 (54.5%) were aging females. Table 1 shows the relationship between sex and Mizaj. The distribution of Mizaj regarding sex was similar (P=0.647), and most of the participants, 49 (51.6%), were Cold and wet temperament. Most of the participants, 78 (78.8%) were native originality.

Table 1: The relationship between sex and temperament

Items		Sex		Total	P-value
		Female	Male		
Temperament (Mizaj)	Warmness and dryness	1 (1.9%)	4 (4.2%)	3 (7.3%)	0.647
	Warmness and wetness	6 (11.1%)	10(10.5%)	4 (9.8%)	
	Coldness and dryness	18 (33.3%)	32 (33.7%)	14 (34.1%)	
	Coldness and wetness	29 (53.7%)	49 (51.6%)	20 (48.8%)	

The mean thermal comfort score in the warmness temperament groups was higher than the coldness temperament groups in older adults (P<0.001).

The mean thermal comfort score in the summer season was higher than other seasons in the coldness temperament groups (P<0.01). Also, the mean thermal comfort score in the summer and fall seasons was higher than in other seasons in the warmness temperament groups (P<0.01) (Table 2).

The mean thermal comfort score in men was higher than in women (P<0.01).

Table 2: The mean of thermal comfort in seasons and temperament of participants

temperament		spring	summer	fall	winter	P-value
Warmness and dryness	Mean	3.75	3.75	4.25	3.50	0.001
	N	4	4	4	4	
	SD	0.50	0.50	0.50	0.57	
Warmness and wetness	Mean	3.80	4.20	3.90	3.30	0.001
	N	10	10	10	10	
	SD	0.42	0.78	0.31	0.48	
Coldness and dryness	Mean	2.75	3.00	2.77	2.71	0.001
	N	32	32	31	32	
	SD	0.67	0.71	0.66	0.63	
Coldness and wetness	Mean	2.87	3.06	2.77	2.70	0.001
	N	47	47	45	47	
	SD	0.74	1.00	0.82	0.68	
P-value		0.001	0.001	0.001	0.001	

The mean thermal expectancy score in the warmness temperament groups was higher than the coldness temperament groups in older adults (P<0.001). There was no difference in the mean thermal expectancy score during the seasons (P>0.05) (Table 3).

Table 3: The mean of expectation thermal in seasons and Mizaj of participants

Mizaj		spring	summer	fall	winter	P-value
Warmness and dryness	Mean	4.25	4.25	4.25	4.25	0.998
	N	4	4	4	4	
	SD	0.95	0.95	0.95	0.95	
Warmness and wetness	Mean	3.50	3.50	3.50	3.40	0.989
	N	10	10	10	10	
	SD	0.52	0.52	0.52	0.51	
Coldness and dryness	Mean	3.18	3.18	3.12	3.06	0.665
	N	32	32	31	32	
	SD	0.64	0.64	0.67	0.66	
Coldness and wetness	Mean	3.25	3.27	3.28	3.19	0.589
	N	47	47	45	47	
	SD	0.67	0.68	0.69	0.64	
P-value		0.021	0.024	0.018	0.008	

Tables 4 to 7 show a significant relationship between thermal comfort and temperament in older people (P=0.001). Older adults with a warm temperament had more thermal comfort than the cold temperament group (Table 4-7).

Table 4: The relationship between thermal comfort and temperament in spring

Items		Thermal comfort				P-value
		comfort	Less comfort	No comfort	Bad comfort	
Temperament (Mizaj)	Warmness and dryness	3 (50.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)	0.001
	Warmness and wetness	8 (80.0%)	2 (20.0%)	0 (0.0%)	0 (0.0%)	
	Coldness and dryness	4 (12.5%)	16 (50.0%)	12 (37.5%)	0 (0.0%)	
	Coldness and wetness	10 (21.3%)	21 (44.7%)	16 (34.0%)	0 (0.0%)	

Table 5: The relationship between thermal comfort and temperament in summer

Items		Thermal comfort					P-value
		Very comfort	comfort	Less comfort	No comfort	Bad comfort	
Temperament (Mizaj)	Warmness and dryness	0 (0.0%)	3 (75.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)	0.001
	Warmness and wetness	4 (40.0%)	4 (40.0%)	2 (20.0%)	0 (0.0%)	0 (0.0%)	
	Coldness and dryness	0 (0.0%)	8 (25.0%)	16 (50.0%)	8 (25.0%)	0 (0.0%)	
	Coldness and wetness	4 (8.5%)	11 (23.4%)	18 (38.3%)	12 (25.5%)	2 (4.3%)	

Table 6: The relationship between thermal comfort and temperament in summer

Items		Thermal comfort					P-value
		Very comfort	comfort	Less comfort	No comfort	Bad comfort	
Temperament (Mizaj)	Warmness and dryness	1 (25.0%)	3 (75.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.001
	Warmness and wetness	0 (0.0%)	9 (90.0%)	1 (10.0%)	0 (0.0%)	0 (0.0%)	
	Coldness and dryness	0 (0.0%)	4 (12.9%)	16 (51.6%)	811 (35.5%)	0 (0.0%)	
	Coldness and wetness	0 (0.0%)	9 (20.0%)	19 (42.2%)	15 (33.3%)	2 (4.4%)	

Table 7: The relationship between thermal comfort and temperament in winter

Items		Thermal comfort				P-value
		comfort	Less comfort	No comfort	Bad comfort	
Temperament (Mizaj)	Warmness and dryness	2 (50.0%)	2 (50.0%)	0 (0.0%)	0 (0.0%)	0.001
	Warmness and wetness	3 (30.0%)	7 (70.0%)	0 (0.0%)	0 (0.0%)	
	Coldness and dryness	3 (9.4%)	17 (53.1%)	12 (37.5%)	0 (0.0%)	
	Coldness and wetness	5 (10.6%)	24 (51.1%)	17 (36.2%)	1 (2.1%)	

Discussion

To perform a spectrum of approval of thermal comfort for a group of people, as many people as possible must be satisfied. Personal factors such as Temperament or Mizaj are the most observable when examining thermal comfort. Also, the results showed that the thermal expectation directly influences the temperament of older people.

These factors and environmental variables correspond to the main ones examined in the various thermal comfort studies since they represent the basis of the process of the human body with the physical environment to sense thermal circumstances [18-20]. A systematic research (2022) showed that the behavior and adaptability of the occupants have given way to age, gender, window/door use, acclimatization, and clothing insulation, which also influence thermal comfort [18]. In the current study, the results showed that gender can affect thermal comfort [18]. Studies showed that personal factors such as age and gender occur more frequently and were utilized as contextual factors of the research when concluding thermal perception [19]. Zhang F. et al. showed that gender shows significant main and interaction effects on thermal sensation. The female gender perceived the same thermal environment as significantly colder than their male counterparts, and thermal sensitivity was also systematically higher in women [20]. Teli D. et al. revealed that youths are more sensitive to higher temperatures than adults with comfortable temperatures, and the study showed that children have a distinct thermal perception and that it is essential to adjust the representatives to present the thermal sensation sufficiently [21].

Thermal comfort is a mental condition that expresses satisfaction with the thermal environment. The term mental conditions emphasizes the importance of the role of individual differences and the thermal preferences of people [22, 23]. Therefore, the existence of individual differences is essential in human and thermal environment studies. In the traditional sciences of Iran, people have different temperaments based on their differences, and the temperament of each person is a set of physical and mental characteristics of each person that can be diagnosed based on the examination of some symptoms and individual factors. Each person's temperament is an aspect of their personality that affects their behavior. Studies showed that most young people under 30 have warm temperaments, and with age, their temperaments change, and in middle age, most people have cold temperaments.

Studies showed that most young people under 30 have warm temperaments, and with age, their temperaments change, and in middle age, most people have cold temperaments [24]. The results of the current study confirmed that most aging adults have cold temperaments. To the best of our knowledge, the present study is the first

research on the effect of Mizaj on thermal comfort in aging people.

The results of the current study showed that the mean thermal comfort score in the summer season was higher than in other seasons in the cold temperament groups. Also, the mean thermal comfort score in the summer and fall seasons was higher than in different seasons in the warmness temperament groups.

Conclusion

The results showed that people's temperament and gender of aging adults can play a central role in determining the amount of coverage of people and their thermal comfort. Older people with a warm temperament were less affected by the outside air temperature in choosing their clothing than other more senior people with a cold temperament, meaning they are less sensitive to changes in the outside temperature. The results showed that the temperament of older people directly influenced the thermal expectation. More long-term studies are needed to investigate more precisely the effect of temperament on people's thermal sensations.

Highlights

What Is Already Known?

The thermal comfort is subjective and influenced by environmental factors and personal differences.

What Does This Study Add?

The temperament and gender of older adults affect the amount of coverage of people and thermal comfort.

Authors' Contributions

Concept and subject: Bashir Razi Kazemi, Marzieh Kazemzadeh, Elham Parsa; Data gathering: Bashir Razi Kazemi, Marzieh Kazemzadeh, Elham Parsa; Preparing manuscript: Bashir Razi Kazemi, Marzieh Kazemzadeh, Elham Parsa; Approval the final proof: Bashir Razi Kazemi, Marzieh Kazemzadeh, Elham Parsa.

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None.

Conflicts of Interest Disclosures

We declare there was no conflict of interest.

Consent For Publication

We declare consent for publication.

Ethics approval

Department of Architecture, Rasht Branch, Islamic Azad University confirmed the proposal of this study.

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