



Original Article

Associations Between General Health, Self-Esteem, and Academic Stress Among Medical Students: A Multicenter Cross-sectional Study in Iran

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Abstract

Background: It is important to monitor the general health of medical students, as they are future healthcare professionals who will interact with large populations. This study was conducted to examine the association between self-esteem, academic stress, and general health among medical students.

Methods: This descriptive cross-sectional multicenter study was conducted from October 2024 to December 2024. A total of 170 medical students from three medical universities in southern Iran were recruited via convenience sampling. Data were collected using a demographic information form, the Goldberg General Health Questionnaire (GHQ), Rosenberg Self-Esteem Scale (RSES), Generalizability Analysis (GA), and Gadzella's Student-Life Stress Inventory (SLSI). Data were analyzed using SPSS version 23, which involved the use of descriptive statistics, ANOVA, chi-square tests, and multiple linear regression.

Results: The mean age of participants was 24.9 ± 1.64 years. The majority were female (64.7%), single (83.3%), dormitory residents (79.1%), and externs (37.6%). The mean and standard deviation scores for general health, self-esteem, and academic stress were 22.7 ± 13.9 , -4.8 ± 4.0 , and 128.8 ± 19.4 , respectively. Among the participants, 24.9% were at risk of mental health disorders, 80.9% had low self-esteem, and 81.6% reported moderate levels of academic stress. General health was significantly positively correlated with self-esteem ($r=0.53$, $P=0.02$) and negatively correlated with academic stress ($r=-0.28$, $P=0.001$). In addition, there was an inverse relationship between self-esteem and academic stress ($r=-0.29$, $P=0.01$). Academic stress, self-esteem, gender, and academic level were significant predictors of general health, accounting for 37% of the variance in general health scores.

Conclusion: The prevalence of low self-esteem and moderate academic stress among medical students underscores the urgent need for targeted interventions. Since both self-esteem and academic stress are modifiable factors, it is recommended that educational administrators and health policymakers implement structured mental health support programs, stress management workshops, and resilience-building programs to improve students' well-being. Future studies should explore the longitudinal impacts and evaluate the effectiveness of such interventions.

Keywords: General health, Self-esteem, Academic stress, Student, Medical schools



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Introduction

Academic education is widely recognized as an inherently stressful period, with significant implications for

students' overall health and well-being (1,2). During this time, students encounter a range of environmental and psychological stressors, including academic performance



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pressure, increased workloads, peer competition, and complex social dynamics (1,3). Research consistently indicates that medical students experience significantly greater stressors and challenges compared to their peers in other academic disciplines. These include psychological pressures associated with clinical environments, direct exposure to patient illnesses and distress, prolonged durations of study, and uncertainty regarding future career prospects. Collectively, these factors heighten their susceptibility to general health issues (1,4). This vulnerability is underscored by Khazir et al, who reported that 54.4% of medical students exhibit suboptimal general health (4), emphasizing the critical need to monitor and support their well-being, particularly given their future roles as healthcare providers and key actors in the public health system (5).

General health is influenced by multiple determinants, among which self-esteem plays a particularly influential role (6). Initially conceptualized by Rosenberg in 1965, self-esteem refers to an individual's overall evaluation of their self-worth, which is generally characterized by a positive self-perception (7). It profoundly affects cognitive processes, shaping perceptions, emotions, aspirations, values, and goals and serves as a fundamental determinant of behavior. Higher self-esteem has been associated with increased self-efficacy, academic achievement, motivation for success, confidence, elevated aspirations, and a greater propensity for health-promoting behaviors (8,9). Additionally, individuals with higher self-esteem are more likely to adopt healthy lifestyle practices and exhibit reduced engagement in risky behaviors (10). Previous research on student populations has consistently demonstrated significant correlations between self-esteem and various aspects of general health, including anxiety, insomnia, and somatic symptoms (6,11,12).

Academic stress, particularly when prolonged or intense, represents another critical factor influencing self-esteem (13,14). It is typically experienced as a psychological response to anticipated academic failure or even the mere possibility of underperformance (15). It arises when educational demands exceed an individual's coping capacities (14). Among medical students, persistent stressors include insufficient rest, an overwhelming volume of learning material, and rigorous examinations (16). If left unaddressed, academic stress can result in severe psychological and physiological consequences, potentially contributing to maladaptive coping strategies such as the use of substances such as alcohol, medications, and illicit drugs (17).

Considering the critical role played by medical students in shaping the future of the healthcare system and their direct impact on the scientific development of society (5), it is essential to assess their general health state and identify the key influencing factors. Moreover, to the best of our knowledge, no prior study has examined the interrelationships among self-esteem, academic stress, and general health within the same population. Thus,

this study sought to explore the relationships between self-esteem, academic stress, and general health among medical students.

Methods

This descriptive cross-sectional multicenter study was conducted between October 2024 and December 2024. A total of 170 medical students across three academic levels participated in the present study: students, externs, and interns. These individuals were practicing in three medical schools located in the south of Iran, selected through convenience sampling.

Medical students were eligible to participate in the study if they met the following criteria: (a) at least one year had passed since high school graduation, (b) willingness to participate, (c) completion of all required questionnaires, and (d) provision of informed consent. Students were excluded if they expressed unwillingness to continue cooperation with the study for any reason.

Sample Size

The sample size was first calculated based on a formula derived from Karimi and colleagues' study (17), with a Type I error rate of 0.05 and statistical power of 90%, coming to 120. To further improve statistical reliability, the final sample size was increased to 200 participants. Of these, 170 participants returned completed questionnaires, yielding a response rate of 85%.

$$n = \left(\frac{z_{1-\frac{\alpha}{2}} + z_{1-\beta}}{0.5 \ln \left(\frac{1+r}{1-r} \right)} \right)^2 + 3$$

Data Collection Instruments

The questionnaire used in this research consisted of four parts:

Demographic Characteristics

The first section of the questionnaire comprised 11 questions focusing on the demographic characteristics of the respondents. The questions included age, gender, marital status, parental employment status, educational level, residential status, previous semester grade point average (GPA), interest in the field of study, family income, parental education level, and substance use.

General Health Questionnaire

General health was measured using the Goldberg and Hillier General Health Questionnaire (GHQ-28), which consisted of 28 items rated on a four-point Likert scale (0 to 3) containing 4 domains: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression, with seven items per domain. Total scores range from 0 to 84, where lower scores indicate better general health (18). For this study, an overall score of 23 was used as the cut-off

point. Specifically, for general health assessment, scores of 23 or below suggested good general health, whereas scores of 24 or above indicated potential psychological distress. Similarly, a threshold score of 6 was applied to each sub-domain to classify risk levels. Taghavi et al verified the reliability of the GHQ-28 in student populations using test-retest, split-half, and Cronbach's alpha methods, resulting in reliability coefficients of 0.73, 0.92, and 0.90, respectively (19).

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale was used to assess self-esteem, which consists of 10 items: five positively worded items (items 1-5) and five negatively worded items (items 6-10). Each item is scored +1 for positive responses and -1 for negative responses. The total score ranges from -10 (indicating the highest level of self-esteem) to -10 (indicating the lowest level of self-esteem). The reliability of this instrument was confirmed in a study by Rajabi et al, which reported a Cronbach's alpha coefficient of 0.84 (20).

Gadzella's Student-Life Stress Inventory

Academic stress was assessed using Gadzella's Student-Life Stress Inventory (SLSI), a 51-item questionnaire classified into nine categories based on Morris's theoretical model of stress. This inventory assesses five types of stressors: frustrations, conflicts, pressures, changes, and self-imposed stress, as well as four types of responses to these stressors: physiological, emotional, behavioral, and cognitive appraisal. Each item is rated on a five-point Likert scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = always, and 5 = often/very often. Scores for each subscale were summed to compute composite scores, with higher scores reflecting higher levels of academic stress and reactivity. The total score ranges from 51 to 255, and stress severity is categorized as: mild (<102), moderate (103-153), and severe (>154). The reliability of the inventory was established in the study by Dong et al (21), reporting a Cronbach's alpha coefficient of 0.80.

Data Analysis

SAS version 25 was used for data analysis, which included both descriptive statistics (mean, standard deviation, frequency, and percentage) and inferential statistics (Pearson's correlation coefficient, ANOVA, chi-square tests, and multiple linear regression). Statistical significance was set at $P < 0.05$. Normality of distribution of data was confirmed through the Kolmogorov-Smirnov test.

Results

The study population consisted of 173 medical students, with a mean age of 24.9 ± 1.64 years, and a mean GPA of 16.9 ± 1.9 . The majority were female (64.7%), single (83.8%), and residing in university dormitories (79.1%). As for the academic status, externs formed the largest cohort (37.6%). Table 1 summarizes the demographic

characteristics of the participants.

The results showed that students had a mean self-esteem score of -4.8 ± 4.09 , with 80.9% of participants classified as having low self-esteem. Regarding academic stress, the mean score was 128.8 ± 19.4 , with the majority of students (81.6%) experiencing moderate levels of stress. The mean general health score was 22.7 ± 13.9 . Notably, 24.9% of respondents were classified as being at risk for psychological disorders. These results are presented in Table 2.

Table 1. Demographic Characteristics of Study Participants (N = 173)

Variable	Terms	Frequency (n)	Percent
Gender	Female	112	64.7
	Male	61	35.3
Marital status	Single	145	83.8
	Married	28	16.2
Place of residence	Dormitory	107	79.1
	Non-Dormitory	66	20.9
Residency status	Native	48	27.6
	Non-Native	125	72.4
Level of education	Preclinical Student	47	27.2
	Extern	65	37.6
	Intern	61	35.3
Economic status	Good	30	17.3
	Moderate	134	77.5
	Poor	9	5.2
Interest in study field	Yes	156	90.2
	No	17	9.8

Table 2. Distribution of Self-Esteem, Academic Stress, and General Health Scores Among Study Participants

Variable	Category	Frequency (n)	Percent	Mean $\pm$ SD
Self-Esteem	Low self-esteem	140	80.9	-4.8 ± 4.09
	High self-esteem	33	19.1	
Academic stress	Mild	13	7.5	128.8 ± 19.4
	Moderate	141	81.6	
	Severe	19	10.9	
Physical symptoms	Severe impairment	40	23.1	5.1 ± 2.9
	Moderate impairment	97	56.1	
	Normal	36	20.8	
Anxiety	Severe	53	30.6	7.1 ± 3.9
	Moderate	69	39.9	
	Normal	51	29.5	
Social functioning	Severe impairment	44	25.4	6.3 ± 4.1
	Moderate impairment	108	62.4	
	Normal	21	12.1	
Depression	Severe	25	14.5	3.8 ± 3.1
	Moderate	36	20.8	
	Normal	112	64.7	
General health	At Risk	43	24.9	22.7 ± 13.9
	Normal	130	75.1	

Note. SD: Standard deviation.

Statistical analyses using ANOVA and chi-square tests revealed several significant associations among the study variables. Self-esteem exhibited statistically significant relationships with both gender and interest in the field of study ($P=0.02$). Academic stress levels varied significantly across different academic stages ($P=0.002$). Furthermore, general mental health scores demonstrated significant associations with both gender ($P=0.02$) and academic level ($P=0.001$), as detailed in Table 3.

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Correlation analysis identified several significant relationships among the key study variables. Age was negatively correlated with both academic stress ($r=-0.22$,

$P=0.04$) and general health scores ($r=-0.16$, $P=0.03$). Academic performance, as measured by GPA, exhibited a positive correlation with general health ($r=0.18$, $P=0.1$). Self-esteem revealed a significant negative correlation with academic stress ($r=-0.29$, $P=0.01$) while maintaining a positive association with general health ($r=0.53$, $P=0.01$). Furthermore, academic stress was negatively correlated with general health ($r=-0.28$, $P=0.001$). These correlational findings are presented in Table 4.

The results of the multiple linear regression analysis indicated that academic stress, self-esteem, level of education, and gender were significant predictors of general health and its various dimensions. Collectively, the variables included in the model accounted for 37% of the variance in general health outcomes (Table 5).

Discussion

This study aimed to examine the relationship between general health, self-esteem, and academic stress among medical students in southern Iran. The findings indicated a mean general health score of 22.713.9, with 24.9% of

Table 3. Distribution of Self-Esteem, Academic Stress, and General Health Scores by Demographic Characteristics

Variable	Group	Self-Esteem			Academic Stress			P Value	General Health		
		High Self-Esteem	Low Self-Esteem	P Value	Mild	Moderate	Severe		At Risk	Normal	P Value
Gender	Female	16 (14.3)	96 (85.7)	0.02	12 (10.9)	91 (81.6)	5 (4.5)	0.1	17 (15.1)	95 (84.9)	0.02
	Male	17 (27.9)	44 (72.1)		15 (24.5)	41 (67.4)	4 (6.5)		4 (6.5)	57 (93.5)	
Marital status	Single	29 (19.9)	116 (80.1)	0.3	18 (12.4)	116 (80.1)	11 (7.5)	0.4	15 (10.3)	130 (89.7)	0.1
	Married	9 (32.2)	19 (67.8)		7 (25.7)	19 (67.8)	1 (3.5)		4 (14.2)	24 (85.8)	
Place of residence	Dormitory	20 (18.7)	87 (81.3)	0.5	23 (21.4)	71 (66.5)	13 (12.1)	0.07	21 (19.6)	86 (80.2)	0.05
	Non-Dormitory	13 (19.7)	53 (80.3)		8 (12.2)	53 (80.9)	5 (6.9)		14 (21.2)	52 (78.1)	
Residency status	Native	11 (18.3)	49 (81.7)	0.4	10 (16.8)	49 (81.6)	1 (1.6)	0.1	9 (15.1)	51 (84.9)	0.5
	Non-Native	22 (19.5)	91 (81.5)		13 (11.5)	82 (72.6)	8 (9.7)		12 (10.6)	101 (89.4)	
Educational level	Preclinical Student	7 (14.9)	40 (85.1)	0.6	9 (19.2)	34 (72.3)	4 (8.5)	0.002	2 (4.2)	45 (95.8)	0.001
	Extern	13 (20.1)	52 (79.1)		20 (30.3)	43 (66.4)	2 (3.3)		9 (13.8)	56 (86.2)	
	Intern	13 (21.3)	48 (78.7)		13 (21.3)	39 (63.4)	9 (14.7)		12 (19.6)	(80.4)	
Interest in field of study	Yes	13 (78.8)	33 (21.2)	0.02	18 (11.1)	139 (86.3)	4 (2.6)	0.1	16 (10.3)	140 (89.7)	0.09
	No	15 (88.2)	2 (11.8)		2 (11.7)	12 (70.7)	3 (17.6)		5 (29.4)	12 (70.6)	

Table 4. Correlation Analysis of Age, GPA, Self-Esteem, Academic Stress, and General Health

Variable		Age	GPA	Self-Esteem	Academic Stress	General Health
Age	Pearson correlation	1	-0.099	-0.092	-0.22	-0.16
	Sig. (2-tailed)	—	0.19	0.22	0.04	0.03
GPA	Pearson correlation	-0.099	1	-0.1	0.13	0.180
	Sig. (2-tailed)	0.19	—	0.17	0.07	0.01
Self-esteem	Pearson correlation	-0.092	-0.100	1	-0.290	0.530
	Sig. (2-tailed)	0.22	0.17	—	0.01	0.02
Academic stress	Pearson correlation	-0.220	0.130	-0.290	1	-0.28
	Sig. (2-tailed)	0.04	0.07	0.01	—	$P<0.001$
General health	Pearson correlation	-0.160	0.180	0.530	-0.28	1
	Sig. (2-tailed)	0.03	0.01	0.02	$P<0.001$	—

Note. GPA: Grade point average.

Table 5. Multiple Linear Regression Analysis Examining the Relationship Between Predictor Variables and General Health

Variable	B	SE	Beta	t	P Value (Sig.)
Constant	62.06	18.1	—	3.42	0.001
Academic stress	0.13	0.04	0.26	3.10	0.002
Self-esteem	1.06	0.17	0.43	6.03	0.001
Age	0.57	0.58	0.09	0.98	0.30
Gender	3.71	1.58	0.17	2.30	0.02
Marital status	-0.48	1.82	-0.01	-0.26	0.79
Dormitory residence	-2.90	1.87	-0.14	-1.50	0.12
GPA	-1.22	0.71	-0.12	-1.70	0.12
Interest in field of study	-2.30	2.70	-0.07	-0.87	0.08
Level of education	-2.40	0.97	-0.19	-2.40	0.01

Note. SE: Standard error; GPA: Grade average point; R = 0.61; R-square = 0.37, f = 6.7, P < 0.001.

participants found to be at risk for mental health disorders. Remarkably, a statistically significant relationship was observed between general health and gender, indicating that female students were more vulnerable to mental health disorders than their male counterparts. This finding underscores the increased vulnerability rate among female students and calls for the need for targeted interventions to support this subgroup. The increased susceptibility of female students may be attributed to multiple factors, including greater familial dependency, higher emotional sensitivity, different patterns of social interaction, and the existing cultural differences between men and women in Iranian society.

The results of the present study comply with previous research, which has indicated similar general health outcomes among students in medical and midwifery faculties. Particularly, mean general health scores of 22.85 (SD = 11.22), 21.27 (SD = 9.47), and 23.42 (SD = 22.09) were reported in midwifery students in Rasht, medical students in Kermanshah, and medical students in other regions, respectively. In addition, the findings of Namazi et al (22), Tofighi et al (23), Heravi-Karimooi et al (24), Kawyannejad et al (5), and Toozandehjani et al (25) support present findings, consistently demonstrating that male students tend to perform better in terms of general health outcomes compared to their female counterparts. In a similar vein, Aghaei et al (26) revealed that 35% of nursing students were at risk for mental health disorders, with female students exhibiting a higher prevalence. Although this finding aligns with the present study regarding gender differences, the variation in the reported prevalence rates may be explained by the difference in the target populations and research context. Notably, Aghaei and colleagues' study was conducted during the COVID-19 crisis, which undoubtedly aggravated mental health challenges among students.

A comparison with other studies further reveals considerable variation in the reported prevalence of mental health disorders among students (27). Mehrabian et al highlighted that 19.5% of students were at risk, while

Khazir et al reported a considerably higher rate of 54.4% (4). Such discrepancies could be due to differences in academic disciplines, educational levels, socioeconomic backgrounds, or access to university welfare services. In contrast to the outcomes of the present study, studies by Khazir et al (4) and Namazizadegan et al (28) reported no significant association between general health and gender, which further highlights the potential role of the contextual and demographic factors.

Another important finding of the present study was the correlation between general health and academic levels where participants in the preclinical (student) phase revealed better general health than those in the advanced clinical stages. Although few studies directly examined this relationship, evidence suggests that preclinical students experience lower levels of academic stress, have reduced workloads in clinical areas, are exempt from night shifts and hospital duties, and report lower rates of academic burnout in preclinical learners compared to interns and externs (29).

Furthermore, self-esteem was also found to be significantly low among students in the current study. A significant correlation was also observed between self-esteem and both gender and interests in academic programs. These findings are supported by Azizi et al (30), who also indicated low self-esteem among nursing students. However, some studies, including those by Askari et al (9), Maleki Jamasbi et al (31), Moradi et al (13), and Jirel et al (32) have reported high self-esteem levels among students, which are contrary to the finding of the present study. Additionally, moderate levels of self-esteem were reported in studies carried out by Karimi et al (17) in Serinkan et al (33) in Turkey, and Belsiyal (34) among Indian postgraduate nursing students. These inconsistencies can be explained by differences in participants' educational backgrounds, sample sizes, self-esteem measurement tools, and cultural contexts.

Supporting the present study's finding that male students exhibit higher self-esteem levels than female students, Arsandaux et al (35) demonstrated that male students consistently reported greater self-esteem. Their analysis suggested that these gender differences were associated with distinct influencing factors: parental support and childhood economic status were stronger predictors of self-esteem among female students, whereas sports participation and satisfaction with social life during adolescence were more influential among male students. Similarly, Asgari et al (9), in their study on 537 medical students, confirmed significant associations between self-esteem, gender, and interest in academic programs. Enthusiasm for one's chosen field of study appears to enhance academic motivation, whereas a lack of interest may contribute to academic disengagement. Additionally, factors such as future career prospects, field of study selection, and aspirations for postgraduate education play crucial roles in students' ability to adapt to academic challenges. However, several previous studies (2,13,31)

have reported no significant correlations between self-esteem and these variables, potentially due to differences in sample size and self-esteem measurement instruments.

Furthermore, the present study identified moderate levels of academic stress among students, with a significant statistical correlation between academic stress and educational level. These findings are consistent with those reported by Jirel et al (32), Pinki and Kaushik (15), and Karimi et al (17), who similarly documented moderate academic stress levels among medical students. This moderate stress level may be attributed to several factors, including concerns over assignment deadlines, excessive academic workload limiting personal time, perceived instructor bias, suboptimal educational planning and course selection processes, inconsistencies in teaching styles among different instructors, dissatisfaction with faculty evaluation methods, and inadequate responsiveness of administrative bodies to student needs. Furthermore, the transition into university life is often accompanied by substantial changes in social relationships, expectations, and role requirements, all of which may exacerbate stress and anxiety levels.

Consistent with our findings, academic stress levels were significantly higher among interns and externs compared to preclinical students. This disparity likely stems from the reduced clinical responsibilities and associated stressors among preclinical students, who primarily engage in observational learning without direct patient care responsibilities. The upward trend in stress levels reflects the progressive nature of medical education, wherein clinical responsibilities and associated pressures increase with students' academic advancement.

Further analysis demonstrated that academic stress, self-esteem, gender, and educational level were significant predictors of general health, collectively accounting for 37% of the variance in students' overall health outcomes. A positive correlation was observed between general health and self-esteem, whereas an inverse relationship was identified between general health and academic stress. These findings align with those of Malekpour and Banihashemian (6), who found a direct association between general health and self-esteem. Similarly, Namvaran Germi (12) reported that self-esteem effectively predicted health outcomes among seminary students.

In exploring these relationships, it is important to recognize that self-esteem reflects an individual's overall self-evaluation of their abilities, characteristics, and competencies, which fundamentally shapes their sense of self-worth and validation. Individuals with higher self-esteem typically exhibit greater assertiveness in social interactions and enhanced resilience to anxiety and stress, both critical components of general health. Supporting our findings, Sabet et al demonstrated that elevated levels of stress were significantly associated with poorer general health outcomes, with stress and lifestyle factors collectively explaining 54% of the variance in students' overall health status. Furthermore, in a conceptual review,

Shankar and Park (36) highlighted the substantial impact of stress on students' physical, psychological, and cognitive well-being, as well as their academic performance.

Our investigation also revealed a significant inverse relationship between self-esteem and academic stress, indicating that students with higher self-esteem tend to experience lower levels of academic stress. This inverse correlation has been consistently documented in previous research, including studies by Karimi et al (17), Bagherzadeh et al (37), and Rajabi et al (38). High self-esteem appears to serve as a psychological buffer, fostering motivation and resilience while mitigating the adverse effects of academic stress. Conversely, low self-esteem can contribute to reduced motivation and heightened academic stress. Individuals with high self-esteem generally exhibit greater perseverance in the face of academic challenges, which may enhance their academic performance while reducing stress levels (17).

Conclusion

The findings of this study suggest that 24.9% of surveyed students exhibited potential indicators of impaired general health. Overall, students exhibited low levels of self-esteem and moderate levels of academic stress. Moreover, a statistically significant positive relationship was observed between general health and self-esteem, while an inverse relationship was found between general health and academic stress. Furthermore, a significant negative correlation was found between self-esteem and academic stress. Notably, academic stress, self-esteem, gender, and educational level emerged as significant predictors of general health.

Shaping students' academic self-esteem and stress proactively will improve their overall well-being. Therefore, it is recommended that health policymakers and educational administrators devise tailored strategies specifically focused on these psychological factors. The two primary strengths of this study are its large sample size and the use of accurate and reliable measurement tools. However, a number of limitations should be noted. First, the study's cross-sectional design precludes the ability to establish causal relationships. In addition, the exclusive focus on medical students, to the exclusion of students from other fields of study, limits the external validity and generalizability of the results. To more effectively establish causative links between the examined factors, future studies should include a broader scope of constituents alongside employing a longitudinal framework.

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Competing Interests

The authors declare no competing interests.

Data Availability Statement

The data supporting the findings of this study could be obtained from the corresponding author upon reasonable request.

Ethical Approval

Written informed consent was obtained from all the participants to take part in the study. This research adhered to the ethical principles of the revised Declaration of Helsinki, which serves as a guide to the medical researchers who conduct research on human subjects. The subjects were assured of their anonymity and the confidentiality of their information. Moreover, ethical approval was provided by the Institutional Research Ethics Committee of Fasa University of Medical Sciences, Fasa, Iran (Ethical Code: IR.FUMS.REC.1403.082).

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