Research Square

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Relationship between Dimensions of Perfectionism and Self-Compassion with Health-Promoting Behaviors in Medical Students

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Abstract

Background

Health-promoting behaviors are key determinants of health and play an essential role in the prevention of chronic diseases. This study aimed to investigate the relationship between dimensions of perfectionism and self-compassion with health-promoting behaviors in medical students.

Methods

This descriptive-correlational study was conducted on 286 medical students at Kermanshah University of Medical Sciences in 2024, who were selected through simple random sampling. Data were collected using the Health-Promoting Behaviors Scale, the Frost Multidimensional Perfectionism Scale (FMPS), and the Self-Compassion Scale (Short Form). Data were analyzed using Pearson correlation coefficients and multiple linear regression in SPSS-22.

Results

Results indicated a significant negative relationship between total perfectionism and health-promoting behaviors ($r = -0.26$, $P < 0.001$), and a significant positive relationship between total self-compassion and these behaviors ($r = 0.38$, $P < 0.001$). The unhealthy dimensions of perfectionism (concern over mistakes, doubt about actions, parental expectations, and parental criticism) were all negatively correlated with health behaviors. Additionally, the positive dimensions of self-compassion (self-kindness, common humanity, and mindfulness) showed positive correlations with these behaviors. The regression model containing the two predictor variables explained 27% of the variance in health-promoting behaviors ($R^2 = 0.27$).

Conclusions

Given the predictive role of self-compassion and perfectionism in health-promoting behaviors, designing educational interventions aimed at enhancing self-compassion and modifying unhealthy perfectionism can be considered an effective strategy for psychological empowerment, prevention of academic burnout, and promotion of health among medical students.

Background

Health is one of the most fundamental human needs and the cornerstone of sustainable development in societies. In recent decades, the perspective on health has shifted from a purely disease-oriented approach to a holistic, health-promotion-based paradigm. The World Health Organization defines health as a state of complete physical, mental, and social well-being and emphasizes the active role of

individuals in maintaining and enhancing it [1]. In this regard, health-promoting behaviors are defined as self-initiated and self-directed actions undertaken by individuals to increase their level of health, self-actualization, and quality of life [2].

The importance of these behaviors becomes evident when we recognize that approximately 53% of mortality causes in modern societies are associated with lifestyle and unhealthy behaviors [3]. Behaviors such as proper nutrition, regular physical activity, stress management, health responsibility, and establishing supportive social relationships not only prevent chronic diseases like diabetes, cardiovascular diseases, and cancer but also directly impact quality of life, productivity, and life expectancy [4, 5].

Despite this importance, numerous studies have shown that adherence to health-promoting behaviors is not at an optimal level across various populations, particularly among students. Medical students, in particular, due to academic pressures, distance from family, clinical stressors, and career competition, are at high risk of burnout and neglect of self-care [6, 7]. For instance, a study by Dargahi et al. (2022) demonstrated that over 80% of medical sciences students were at moderate to low levels of health-promoting behaviors [8]. This issue underscores the necessity of investigating psychological factors influencing these behaviors.

Among psychological variables, two constructs—self-compassion and perfectionism—have garnered attention as potential predictors of health behaviors. Self-compassion, defined by Kristin Neff (2003) as openness to one's own suffering, accompanied by kindness, a sense of common humanity, and mindfulness [9], is associated with psychological adaptability and well-being [10]. Recent studies have shown that self-compassion, contrary to common belief, does not lead to self-indulgence but rather enhances motivation for healthy living, health self-efficacy, and adherence to treatment regimens [11, 12].

In contrast, perfectionism, as a multidimensional construct, involves striving for flawlessness and setting extremely high standards for performance [13]. Research has generally divided perfectionism into two types: adaptive (healthy) perfectionism, characterized by flexible effort and high personal standards, and maladaptive (unhealthy) perfectionism, associated with excessive concern over mistakes, doubt about actions, and self-criticism [14]. Evidence suggests that maladaptive perfectionism, through chronic anxiety, rumination, and depletion of self-regulatory resources, prevents individuals from adopting a healthy lifestyle [15, 16].

Given the importance of medical students' health as future assets of the healthcare system and the lack of a comprehensive study examining the simultaneous role of these two variables in this population, the present study was conducted to determine the relationship between dimensions of perfectionism and self-compassion with health-promoting behaviors among students at Kermanshah University of Medical Sciences. The main hypotheses were: (1) there is a significant negative relationship between perfectionism and health-promoting behaviors; (2) there is a significant positive relationship between

self-compassion and health-promoting behaviors; and (3) self-compassion and perfectionism can predict health-promoting behaviors.

Methods

Study Design and Population

This study was a descriptive-correlational research. The statistical population included all medical students studying at Kermanshah University of Medical Sciences during the 2024 academic year. Based on Cohen's table with a 95% confidence level and a 5% margin of error, the sample size was estimated at 322 individuals. After excluding incomplete questionnaires, data from 286 students were ultimately analyzed. Simple random sampling was employed.

Research Instruments

1. Health-Promoting Behaviors Scale (HPLP)

This 29-item scale measures health behaviors in four main domains: nutrition, physical activity, relaxation and mental health, and preventive behaviors. Items are scored on a 4-point Likert scale (never = 0 to always = 3). The total score ranges from 0 to 87, with higher scores indicating healthier behaviors. The reliability and validity of this instrument have been confirmed in Iranian studies [17].

2. Frost Multidimensional Perfectionism Scale (FMPS)

This 35-item questionnaire measures multidimensional perfectionism across six subscales: concern over mistakes, doubt about actions, parental expectations, parental criticism, personal standards, and organization. Items are scored on a 5-point Likert scale (strongly disagree = 1 to strongly agree = 5). Cronbach's alpha for this instrument in Iran has been reported as 0.84 [18].

3. Self-Compassion Scale (Short Form - SCS-SF)

This 12-item scale measures three bipolar components: self-kindness/self-judgment, common humanity/isolation, and mindfulness/over-identification. Items are scored on a 5-point Likert scale (almost never = 1 to almost always = 5). Test-retest reliability for this instrument is 0.92, and Cronbach's alpha in the Iranian sample has been reported as 0.78 [19].

Procedure

After obtaining approval from the University Ethics Committee (IR.KUMS.MED.REC.1403.230), necessary coordination with the Research Deputy was conducted. Questionnaires were distributed through two methods: in-person (during classes and hospital wards) and electronically (via internal messengers) over a three-month period. All participants provided written informed consent. Inclusion criteria included

being enrolled at Kermanshah University of Medical Sciences, providing informed consent, and being between 18 and 30 years of age. Collected data were analyzed using SPSS-22 software, employing descriptive statistics (mean, standard deviation, percentage) and inferential statistics (Pearson correlation coefficient and multiple linear regression).

Results

Descriptive Findings

Of the 286 students, 153 (53.4%) were female and 133 (46.5%) were male. The mean age of participants was 22.8 years (SD = 3.4). A total of 247 (84.5%) were single and 39 (13.6%) were married. The distribution of students across different academic levels is presented in Table 1, indicating that the highest frequency was in the internship stage (96 students, 33.6%).

Table 1
Academic Status of Students by Gender

Variables	**Female**		**Male**	
	N	**%**	**N**	**%**
Academic Level				
Basic Sciences	41	26.7	32	24.0
Physiopathology & Clerkship	36	23.5	27	20.3
Internship	50	32.6	46	34.5
Residency	26	16.9	28	21.0
Total	**153**	**53.4**	**133**	**46.5**

The gender distribution of students across different academic levels is relatively balanced. The highest percentage of both female and male students is in the internship stage (32.6% and 34.5%, respectively). The high presence of students in the internship stage, which involves greater clinical workload and pressure, emphasizes the importance of examining health behaviors in this group.

The mean, standard deviation, maximum, and minimum scores for the main variables are presented in Table 2. The results of categorizing the level of health-promoting behaviors (based on mean and standard deviation) are presented in Table 3.The findings indicate that 49% of female students are at a good level of health behaviors, while this proportion among male students is only 23.3%. Conversely, 47.3% of male students are at a low level, indicating a more unfavorable status among men. Regarding marital status, 49% of single students are at a good level, whereas nearly half of married students (48.7%) are at a low level, which could be attributed to multiple responsibilities and time constraints. In terms of academic level, basic sciences students show the best status (49.3% good), while internship

students show the worst status (59.3% moderate and 29.1% low), reflecting the negative impact of clinical pressures on health behaviors.

Table 2
Descriptive Indices of Main Research Variables

Variables	Mean	SD	Maximum	Minimum
Health-Promoting Behaviors	43.3	10.6	72	16
Perfectionism	113.4	19.8	155	36
Self-Compassion	36.2	2.6	42	27

Table 3
Level of Health-Promoting Behaviors by Demographic Variables

Variable	Low Level	Moderate Level	Good Level	Total
Gender				
Female	35 (22.8%)	43 (28.1%)	75 (49.0%)	153
Male	63 (47.3%)	39 (29.3%)	31 (23.3%)	133
Marital Status				
Single	43 (17.4%)	83 (33.6%)	121 (49.0%)	247
Married	19 (48.7%)	12 (30.7%)	8 (20.5%)	39
Academic Level				
Basic Sciences	25 (34.2%)	12 (16.4%)	36 (49.3%)	73
Physiopathology & Clerkship	10 (15.8%)	41 (65.0%)	12 (19.0%)	63
Internship	28 (29.1%)	57 (59.3%)	11 (11.4%)	96
Residency	21 (38.8%)	18 (33.3%)	15 (27.7%)	54

Testing Hypotheses

Hypothesis 1

The results of Pearson correlation analysis (Table 4) showed a significant negative relationship between total perfectionism score and health-promoting behaviors ($r = -0.26$, $P < 0.001$). Furthermore, all four unhealthy subscales of perfectionism—concern over mistakes, doubt about actions, parental expectations, and parental criticism—demonstrated significant negative correlations with health behaviors. The strongest negative correlation was related to the "concern over mistakes" subscale ($r = -0.38$), indicating that students with higher concerns about making errors are less likely to adhere to

health behaviors. This finding suggests that unhealthy perfectionism, through inducing anxiety and decision paralysis, creates a significant barrier to self-care. In contrast, the healthy dimensions of perfectionism (personal standards and organization) did not show significant correlations with health behaviors (P > 0.05), indicating that striving for organization and personal goals alone does not hinder healthy behaviors.

Table 4
Correlation Coefficients between Dimensions of Perfectionism and Health-Promoting Behaviors

Variable	Correlation Coefficient (r)	Significance Level (P)
Total Perfectionism	**-0.26**	< 0.001
Concern over Mistakes	-0.38	< 0.001
Doubt about Actions	-0.29	0.002
Parental Expectations	-0.21	0.028
Parental Criticism	-0.31	0.001
Personal Standards	-0.08	0.93
Organization	-0.017	0.86

Hypothesis 2

Table 5 shows a significant positive relationship between total self-compassion score and health-promoting behaviors (r = 0.38, P < 0.001). Moreover, the positive subscales of self-compassion (self-kindness, common humanity, and mindfulness) showed positive correlations with health behaviors, while the negative subscales (self-judgment and over-identification) showed negative and significant correlations.The relatively strong positive correlations between total self-compassion (r = 0.38) and self-kindness (r = 0.36) with health behaviors indicate that students who are more compassionate toward themselves are more likely to engage in self-care behaviors. This finding aligns with Neff's theory (2003), suggesting that self-compassion, by reducing self-criticism and enhancing intrinsic motivation, drives individuals toward healthy behaviors. The lack of a significant correlation between the isolation subscale and health behaviors (r = -0.03, P = 0.75) suggests that feelings of loneliness and isolation alone cannot be considered a strong predictor of health behaviors.

Table 5
Correlation Coefficients between Dimensions of Self-Compassion and Health-Promoting Behaviors

Variable	Correlation Coefficient (r)	Significance Level (P)
Total Self-Compassion	**0.38**	< 0.001
Self-Kindness	0.36	< 0.001
Self-Judgment	-0.19	0.04
Common Humanity	0.19	0.049
Isolation	-0.03	0.75
Mindfulness	0.30	< 0.001
Over-Identification	-0.29	0.002

Hypothesis 3

The results of multiple linear regression analysis (Table 6) showed that the model including the two variables of self-compassion and perfectionism significantly explained 27% of the variance in health-promoting behaviors ($R^2 = 0.27$).

Table 6
Regression Model Summary for Predicting Health-Promoting Behaviors

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.27*	0.075	0.058	10.3
*P < 0.05				

Discussion

The present study aimed to investigate the relationship between dimensions of perfectionism and self-compassion with health-promoting behaviors in medical students. The findings revealed that health-promoting behaviors among medical students, particularly in male, married, and clinical-stage (internship and residency) groups, are not at a desirable level. These results are consistent with previous studies conducted in Iran and internationally [8, 20, 21]. For example, Emami et al. (2015) also found that medical sciences students scored lowest in the domain of physical activity [22]. This unfavorable pattern may stem from academic pressures, time constraints, prioritization of clinical duties, and neglect of self-care, which are highly prevalent among medical students [23].

Regarding the first hypothesis, the results demonstrated that unhealthy perfectionism and its dimensions (concern over mistakes, doubt about actions, parental expectations, and parental criticism) have a significant negative relationship with health-promoting behaviors. This finding aligns with the

results of Kozłowska and Kuty-Pachecka (2023), who showed that maladaptive perfectionism is associated with poorer health behaviors [16]. Furthermore, Sirois's meta-analysis (2013) revealed that "perfectionistic concerns" are negatively related to health behaviors, whereas "perfectionistic strivings" show no such relationship [24]. To explain this finding, it can be argued that individuals with unhealthy perfectionism, due to excessive fear of failure, chronic anxiety, and self-criticism, experience depletion of self-regulatory resources, thereby losing the motivation and energy necessary for consistent engagement in health behaviors [25]. On the other hand, the healthy dimensions of perfectionism (personal standards and organization), characterized by goal-directed effort and organization, did not show any relationship with health behaviors in this study, suggesting that striving for perfection is not inherently harmful; rather, the quality and flexibility of this striving is what matters.

Concerning the second hypothesis, the findings of the present study indicated that self-compassion and its positive dimensions (self-kindness, common humanity, and mindfulness) have a significant positive relationship with health-promoting behaviors. These results are consistent with the findings of Sirois and Hirsch (2015), whose meta-analysis showed that self-compassion is positively associated with health behaviors such as healthy eating, exercise, and stress management [26]. Moreover, Arzanagh and Khodabakhshi-Koolaee (2019) demonstrated that self-compassion in women with type 2 diabetes is associated with better self-care [27]. In interpreting these findings, it is worth noting the role of self-compassion in reducing negative emotional reactions and enhancing self-efficacy. Neff et al. (2007) showed that self-compassion, by reducing rumination and self-criticism, provides the psychological space necessary for making healthy and goal-directed decisions [28]. Additionally, self-compassion helps individuals accept their failures in the health domain (e.g., overeating or stopping exercise) as part of the common human experience and, without self-blame, return to their healthy path [29].

The regression analysis results indicated that self-compassion and perfectionism together predict 27% of the variance in health-promoting behaviors. This finding highlights the significant contribution of psychological variables in explaining health behaviors and underscores the need to consider these constructs in designing preventive and health-promoting interventions. In other words, psychological empowerment of students through enhancing self-compassion and modifying unhealthy perfectionism can serve as an effective strategy for improving health and preventing academic burnout [30]. Compassion-focused and mindfulness-based interventions have demonstrated positive effects on reducing stress, anxiety, and enhancing well-being in numerous studies and can be utilized as a foundation for improving health behaviors in students [31, 32].

Conclusions

Based on the findings of this study, it can be concluded that self-compassion and perfectionism are influential psychological variables affecting health-promoting behaviors in medical students. Given the unfavorable status of health behaviors in specific groups (males, married students, and clinical-stage students), designing and implementing educational programs and psychological interventions aimed at enhancing self-compassion and modifying unhealthy perfectionistic beliefs appears essential for

improving the health and quality of life of medical students. It is recommended that university counseling centers organize workshops on life skills, mindfulness, and self-compassion to promote the mental and physical health of students.

Limitations

1. The cross-sectional nature of the study precludes conclusions about causal relationships.
2. The use of the short form of the Self-Compassion Scale may not fully capture the depth of the construct.
3. The study population was limited to students from a single medical university, which warrants caution in generalizing the results.
4. Reliance on self-report measures for all instruments may be subject to response bias.

Recommendations

1. Conduct longitudinal studies to investigate causal relationships between variables.
2. Examine the mediating role of variables such as self-efficacy and self-regulation in the relationship between perfectionism and self-compassion with health behaviors.
3. Design and implement randomized controlled trials to evaluate the effectiveness of self-compassion-based interventions on students' health behaviors.
4. Investigate these variables across different student groups (basic sciences vs. clinical) and non-medical disciplines for comparative analysis.

Abbreviations

• **FMPS**
Frost Multidimensional Perfectionism Scale
• **HPLP**
Health-Promoting Behaviors Scale
• **SCS-SF**
Self-Compassion Scale (Short Form)
• **SD**
Standard Deviation
• **SPSS**
Statistical Package for the Social Sciences

Declarations

Ethics approval and consent to participate:

This study was approved by the Ethics Committee of Kermanshah University of Medical Sciences (approval code: IR.KUMS.MED.REC.1403.230). All procedures were performed in accordance with the

ethical standards of the Declaration of Helsinki (2013 version). Prior to questionnaire distribution, the purpose of the study was fully explained to the participants, and all students signed a written informed consent form. Participants were assured that their information would remain confidential and used only for research purposes.

Consent for publication:

Not applicable.

Competing interests:

The authors declare that they have no competing interests.

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Author Contribution

All authors contributed significantly to the design, execution, and writing of this study. Their individual contributions are as follows: M.N. (Mehran Norouzian) contributed to data collection, drafting of the initial manuscript, statistical analysis, and final editing. A.P. (Ali Akbar Parvizifard) was responsible for the conceptual design of the study, supervision of the research process, guidance in questionnaire development, and critical review of the manuscript. O.P. (Omid Parvizi Fard) actively participated in the design of the study and questionnaire development, was involved in data collection, and critically revised the manuscript for important intellectual content. A.F. (Ali Akbar Foroughi) participated in data analysis, critical revision of the scientific content, and structural editing of the manuscript. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Availability of data and materials:

The datasets used during the current study are not publicly available due to confidentiality agreements with participants. However, summarized data and the questionnaires used are available from the corresponding author upon reasonable request.

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