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The Mediating Role of Mindfulness in the Relationship between Self-Compassion and Psychological Vulnerability in Nursing Students

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ABSTRACT

Objective: This study aimed to examine the mediating role of mindfulness in the relationship between self-compassion and psychological vulnerability.

Methods: The research employed a descriptive-correlational design using path analysis. The statistical population consisted of all students enrolled in Tehran paramedical faculties during the 2023–2024 academic year. A total of 273 participants were selected through convenience sampling. Data were collected using the Psychological Vulnerability Scale (SCL-25; Najarian & Davoudi, 2001), the Self-Compassion Scale–Short Form (SCS-SF; Raes et al., 2011), and the Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2004). Correlation analysis and path analysis were used for data analysis.

Results: Goodness-of-fit indices indicated that the proposed model had an acceptable fit. The results showed that the direct effects of self-compassion and mindfulness on psychological vulnerability were significant. In addition, the indirect effect of self-compassion on psychological vulnerability through mindfulness was also significant ($p < .01$).

Conclusions: The findings suggest that psychological vulnerability in nursing students is predicted by self-compassion with the mediating role of mindfulness. Furthermore, mindfulness—considering the influence of self-compassion—can help explain symptoms of psychological vulnerability in nursing students.

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Introduction

Nursing students, due to the nature of their professional training, are exposed to higher levels of psychological disorders and vulnerability compared with many other student groups (Alsulais et al., 2024). The simultaneous demands of academic responsibilities, engagement in clinical environments, interactions with patients and their families, and concerns about future professional performance make this population particularly susceptible to mental health problems (Soon et al., 2023). Research has shown that the prevalence of anxiety, depression, and psychological burnout among medical students—and especially nursing students—is considerable and can adversely influence their learning processes and academic success (Labrague, 2023).

University life in general constitutes a sensitive stage of personal and social development. Entering an academic environment, partial separation from family, increasing independence, financial pressures, academic competition, and familial expectations are among the factors that may contribute to psychological vulnerability (Gao et al., 2020; Khan et al., 2024).

Psychological vulnerability is defined as an increased risk of harm or a reduced capacity to protect oneself from threats (Rogers et al., 2012). It refers to a condition in which individuals display heightened sensitivity to stressors and a diminished ability to adapt effectively to environmental pressures (Yogour et al., 2021). This construct emerges from the interaction of biological, cognitive, emotional, social, and environmental factors and can influence stress perception, emotion regulation, and the selection of coping strategies (Khan et al., 2024). Consequently, nursing students—because of their unique circumstances—are at heightened risk for psychological difficulties that may negatively affect their academic performance (Aghakhani et al., 2019). They face numerous stress-inducing variables (Teixeira et al., 2022), and these stressors are closely associated with psychological vulnerability (Tran et al., 2022). Hence, many students report concerns related to their mental health (Lathey et al., 2022).

Empirical research suggests that psychological well-being in nursing students is associated with self-compassion, and that self-compassion may protect students from emotional distress (Kotra et al., 2021). Rose (2022), for example, found that lower levels of sadness, anxiety, and depression were related to higher self-compassion in graduate nursing students. According to Neff (2003), self-compassion involves extending kindness and understanding toward oneself rather than harsh self-criticism (self-kindness vs. self-judgment); recognizing one's suffering as part of the shared

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human experience rather than as an isolated event (common humanity vs. isolation); and maintaining a balanced awareness of one's painful experiences instead of becoming overly absorbed in them (mindfulness vs. over-identification).

Based on this framework, studies have consistently reported a strong negative relationship between self-compassion and psychological vulnerability, as well as a positive association with psychological well-being (Galvin & Richards, 2023; Han & Kim, 2023). Accordingly, students with higher self-compassion tend to experience better mental health (Zhou et al., 2023). Bagheri-Panah et al. (2020) also found significant associations between self-compassion and psychological vulnerability among university students. Similarly, Larkombe et al. (2023) reported that students with lower levels of self-compassion experienced higher psychological distress and reduced psychological well-being.

Mindfulness has likewise been shown to play an important role in psychological adjustment among nursing students. Nedermier et al. (2022) reported that mindfulness was inversely related to psychological vulnerabilities such as depression and anxiety, suggesting that nursing students require care and support that can be cultivated through focused awareness and mindful attention (Tran et al., 2022). Mindfulness originates from ancient contemplative traditions, particularly Buddhist meditative practices of East Asia, and is now recognized as a major contemporary psychological construct (Kang et al., 2024). It refers to purposeful, conscious, and accepting attention to present-moment experiences, in which individuals maintain awareness of their thoughts, emotions, and surroundings without judgment (Goldberg et al., 2023). This process enables individuals to respond to internal and external stimuli with greater awareness and intentionality rather than with automatic reactions (Creswell, 2024).

Unlike some traditional behavioral approaches that focus on directly changing maladaptive thoughts or behaviors, mindfulness emphasizes observing and accepting experiences without immediately attempting to eliminate or control them (Hayes et al., 2024). In this approach, individuals learn to see their thoughts and feelings as they truly are—without over-engagement or judgment (Kabat-Zinn, 2023). Such a stance can reduce rumination, promote calmness, and enhance overall psychological well-being (Fisher et al., 2023).

In recent years, mindfulness-based interventions have gained widespread attention in academic settings, and many higher education institutions have adopted these programs to promote student

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mental health (Galante et al., 2023; Yurbach et al., 2022). Research has shown that higher levels of mindfulness are associated with greater positive emotions such as life satisfaction, hope, and happiness, and with reductions in negative emotions including anxiety, depression, and burnout (Ciudelli et al., 2022; Korstet et al., 2020). Mindfulness enhances emotion regulation and strengthens the capacity to remain present, helping individuals maintain calm and adopt more adaptive responses under stressful conditions (Gu et al., 2021).

In the field of medical sciences as well, studies demonstrate that mindfulness-based programs for nursing students and staff reduce anxiety, improve mood, increase resilience, and enhance quality of life (McVeigh et al., 2021; Fang et al., 2024). These interventions have also been found to improve concentration, academic performance, and clinical preparedness among nursing students (McVeigh et al., 2021; Soong & Lindquist, 2023). Pérez-Andra et al. (2021) reported that mindfulness and self-compassion had significant direct effects on symptoms of anxiety and depression, while McCuddy and Kazisky (2020) found that self-compassion and facets of mindfulness were associated with reduced social anxiety and depressive symptoms, as well as improved functioning, self-esteem, and life satisfaction.

Taken together, existing studies suggest that both self-compassion and mindfulness are significantly associated with psychological vulnerability. Therefore, it is plausible that these two variables may serve as predictors of psychological vulnerability among nursing students. Based on this premise, the present study was conducted to examine the mediating role of mindfulness in the relationship between self-compassion and psychological vulnerability in nursing students.

Material and Methods

The present study employed a descriptive–correlational design using path analysis. The statistical population consisted of all nursing students enrolled in medical and paramedical faculties affiliated with Tehran University of Medical Sciences and Health Services during the 2024–2025 academic year. According to the recommendation of Garver and Mentzer (1999), the minimum required sample size for structural equation modeling is 200 participants. Based on this criterion, 273 students were selected through convenience sampling, and the questionnaires were distributed among them. The inclusion criteria were: being a nursing student, having completed at least two years of university education, and studying in medical or paramedical faculties in Tehran.

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The exclusion criteria included failure to answer at least 5% of the items in any questionnaire and requesting withdrawal from the study. Ethical considerations included obtaining informed consent, ensuring the confidentiality of participants' information, and collecting participants' email addresses or phone numbers (if they wished) in order to provide them with the study results.

Data were analyzed using path analysis with SPSS version 25 and AMOS version 22.

Measures

Symptom Checklist-25 (SCL-25): The Symptom Checklist-25 was developed by Najarian and Davoudi (2001) to assess psychological vulnerability during the previous week. The scale consists of 25 items rated on a 5-point Likert scale ranging from 0 (rarely) to 4 (very much). Total scores range from 0 to 100, with higher scores indicating greater psychological vulnerability.

The construct and content validity of the scale were confirmed by its developers. Concurrent validity showed significant correlations between the total score of the questionnaire and the Beck Depression Inventory (r = .49) and the Hill Perfectionism Questionnaire (r = .66). Reliability assessed through Cronbach's alpha was reported as .78 (Najarian & Davoudi, 2001). In the present study, the Cronbach's alpha coefficient was .84.

Self-Compassion Scale–Short Form (SCS-SF): The Self-Compassion Scale–Short Form, developed by Raes et al. (2011), consists of 12 items designed to measure self-compassion. The scale assesses six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. Items are rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). Total scores range from 12 to 60, with higher scores indicating greater self-compassion. The developers reported Cronbach's alpha coefficients of .86 or higher for the total scale and its subscales. Additionally, the convergent validity between the short and long forms of the scale was reported as .97 (Raes et al., 2011).

Shahbazi et al. (2015) confirmed the six-factor structure of the questionnaire and reported Cronbach's alpha coefficients above .70 for the total score and its subscales. Concurrent validity with the General Health Questionnaire was −.45 ($p < .001$) for the total score, and for the six subscales ranged from −.28 ($p < .036$) to −.48 ($p < .001$). In the present study, Cronbach's alpha coefficients ranged from .77 to .86 for the scale and its subscales.

Five Facet Mindfulness Questionnaire (FFMQ): The Five Facet Mindfulness Questionnaire, developed by Baer et al. (2006), consists of 39 items used to measure mindfulness. The scale

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includes five subscales: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.

Items are rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). Total scores range from 39 to 195, with higher scores indicating higher levels of mindfulness. The developers reported Cronbach's alpha coefficients above .70 for the total scale and its subscales and demonstrated significant predictive validity in relation to psychological symptoms. The subscales showed correlations ranging from .16 to .68 with measures of thought suppression and alexithymia, supporting the convergent and discriminant validity of the questionnaire.

Tamannaeifar et al. (2016) reported test–retest reliability over a two-week interval in a sample of 58 participants ranging from .76 to .86 for the subscales and .89 for the total scale. They also reported acceptable construct validity (RMSEA = .07) and that the questionnaire explained 49% of the variance. In the present study, Cronbach's alpha coefficients ranged from .67 to .85 for the scale and its subscales.

Results

A total of 273 participants took part in the study. Among them, 146 (53.5%) were female and 127 (46.5%) were male. Regarding marital status, 234 participants (86%) were single, while 39 (14%) were married. The mean age of the participants was 22.64 years with a standard deviation of 6.57.

Table 1. Descriptive Statistics and Correlation Matrix of Study Variables

Variable	Subscale	Mean	SD	Skewness	Kurtosis	1	2	3
Self-compassion	Self-kindness	19.21	3.22	0.78	0.56			
	Self-judgment	16.27	4.35	−0.98	1.05			
	Common humanity	18.42	3.87	−1.46	−0.85			
	Isolation	16.24	3.44	0.79	1.03			
	Mindfulness	19.05	3.56	1.33	1.35			
	Over-identification	17.84	4.72	−1.35	−0.32			
Mindfulness	Observing	32.27	4.77	1.37	0.99			
	Describing	31.85	4.78	0.76	1.89			
	Acting with awareness	32.06	4.33	−1.56	0.94			
	Acceptance	30.62	3.27	−0.27	−0.259			
	Non-reactivity	27.67	4.08	0.012	−0.365			
1. Self-compassion		93.07	8.30	0.42	−0.80	1		
2. Mindfulness		155.13	13.54	−0.27	−1.40	.57**	1	
3. Psychological vulnerability		18.71	6.38	0.012	−1.005	−.58**	−.48**	1

**$p < .01$

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Table 1 presents the means, standard deviations, skewness, kurtosis, and correlation matrix of the study variables. The mean score for self-compassion was 93.07, for mindfulness was 155.13, and for psychological vulnerability was 18.71. The values of skewness and kurtosis ranged between −2 and +2, indicating that the distribution of the data was approximately normal. The results of the correlation matrix also indicate that there are significant relationships among all study variables.

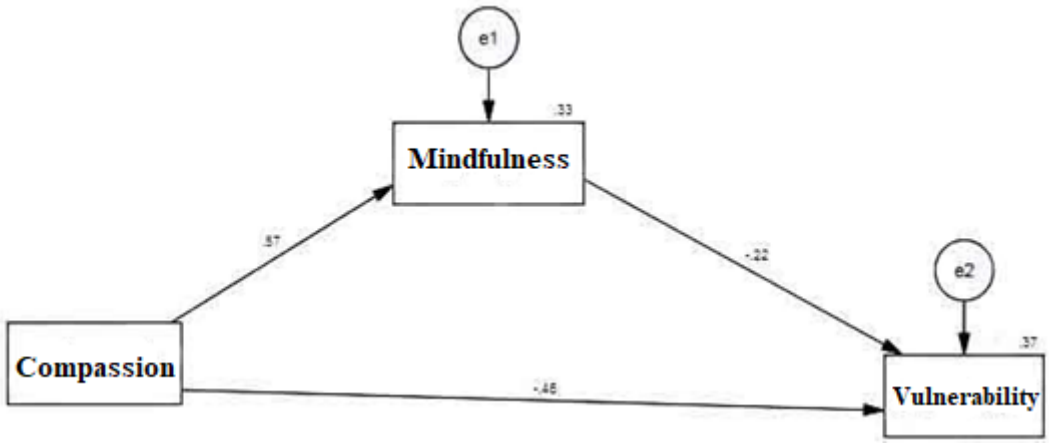

Figure 1. Path analysis model of psychological vulnerability based on self-compassion with the mediating role of mindfulness

Table 2. Model Fit Indices

Fit Index	Acceptable Range	Observed Value
CMIN	—	0.667
df	—	1
CMIN/df	< 3	0.667
Root Mean Square Error of Approximation (RMSEA)	< .08	0.002
Goodness of Fit Index (GFI)	> .90	0.99
Adjusted Goodness of Fit Index (AGFI)	> .90	0.99
Comparative Fit Index (CFI)	> .90	0.99
Normed Fit Index (NFI)	> .90	0.99

Based on the results presented in Table 2, the RMSEA value (0.002) is smaller than the acceptable threshold of 0.08. Furthermore, the AGFI, CFI, GFI, and NFI indices are all above the recommended criterion of 0.90 and show improvement compared to the initial model. Therefore, according to these fit indices, the model examining the relationship between self-compassion and psychological vulnerability with the mediating role of mindfulness demonstrates a good fit.

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Table 3. Standardized Estimates of Direct, Indirect, and Total Effects

Predictor	Outcome	Unstandardized Direct Effect	Direct Effect	Indirect Effect	Total Effect
Self-compassion	→ Mindfulness	0.93	0.57**	—	0.57**
Self-compassion	→ Psychological vulnerability	−0.35	−0.46**	−0.12**	−0.58**
Mindfulness	→ Psychological vulnerability	−0.10	−0.22**	—	−0.22**

The results in Table 3 show that the direct effect of self-compassion on mindfulness is significant ($\beta = 0.57$, $p < .01$). The direct effect of self-compassion on psychological vulnerability is also significant ($\beta = -0.46$, $p < .01$). In addition, the direct effect of mindfulness on psychological vulnerability is significant ($\beta = -0.22$, $p < .01$). The results further indicate that the indirect effect of self-compassion on psychological vulnerability is also significant ($\beta = -0.12$, $p < .01$).

To examine the mediating role of mindfulness, the bootstrap method was used. In this method, if both the lower and upper bounds of the confidence interval are either positive or negative (i.e., zero does not lie between them), the indirect path is considered statistically significant.

Table 4. Bootstrap Results for Mediated Relationships

Predictor Variable	Mediator Variable	Dependent Variable	Lower Bound	Upper Bound	Significance
Self-compassion	Mindfulness	Psychological vulnerability	−0.23	−0.037	.001

Table 4 shows that the lower and upper bounds of the bootstrap confidence interval for the mediating variable (mindfulness) are both negative. Therefore, it can be concluded that the indirect effect is significant, and mindfulness serves as a mediating variable in the relationship between self-compassion and psychological vulnerability.

Discussion

The present study was conducted with the aim of examining the mediating role of mindfulness in the relationship between self-compassion and psychological vulnerability. The findings showed that self-compassion has a direct negative effect on psychological vulnerability. This result was consistent with the findings of Rooz (2022) and Koutra et al. (2021). In explaining these findings, it can be stated that self-compassion is conceptualized as a balance between reducing negative responses to oneself and increasing positive responses toward oneself (Neff, 2003). Research has also shown that self-compassion functions as a protective factor against psychological distress,

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and students who make greater use of self-compassion enjoy better mental health (Zhou et al., 2023). Having self-compassion can help students use appropriate strategies, such as employing kind and supportive words toward themselves instead of derogatory ones, in order to improve their sense of well-being in life. Such constructive use of language can play an important role in students' mental health. However, if a student uses inappropriate self-directed language, has less self-compassion, and does not support themselves in the face of problems, they may become more susceptible to psychological vulnerability. In addition, students with greater self-compassion are less likely to experience mental health disorders and problems, because self-compassion can serve as a protective factor and play a key role in maintaining students' mental health (Koutra et al., 2018), thereby preventing the emergence of psychological vulnerabilities. In this way, when they are under pressure and stress, instead of judging and punishing themselves, they show greater kindness and understanding toward themselves and protect themselves against problems and stressors.

Another finding of this study showed that mindfulness has a direct and negative effect on psychological vulnerability; in other words, the higher the level of mindfulness in individuals, the lower the likelihood of experiencing psychological problems and emotional vulnerability. This result is in line with the findings of Feng et al. (2024), Niedermeyer et al. (2022), and Bagheri-Panah et al. (2020). To explain this finding, it can be argued that mindfulness, as an effective approach for promoting mental health, helps individuals observe their thoughts, emotions, and internal experiences without judgment and respond in less maladaptive ways (Gu et al., 2021). Such a process reduces symptoms of psychological distress, anxiety, depression, and stress, while enhancing individuals' level of psychological adjustment. Students who are able to maintain conscious awareness of the present moment and manage their daily experiences with greater acceptance usually enjoy better mental health and are less exposed to psychological vulnerabilities, because mindfulness can prevent the emergence of maladaptive behaviors among students and strengthen more adaptive coping strategies in them. As a result, these individuals are better able to manage their emotions and solve problems when confronted with academic, social, and personal pressures (Taylor et al., 2022). Furthermore, the effectiveness of mindfulness in reducing symptoms of certain psychological vulnerabilities such as depression, anxiety, stress, insomnia, addiction, psychosis, and post-traumatic stress disorder has been reported in various studies

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(Zhang et al., 2021). Therefore, mindfulness has attracted attention as one of the important intervention methods for promoting mental health, and students with higher levels of mindfulness are more resilient in the face of life pressures, manage their issues and challenges more effectively, and are better able to protect their mental health. Mindfulness also reduces the likelihood of becoming trapped in psychological vulnerabilities by increasing the ability to observe thoughts and feelings, accept life experiences, and focus on the present moment. Therefore, it can be concluded that students with higher levels of mindfulness function more effectively when facing life pressures and academic challenges, manage their problems more adaptively, and better protect their mental health.

Finally, the findings of the study showed that mindfulness plays a mediating role in the relationship between self-compassion and psychological vulnerability. This finding was consistent with the studies of Pérez-Andréa et al. (2021) and McCady and Kazisky (2020). In explaining this finding, it can be stated that the COVID-19 pandemic brought about many changes in the experiences of university students, especially students affiliated with medical sciences universities and nursing students. Due to the special circumstances of the disease, these students endured high levels of stress, and in this way COVID-19 was able to harm their mental health (Sönmez et al., 2023). In this context, students with higher levels of self-compassion, given that there is a positive correlation between mindfulness and self-compassion (Golden et al., 2021), are able to adopt a more balanced and kinder perspective toward the problems they encounter, such that their mental health is not adversely affected. For this reason, self-compassion together with mindfulness can help regulate negative thoughts and feelings and replace them with more positive ones. Mindfulness and self-compassion can improve psychological well-being and quality of life (Tran et al., 2022), and can also reduce negative emotions, including stress and symptoms, in individuals dealing with stress-related problems. Therefore, mindfulness acts as a mediating variable between self-compassion and psychological vulnerabilities, and students who possess self-compassion, if they also experience higher levels of mindfulness, will distance themselves from psychological problems and harm and will be able to experience better mental health. Mindfulness-based programs usually focus on developing self-compassion (Vionnet & Koutra, 2023). For this reason, students with higher mindfulness, through conscious attention, try to remain in the present moment

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and accept unpleasant events without judgment as a part of life that every person encounters, while also striving to find the best solutions for dealing with problems and undesirable events.

Overall, the results obtained showed that mindfulness has a significant mediating role in the relationship between self-compassion and psychological vulnerability among nursing students. In addition, the two variables of mindfulness and self-compassion each had a significant direct effect on the psychological vulnerability of nursing students. Accordingly, it is suggested that psychologists and counselors in universities provide nursing students with training related to self-compassion and mindfulness and incorporate these variables into mental health promotion programs and the prevention of psychological vulnerabilities among nursing students.

Like other studies, this research also had certain limitations. Since the data collection instrument was a questionnaire, the self-report nature of students' responses may have created a tendency toward socially desirable responding, which could have influenced the study results. Therefore, it is recommended that future studies use other assessment methods, including interviews. Another limitation was the use of convenience sampling, which restricts the generalizability of the findings; thus, it is recommended that future research use other sampling methods. Given that the study population consisted of nursing students under the coverage of Tehran University of Medical Sciences, the findings are specific to this population. Therefore, it is suggested that similar future studies be conducted among students of other medical sciences universities across the country in order to examine the generalizability of the results. In addition, based on the findings of the study and considering that self-compassion and mindfulness are two widely used therapeutic protocols for the treatment or prevention of mental health disorders, it is recommended that the Ministry of Health and Medical Education implement preventive and/or therapeutic courses based on these protocols for nursing students.

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Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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