

Comparison of the Effectiveness of Mindful Self-Compassion Training and Cognitive-Behavioral Therapy on Self-Esteem and Psychological Symptoms in Students with Academic Failure

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Abstract

Objectives: Academic failure is associated with psychological consequences including decreased self-esteem and increased anxiety, stress, and depression. This study aimed to compare the effectiveness of a Mindful Self-Compassion (MSC) training program with Cognitive-Behavioral Therapy (CBT) on these variables in students with academic failure.

Methods: This quasi-experimental study employed a pretest-posttest design with a two-month follow-up period. Forty students with academic failure from Kermanshah University of Medical Sciences were randomly assigned to two groups: MSC (n=20) and CBT (n=20), receiving eight 90-minute sessions. Instruments included the Coopersmith Self-Esteem Inventory, the Depression, Anxiety, and Stress Scale (DASS-21), and the Self-Compassion Scale (SCS). Data were analyzed using repeated measures ANOVA in SPSS-25.

Results: Both interventions led to significant increases in self-esteem and significant reductions in depression, anxiety, and stress symptoms ($p^* < .001$), with no significant difference between the two approaches ($p^* > .05$). The MSC program produced significantly greater increases in self-compassion compared to CBT ($p^* = .011$). Therapeutic effects were maintained at the two-month follow-up.

Conclusions: Both interventions are effective. Given the equivalent effectiveness and the advantage of the MSC program in enhancing self-compassion, it can be utilized as an efficient intervention in university counseling centers.

Introduction

Academic failure among university students represents one of the oldest and most recognized challenges facing higher education systems, imposing not only substantial economic and social costs on society but also profound psychological consequences for individuals (Sønmez et al., 2020; Eneogu et al., 2024). Research indicates that approximately 12% of medical sciences students experience at least one semester of academic probation during their studies, which can place them at risk of academic dismissal and associated psychological repercussions (Moniri et al., 2006).

Academic failure is defined as a sudden or gradual decline in a student's attention and learning within the educational environment, leading to reduced grades or diminished concentration (Ajjawi et al., 2020). This phenomenon may result in outcomes including anxiety, depression, decreased self-esteem, and even suicidal ideation; alternatively, psychological symptoms and emotional difficulties may themselves serve as causal factors in academic failure (Tamannaifar et al., 2012). In either case, a significant relationship exists between psychological symptoms—such as depression, anxiety, stress, and markedly diminished self-esteem—and academic failure (Shareinia et al., 2021).

Self-esteem is recognized as one of the most important psychological factors influencing academic failure (Moradi et al., 2018). Self-esteem refers to an individual's feelings about themselves and the value

they ascribe to themselves (Kim, 2024). Students with higher self-esteem demonstrate more favorable academic standing, as self-esteem influences self-belief and positive self-perception in learning, generates motivation for study, and contributes to academic achievement (Acosta-Gonzaga, 2023). Conversely, diminished self-esteem reduces learning efficiency and capacity while increasing vulnerability to psychological symptoms including anxiety, stress, and depression (Shareinia et al., 2021).

In recent years, various psychotherapeutic approaches have been employed to address these difficulties. Cognitive-Behavioral Therapy (CBT), as a frontline approach, has demonstrated positive effects on reducing psychological symptoms and enhancing self-esteem through the modification of dysfunctional thoughts and beliefs (Sønmez et al., 2020; Eneogu et al., 2024). CBT improves self-esteem by identifying, evaluating, and challenging irrational thoughts and beliefs, strengthening motivation, teaching coping skills, and enhancing social skills (Sønmez et al., 2020). Melanie Fennell, a pioneer of cognitive therapy in the United Kingdom, has developed a comprehensive cognitive model for understanding the formation and maintenance of low self-esteem, in which negative core beliefs and maladaptive life rules create a vicious cycle of threat predictions and self-criticism (Tarrier et al., 1998; Fennell, 2021).

Despite the remarkable success of CBT, third-wave cognitive-behavioral therapies—including compassion-focused and mindfulness-based approaches—offer a more recent perspective for reducing self-criticism and improving psychological well-being by emphasizing acceptance and self-compassion (Neff et al., 2005; Neff, 2023). The Mindful Self-Compassion (MSC) program, developed by Kristin Neff and Christopher Germer, integrates mindfulness skills with self-compassion to enhance emotional resilience and psychological well-being (Neff & Germer, 2018; Germer & Neff, 2019). Self-compassion comprises three core components: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification (Neff, 2003).

Research evidence demonstrates that self-compassion is associated with higher levels of psychological well-being and lower levels of anxiety, depression, and stress, serving as a significant protective factor that helps individuals cope effectively with stressors such as academic failure (Neff, 2023; Neff et al., 2007; Neff & Costigan, 2014). Recent studies have shown that self-compassion training can increase resilience and significantly reduce academic stress in students with low academic performance (Pourshalchi et al., 2024). Furthermore, research indicates that both CBT and mindfulness- and compassion-based programs are effective in improving mental health and reducing psychological distress (Mak et al., 2018).

Despite separate investigations into the efficacy of each of these approaches, no study has directly compared the effectiveness of the MSC program with CBT specifically for students experiencing academic failure. Therefore, the present study was designed to address the question of which intervention is more effective in enhancing self-esteem and reducing psychological symptoms (depression, anxiety, and stress) in students with academic failure.

Methods

Study Design

This study employed a quasi-experimental design with pretest, posttest, and two-month follow-up assessments across two experimental groups.

Participants and Sampling

The statistical population comprised all students at Kermanshah University of Medical Sciences during the 2024 academic year who had a history of at least one semester of academic probation. Based on sample size calculations using effect size of 0.95, power of 0.8, and alpha of 0.05, 19 participants were estimated per group. To account for potential attrition, 40 participants (20 per group) were recruited. Purposive sampling was conducted according to inclusion and exclusion criteria, after which participants were randomly assigned to either the MSC or CBT group.

Inclusion and Exclusion Criteria

Inclusion criteria included: completion of at least two academic semesters, history of at least one semester of academic probation, score below 27 on the Coopersmith Self-Esteem Inventory, no concurrent receipt of other psychological treatments, and provision of informed consent. Exclusion criteria included: unwillingness to continue treatment, absence from more than two consecutive sessions, and need for psychiatric medication during the treatment process.

Instruments

Coopersmith Self-Esteem Inventory. Developed by Coopersmith in 1967, this 58-item questionnaire measures attitudes toward oneself across various domains (family, academic, social, and general). Scores below 27 indicate low self-esteem. Herz and Gullone (1991) reported a Cronbach's alpha coefficient of 0.88 for the total score. In Iran, Rahmani and Rahmani (2012) reported test-retest reliability coefficients of 0.77 and 0.80 over four-week and twelve-day intervals, respectively.

Depression, Anxiety, and Stress Scale (DASS-21). Developed by Lovibond and Lovibond in 1995, this 21-item questionnaire comprises three subscales: depression (7 items), anxiety (7 items), and stress (7 items). Responses are rated on a 4-point Likert scale ranging from "not at all" to "very much." Lovibond and Lovibond reported test-retest reliability coefficients of 0.81, 0.79, and 0.71 for the stress, anxiety, and depression subscales, respectively. In Iran, Afzali et al. (2007) calculated Cronbach's alpha coefficients of 0.94, 0.85, and 0.87 for the depression, anxiety, and stress subscales, respectively.

Self-Compassion Scale (SCS). Developed by Neff in 2003, this 26-item scale comprises six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. Test-retest reliability over a two-week interval was reported as 0.92. In Iran, Hoghabrkhah et al. (2023) reported Cronbach's alpha coefficients of 0.79 for the total scale and 0.68, 0.71, and 0.86 for the subscales.

Interventions

Both groups received eight 90-minute sessions (weekly).

MSC Group (Mindful Self-Compassion Program). Sessions were based on the Mindful Self-Compassion protocol developed by Neff and Germer (2019; Germer & Neff, 2019). This protocol includes education on self-compassion concepts, mindfulness exercises, loving-kindness meditation, identification and cultivation of a compassionate inner voice, and confronting difficult emotions through a compassionate approach. Session content included: introduction to self-compassion (session 1), loving-kindness breathing meditation and mindfulness (session 2), distinguishing loving-kindness from self-compassion (session 3), cultivating a compassionate voice (session 4), giving-and-receiving compassion meditation (session 5), strategies for coping with difficult emotions (session 6), examining problematic relationships (session 7), and cultivating happiness and program summary (session 8).

CBT Group (Cognitive-Behavioral Therapy). Sessions were based on Melanie Fennell's cognitive-behavioral therapy protocol for improving self-esteem (1998; Tarrier et al., 1998). This protocol is designed according to the cognitive model of low self-esteem and includes identification of negative core beliefs (bottom line), maladaptive life rules, cycles of threat prediction and self-criticism, and strategies for modifying these patterns. Session content included: defining self-esteem and identifying its effects (session 1), examining causes of low self-esteem formation (session 2), identifying negative beliefs and rules (session 3), overcoming threat predictions (session 4), combating self-criticism (session 5), achieving greater self-acceptance (session 6), modifying life rules (session 7), and changing negative core beliefs (session 8). Interventions were conducted at the Farabi Hospital Psychology Clinic by two experienced, trained clinical psychologists.

Ethical Considerations

This study was performed in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments. All procedures were conducted with respect for human dignity, confidentiality maintenance, respect for autonomy, and non-maleficence. This study was approved by the Research Ethics Committee of Kermanshah University of Medical Sciences (Ethics Code: IR.KUMS.MED.REC.1403.218). Prior to initiating interventions, the objectives, procedures, and duration of the study were fully explained to all participants. They were informed of their right to withdraw from the study at any time without penalty. Written informed consent was obtained from all participants, and they were assured that their personal information and responses would remain completely confidential and would be used only in aggregate form for research purposes.

Data Analysis

Data were analyzed using SPSS version 25 at both descriptive (means, standard deviations, frequencies, percentages) and inferential levels. The Kolmogorov-Smirnov test was used to assess normality of data distribution, Levene's test for homogeneity of variances, Box's M test for homogeneity of variance-

covariance matrices, and Mauchly's test for sphericity. Repeated measures ANOVA was then employed to compare means across pretest, posttest, and follow-up stages and to examine within-group and between-group effects. The significance level was set at .05.

Results

Demographic Characteristics of Participants

Examination of demographic characteristics revealed identical gender distribution across both groups, with 10 females (56%) and 8 males (44%) in each group. The overall sample comprised 50% female and 50% male participants. Additionally, independent samples *t*-test results indicated no significant difference in mean age between the two groups (*t* = 1.141, *p* = .261). These findings demonstrate that the two groups were homogeneous with respect to key demographic variables (gender and age).

Descriptive Statistics for Dependent Variables

As shown in Table 1, pretest mean scores for both groups were similar across all variables, indicating initial homogeneity between groups prior to intervention. At posttest and follow-up, the pattern of changes indicates increased self-esteem and self-compassion scores alongside decreased depression, anxiety, and stress scores in both groups.

Table 1
Descriptive Statistics for Research Variables Across Groups and Assessment Stages

Variable	Group	Pretest Mean (SD)	Posttest Mean (SD)	Follow-up Mean (SD)
Self-Esteem	CBT	18.10 (4.70)	20.60 (4.55)	20.40 (4.97)
	MSC	16.85 (4.72)	20.65 (4.03)	21.20 (4.40)
Depression	CBT	16.15 (3.33)	13.90 (3.70)	13.50 (4.07)
	MSC	17.25 (3.32)	14.55 (3.60)	13.80 (3.91)
Anxiety	CBT	8.40 (4.71)	6.95 (3.99)	6.70 (4.35)
	MSC	8.05 (4.37)	6.45 (3.39)	5.95 (3.62)
Stress	CBT	28.86 (2.77)	26.28 (2.97)	26.57 (2.56)
	MSC	29.07 (3.05)	23.21 (3.98)	23.07 (3.04)
Self-Compassion	CBT	33.90 (2.86)	34.75 (2.79)	34.90 (2.75)
	MSC	33.95 (4.08)	39.00 (4.55)	39.55 (4.99)

Note. CBT = Cognitive-Behavioral Therapy; MSC = Mindful Self-Compassion; SD = standard deviation.

Statistical Assumptions

The Kolmogorov-Smirnov test results indicated that most research variables across the three assessment stages in both treatment groups had normal distributions (*p* > .05). Levene's test results showed that all calculated statistics for examining homogeneity of variances across different stages were non-significant (Sig = .564 to .917). Box's M test confirmed the homogeneity of variance-covariance matrices (Sig = .897). Therefore, all necessary assumptions for conducting repeated measures ANOVA were satisfied.

Findings Related to Self-Esteem

Table 2
Summary of Repeated Measures ANOVA Results for Self-Esteem

Effect	F	df	p	η^2p	Power
Main Effect of Time	84.681	1.824	< .001	.690	1.000
Time × Group Interaction	3.000	1.824	.098	.096	.578
Between-Group Effect	0.363	1	.550	.009	.090
Pairwise Comparison (Pretest to Posttest)	119.510	1	< .001	.759	1.000
Pairwise Comparison (Posttest to Follow-up)	0.581	1	.451	.015	.115
Note. Mauchly's test indicated that the assumption of sphericity was violated (*p* = .030), so Greenhouse-Geisser correction was used.					

Repeated measures ANOVA results demonstrated that the main effect of time on self-esteem scores was significant in both treatment groups ($F = 84.681$, *p* < .001), with an effect size of .690 indicating a large effect. The Time × Group interaction effect was not significant ($F = 3.000$, *p* = .098), indicating that the pattern of self-esteem changes was equivalent across the CBT and MSC groups. Pairwise comparisons revealed that self-esteem scores increased significantly from pretest to posttest in both groups ($F = 119.510$, *p* < .001), with an effect size of .759. The between-group effect was also non-significant ($F = 0.363$, *p* = .550), indicating no significant difference between the two intervention groups in improving self-esteem.

Findings Related to Psychological Symptoms

Table 3
Summary of Repeated Measures ANOVA Results for Depression, Anxiety, and Stress

Variable	Main Effect of Time	Time × Group Interaction	Between-Group Effect	Pretest to Posttest Comparison	Posttest to Follow-up Comparison
Depression	$F = 119.77, *p* < .001, \eta^2 = .759$	$F = 1.83, *p* = .170$	$F = 0.36, *p* = .550$	$F = 179.23, *p* < .001, \eta^2 = .825$	$F = 9.21, *p* = .004, \eta^2 = .195$
Anxiety	$F = 38.09, *p* < .001, \eta^2 = .501$	$F = 0.38, *p* = .664$	$F = 0.18, *p* = .676$	$F = 21.22, *p* < .001, \eta^2 = .509$	$F = 3.47, *p* = .043, \eta^2 = .103$
Stress	$F = 130.97, *p* < .001, \eta^2 = .775$	$F = 1.43, *p* = .246$	$F = 0.02, *p* = .889$	$F = 232.07, *p* < .001, \eta^2 = .859$	$F = 2.09, *p* = .156$
Note. All values reported at a significance level of .05. Mauchly's test indicated that the assumption of sphericity was violated for depression (*p* = .038) and anxiety (*p* = .033), so Huynh-Feldt correction was used.					

Repeated measures ANOVA results indicated that the main effect of time was significant for all three variables in both treatment groups (*p* < .001). Effect sizes for all three variables ranged from .50 to .78. Pairwise comparisons showed that reductions from pretest to posttest were significant for all three variables (*p* < .001) with high effect sizes (.51–.86). Reductions from posttest to follow-up were significant for depression (*p* = .004) and anxiety (*p* = .043). The Time × Group interaction effect was non-significant for all three variables (*p* = .17–.66), and the between-group effect was non-significant for all three variables (*p* = .55–.89), confirming no significant difference between the two therapeutic approaches.

Findings Related to Self-Compassion

Table 4
Summary of Repeated Measures ANOVA Results for Self-Compassion

Effect	F	df	p	η^2p	Power
Main Effect of Time	47.733	1.242	< .001	.557	1.000
Time × Group Interaction	23.582	1.242	< .001	.383	.999
Between-Group Effect	7.125	1	.011	.158	.739
Pairwise Comparison (Pretest to Posttest) -- Main Effect	102.145	1	< .001	.729	1.000
Pairwise Comparison (Posttest to Follow-up) - Main Effect	1.484	1	.231	.038	.221
Pairwise Comparison (Pretest to Posttest) -- Interaction	51.762	1	< .001	.577	1.000
Pairwise Comparison (Posttest to Follow-up) - Interaction	0.484	1	.491	.013	.104
<i>Note.</i> Mauchly's test indicated that the assumption of sphericity was violated (* p < .001), so Greenhouse-Geisser correction was used.					

Levene's test results indicated that all calculated statistics for examining homogeneity of variances across pretest (Sig = .124), posttest (Sig = .130), and follow-up (Sig = .101) stages were non-significant, and Box's M test confirmed the homogeneity of variance-covariance matrices (Sig = .231). Multivariate tests revealed that both the main effect of time and the Time × Group interaction effect were significant for self-compassion (* p < .001). The main effect of time was significant (F = 47.733, * p < .001), with an effect size of .557. The Time × Group interaction was also significant (F = 23.582, * p < .001) with an effect size of .383. The between-group effect was significant (F = 7.125, * p = .011) with an effect size of .158, indicating that the MSC program was significantly more effective than CBT in enhancing self-compassion.

Discussion

This study aimed to compare the effectiveness of a Mindful Self-Compassion (MSC) training program with Cognitive-Behavioral Therapy (CBT) on self-esteem and psychological symptoms (depression, anxiety, and stress) in students with academic failure. The findings demonstrated that both interventions produced significant improvements in self-esteem and reductions in psychological symptoms, with effects maintained at the two-month follow-up.

Effectiveness of Interventions on Self-Esteem

The findings showed that both CBT and MSC significantly enhanced self-esteem in students with academic failure (* p < .001, effect size = .759). This finding aligns with previous research demonstrating

that CBT improves self-esteem through identifying, evaluating, and challenging irrational thoughts and beliefs (Sønmez et al., 2020; Eneogu et al., 2024; Gautam et al., 2020). In a review study, Kazemeini et al. (2011) showed that CBT can enhance self-esteem and self-efficacy in university students. Similarly, Beattie et al. (2018) demonstrated the significant effect of CBT on improving self-esteem in Cambridge University students.

Regarding the effectiveness of the self-compassion program on self-esteem, research has shown that self-compassion is associated with higher levels of psychological well-being and serves as an important protective factor (Neff et al., 2005; Neff, 2023). Sopian et al. (2023) found that mindful self-compassion significantly improved self-esteem in students. Abdollahi and Eisanejad (2023) also demonstrated that the mindful self-compassion program reduced academic burnout and increased academic self-regulation and resilience in students.

In explaining the effectiveness of CBT on self-esteem, this treatment, by focusing on negative thoughts, beliefs, and expectations about study and learning, changes students' attitudes toward learning and provides the foundation for improving self-esteem (Seyedmoharrami et al., 2016). CBT helps students strengthen their cognitive and metacognitive abilities through systematic testing and evaluation of cognitive assumptions (Alghamdi et al., 2023). Regarding the self-compassion program, self-compassion helps activate the soothing system in the individual by creating a compassionate inner relationship with oneself (Gilbert, 2009). Neff (2011) demonstrated that self-compassion, compared to self-esteem, has greater stability and represents a more sustainable source of psychological well-being.

Effectiveness of Interventions on Psychological Symptoms

The findings demonstrated that both treatments significantly reduced depression, anxiety, and stress symptoms in students with academic failure. This finding aligns with multiple previous studies (İme, 2024; Etzelmueller et al., 2020; Heidari et al., 2023). Jami et al. (2024) showed that cognitive-behavioral training based on intolerance of uncertainty and emotion regulation was effective on academic stress in students with social anxiety disorder. Soltani Delgosha (2023) also confirmed the effectiveness of compassion-based treatment on depression and anxiety in emergency medical workers.

In explaining the effectiveness of both treatments on psychological symptoms, both approaches operate by targeting negative automatic thoughts and improving emotion regulation (Aghalar & Akrami, 2022; Beck et al., 2024). CBT through direct cognitive restructuring and the MSC program through cultivating a non-judgmental and compassionate attitude toward thoughts and feelings both lead to reduced rumination and negative emotions (Marshall et al., 2015). Self-compassion has been shown to be associated with higher levels of heart rate variability leading to faster stress reduction (Gilbert, 2009). Additionally, self-compassion activates the parasympathetic system and reduces heart rate and respiration, which are symptoms associated with stress (Khedri et al., 2022).

Regarding the reduction of depressive symptoms, self-compassion reduces rumination and self-criticism (Barnard & Curry, 2011; Neff & Germer, 2018). Anuwatgasem et al. (2020) found that mindful self-

compassion played a significant role in reducing depressive symptoms. Friis et al. (2016) demonstrated that mindful self-compassion was effective in reducing stress and depressive symptoms, with effects maintained at 3-month follow-up.

Comparison of Intervention Effectiveness

A key finding was the absence of significant difference between the effectiveness of CBT and the MSC program on self-esteem and psychological symptoms. This finding aligns with previous research indicating equivalent effectiveness of CBT and mindfulness- and compassion-based therapies (Azadnia et al., 2021; Sadeghi et al., 2020; Sverre et al., 2023). Sverre et al. (2023), in a meta-analytic review of 30 studies, demonstrated equivalent effectiveness of mindfulness-based therapy and CBT on depressive symptoms.

In explaining this equivalence, both treatments lead to increased self-esteem and reduced anxiety and depression through reducing rumination, modifying negative thoughts, and improving emotion regulation (Charmchi et al., 2016). CBT through direct cognitive restructuring and the MSC program through cultivating a non-judgmental and compassionate attitude both contribute to reducing self-criticism and increasing self-acceptance (Hayes et al., 2011). Self-compassion can serve as an alternative mechanism for reducing threats arising from the experience of failure, helping individuals learn from failure (Neff, 2003; Leary et al., 2007).

Specific Effectiveness of the MSC Program on Self-Compassion

The findings demonstrated that the MSC program was significantly more effective than CBT in enhancing self-compassion in students ($p = .011$, effect size = .158). This finding is consistent with previous research (Davoudi Moghaddam et al., 2020; Alirezaee et al., 2021). Foroughi et al. (2022) demonstrated that mindful self-compassion treatment was effective on sleep quality, rumination, and self-compassion in individuals with cardiovascular disease. Rouhani and Harouni (2020) also confirmed the effectiveness of compassion-focused therapy on self-compassion.

In explaining this finding, the MSC program specifically focuses on cultivating self-compassion through exercises such as loving-kindness meditation, compassionate letter-writing, and soothing breathing (Germer & Neff, 2019; Germer & Neff, 2019). These exercises directly target the three core components of self-compassion (Neff, 2003). In contrast, while CBT may indirectly enhance self-compassion through reducing self-criticism, it does not specifically focus on cultivating self-kindness (Tarrier et al., 1998), explaining the greater effectiveness of the MSC program on self-compassion.

Maintenance of Treatment Effects

The findings demonstrated that treatment effects of both interventions on self-esteem and psychological symptoms remained stable at the two-month follow-up. This finding aligns with previous research showing maintenance of treatment effects for cognitive-behavioral and compassion- and

mindfulness-based therapies at multi-month follow-ups (Blay et al., 2002; Baer, 2010; Van Dis et al., 2020). Eriksson et al. (2018) showed that mindful self-compassion training had sustained effects on stress and burnout symptoms among practicing psychologists. Haukaas et al. (2018) found that results were maintained at 6-month follow-up.

Maintenance of treatment effects can be attributed to the learning of sustainable skills during interventions. In CBT, students learn cognitive restructuring skills (James et al., 2020). In the self-compassion program, students develop an internal resource of flexibility by cultivating a kind attitude toward themselves (Neff & Costigan, 2014). Research has shown that self-compassion enhances psychological resilience and makes individuals more resistant to future distress (Neff et al., 2007; MacBeth & Gumley, 2012).

Conclusions

The findings of this study demonstrated that both Cognitive-Behavioral Therapy and the Mindful Self-Compassion training program are effective interventions for improving mental health and enhancing self-esteem in students with academic failure. Both interventions significantly reduced depression, anxiety, and stress symptoms while increasing self-esteem, with effects maintained up to two months post-intervention. However, no significant difference was observed between the two methods on the primary outcome variables, indicating equivalence of these approaches in improving psychological symptoms and enhancing self-esteem.

Notably, the self-compassion program showed greater effectiveness in increasing students' self-compassion, representing a specific advantage of this program in cultivating self-kindness and self-acceptance. Given that self-compassion serves as an internal resource of resilience that can protect individuals against future stressors (Neff et al., 2021), this advantage may have important implications for students' mental health.

Given the equivalent effectiveness of both methods on primary outcomes and the advantage of the self-compassion program in enhancing self-compassion, along with its educational nature and lower cost (Pourshalchi et al., 2024), it can be recommended as an efficient intervention in university counseling centers for students with academic failure. Furthermore, since the self-compassion program helps students to be kind to themselves rather than self-critical when facing academic failure (Neff et al., 2008), it can assist them in learning from experiences of academic failure and coping effectively with them.

Limitations

1. **Limited sample generalizability.** The sample was restricted to medical sciences students at Kermanshah University of Medical Sciences, limiting generalizability of findings (Moradi et al., 2018).
2. **Short follow-up period.** The two-month follow-up period limits the ability to assess long-term sustainability of treatment effects (Blay et al., 2002).
3. **Uncontrolled socioeconomic variables.** Inability to fully control for participants' socioeconomic status, which may have served as a confounding variable.
4. **Absence of a control group.** The lack of a control group precludes comparison with no-intervention conditions, although the primary aim was to compare two active treatment approaches.

Declarations

Conflicts of Interest

The authors declare that they have no conflicts of interest in relation to the research, authorship, and/or publication of this article.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This study was approved by the Research Ethics Committee of Kermanshah University of Medical Sciences (Ethics Code: IR.KUMS.MED.REC.1403.218).

Consent to Participate

Informed consent was obtained from all individual participants included in the study.

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Author Contribution

Detailed Description of Contributions (CRediT Roles) E.P.Z (First Author): Conducted the data collection process, including administering questionnaires and delivering the Mindful Self-Compassion and Cognitive-Behavioral Therapy interventions to participants. A.P.F, Ph.D. (Corresponding Author & Supervisor): Provided overall guidance and oversight throughout all phases of the research, from

conception to manuscript preparation, Designed the study protocol and selected appropriate assessment instruments. A.F, Ph.D. (Co-Supervisor): Provided specialized supervision on the Mindful Self-Compassion (MSC) intervention protocol and contributed to the development of the intervention protocol and ensured its fidelity. O.P.F, (Co-Author): Provided expert feedback and revisions on the manuscript, particularly regarding the MSC program and its theoretical framework and conducted the statistical analyses using SPSS, including repeated measures ANOVA, and interpreted the results. Assisted in drafting the results section and contributed to the final revision of the manuscript.

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