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The Effect of Mindfulness-Based Cognitive Therapy on Academic Self-Defeating Behaviors and Social Anxiety

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ABSTRACT

Background and Objective: One of the common problems of young people is mental health, which can have a significant effect on their quality of life and academic performance. The present study was conducted to evaluate the effect of mindfulness-based cognitive therapy on academic self-defeating behaviors and social phobia among students of Babol University of Medical Sciences.

Methods: This cross-sectional study was conducted from January 2025 to April 2025 on 40 female students of Babol University of Medical Sciences in experimental and control groups (n=20). The experimental group received mindfulness-based cognitive therapy in 8 90-minute sessions over two months. The control group did not receive any intervention. Data were collected using the Cunningham's Self-Destructive Behavior Scale with 21 items in 6 subscales of procrastination, self-handicapping, overcommitment, invalid self-assessments, impulsive behavior (inability to delay gratification), and delayed decision-making, with a total score of over 52 indicating high self-defeating behaviors, and Wells Social Anxiety Inventory with 21 items in three subscales of health worry, social worry, and meta-worry, which are scored using a 4-point Likert scale; higher scores indicate greater intellectual anxiety. The results before treatment, after treatment, and in the two-month follow-up were compared and analyzed.

Findings: The results showed that after the treatment, mindfulness-based cognitive therapy had a significant effect on reducing academic self-defeating behaviors (46.87±5.22 vs. 51.39±3.76) and social anxiety (15.25±3.14 vs. 65.18±3.97) in the experimental group compared to the control group, and in the two-month follow-up, it was (46.77±5.21 vs. 51.34±3.70) and (15.20±3.23 vs. 63.18±3.96) ($p<0.05$).

Conclusion: The results of the present study demonstrated that mindfulness-based cognitive therapy can be used as an effective psychological strategy to promote mental health and reduce social problems.

Keywords: *Social Anxiety, Students of the University of Medical Sciences, Academic Self-Defeating Behaviors, Mindfulness.*

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Introduction

Anxiety and the psychological stress caused by it can lead to numerous psychological and behavioral problems that threaten a person's health (1). Anxiety is divided into two types: facilitating and debilitating (2). Temporary anxiety is normal in certain circumstances, but its persistence and excessive intensity can harm health (3). Social anxiety is a persistent fear or worry about situations in which an individual is exposed to the evaluation of others, such as giving a speech or interacting with unfamiliar people, and is a common problem among medical students (4). One of the consequences of this anxiety is the emergence of academic self-defeating behaviors; a maladaptive strategy that an individual uses to maintain his/her mental image of possible failure. In this behavior, the person attributes failure to external factors by procrastinating or reducing effort (5, 6). This pattern is formed in response to the fear of failure and leads to academic failure, anxiety, and lack of motivation in the long term. Research has shown that anxiety can lead to self-defeating behaviors by creating negative and self-limiting thoughts (7).

Mindfulness is associated with greater well-being in daily life, while mind wandering, which accounts for about 47% of daily time, is associated with negative psychological consequences (8). Mindfulness can reduce the severity of social anxiety and self-defeating behaviors through various psychological pathways. By increasing awareness of thoughts and emotions, mindfulness exercises help individuals identify anxiety and observe it without immediate reaction, which reduces the cycle of worry and stress (9). Mindfulness also prevents destructive responses by reducing self-judgment, accepting negative thoughts, and controlling emotional reactions (10, 11). These exercises strengthen adaptive coping skills and encourage individuals to use rational and calming strategies instead of avoidance or unhealthy behaviors (12, 13). In addition, mindfulness helps reduce anxiety, anger, and self-defeating behaviors by reducing cortisol levels and physiological responses to stress, focusing on the present moment, and controlling negative emotions (11-13).

Mindfulness-based cognitive therapy in the form of structured programs can improve the quality of psychological life by reducing stress, anxiety, and depression (14). In educational settings, mindfulness has also been recognized as an effective method for increasing concentration, reducing test anxiety, and improving academic motivation (15). Research has shown that mindfulness plays an important role in reducing self-defeating and avoidance behaviors (16). Mindfulness therapy reduces social anxiety and increases self-efficacy in students, and also reduces procrastination and improves academic performance (17, 18). Students, especially in medical sciences, are exposed to significant psychological pressures, including a high volume of material, clinical responsibilities, and intense competition, which can threaten their mental health (19). Therefore, mindfulness-based cognitive therapy has received increasing attention as one of the new and effective approaches in the field of mental health. In recent years, this method has been recognized as an effective strategy for reducing anxiety, depression, and improving cognitive and emotional functioning (20, 21). A review of studies has also shown that mindfulness is effective in reducing symptoms of depression, anxiety, and self-defeating behaviors (22).

Medical students face special pressures, including high workloads, clinical responsibilities, and intense competition, which can increase the risk of anxiety and self-defeating behaviors (23). Despite studies related to students' mental health performed in Iran, few comprehensive and applied studies have been conducted regarding the effectiveness of mindfulness-based cognitive therapy on academic self-defeating behaviors and social anxiety in specific and challenging environments such as medical universities. Therefore, conducting studies that can examine the effect of mindfulness-based cognitive therapy in reducing these problems in Iranian medical universities is of great importance. The innovation of this research resides in applying mindfulness-based cognitive therapy as a structured intervention and localizing it in the cultural

and educational context of Iran. This study, for the first time, simultaneously examines the effect of this approach on social anxiety and academic self-defeating behaviors among medical students and can be a basis for designing mental health promotion programs in academic environments. Considering the above, the present study was conducted with the aim of investigating the effectiveness of mindfulness-based cognitive therapy on academic self-defeating behaviors and social anxiety in students of Babol University of Medical Sciences.

Methods

After approval by the Ethics Committee of Islamic Azad University, Babol Branch with the code IR.IAU.BABOL.REC.1403.151, this cross-sectional study was conducted from January 2025 to April 2025 on 40 female students who were randomly divided into experimental and control groups. Female students in the age range of 18-25 years, who did not participate in similar mindfulness or psychotherapy programs in the past 6 months (18), completed the informed consent form of their own free will, were able to attend the mindfulness sessions continuously, and obtained scores below the cut-off point in the research questionnaires in the pre-test, were included in the study. Subjects were excluded from the study if they had a severe psychiatric disorder that was not recorded in the pre-screening but was identified in the clinical interview before the intervention (e.g., active schizophrenia, bipolar disorder in the manic phase), consent withdrawal, prolonged absence, failure to complete the post-test and follow-up questionnaires (e.g., being unavailable for all follow-up appointments), failure to attend more than 2 sessions or more than 30% of the sessions without a valid reason (24), and the occurrence of an acute psychiatric event during the study (e.g., severe increase in self-harm thoughts, attempted self-harm or suicide, psychotic thoughts) that required immediate referral and specialized treatment.

The statistical sample was selected from female students of the Faculty of Nursing, Babol University of Medical Sciences who volunteered to participate in the educational and research sessions of this project and scored lower than the cut-off points in the research questionnaires in the pre-test. Power G software was used to determine the sample size. The minimum sample size required in this study is 30 people, but 40 subjects were selected as a prediction so that if a subject withdrew from the design, the validity of the research results would not be affected; 20 people were selected as the experimental group and 20 as the control group.

The experimental group received mindfulness training based on the mindfulness-based cognitive therapy protocol proposed by Kabat-Zinn (25), but the control group did not receive any training. Both groups simultaneously responded to the pretest, posttest, and follow-up two months later. After the follow-up period, the control group also received a mindfulness training course. The mindfulness training program was implemented in eight 90-minute sessions once a week according to the protocol (Table 1). To validate the content of the mindfulness therapy program, this tool was provided to ten clinical psychologists to identify the most important components and dimensions based on their experiences and observations, and the content of the therapy program was then modified. The content validity index using the Waltz and Bausell method was 0.9, which was confirmed by comparing it with the minimum acceptable value of 0.79 (26).

Cunningham Self-Defeating Behavior Scale: The Self-Defeating Academic Behavior and Cognition Questionnaire is one of the subscales of the Cunningham Self-Defeating Behavior Scale, which has 21 questions to assess 6 types of self-defeating behavior (27). The academic self-defeating subscale of this questionnaire was used in this study. The psychometric properties of this questionnaire have been examined for two scales of procrastination and self-defeating (28). The content, face, and criterion validity of this

questionnaire have been assessed as appropriate (29). In this study, the internal validity was estimated to be 0.72 using Cronbach's alpha.

Wells Social Anxiety Inventory: This questionnaire was developed by Wells in 1994 and is one of the subscales of the Wells Thought Control Questionnaire (30). This questionnaire has 8 items, and each question is answered using a four-point Likert scale (almost never= 1, sometimes= 2, often= 3, almost always= 4). This questionnaire has 21 questions and aims to measure three areas of anxious thoughts (health worry, social worry and meta-worry). Its response scale is based on Likert scale. Wells reported Cronbach's alpha coefficients for social anxiety as 0.84 and 0.81 (30). The internal consistency of the questionnaire was calculated in a study conducted on 60 students using Cronbach's alpha and a value of 0.67 was obtained for social anxiety (31). Data were analyzed using SPSS version 27 and Shapiro-Wilk test, Levene's test, Mauchly's Test of Sphericity, repeated measures ANOVA and Bonferroni and Chi-square tests, and $p<0.05$ was considered significant.

Table 1. Mindfulness training session schedule

Sessions	Training program for each session
First session	Introducing group members, rules for attending meetings, introducing the concept of mindfulness, getting out of autopilot, practicing raisin exercise. Assignment: Doing one of the daily activities, such as brushing your teeth, with moment-to-moment awareness.
Second session	Body scan meditation practice, conscious checking of awareness at different times, feedback on assignments, appreciating the "here and now" by recording pleasant events, ending the session with a two- or three-minute breathing focus practice. Assignment: Body scan practice and taking five focused breaths before bed.
Third session	Relaxation and meditation focused on body movements (yoga), practice review: explanation of the logic of yoga practices and the close relationship between mind and body, teaching the three-minute breathing space, assignment feedback. Assignment: Body scan practice and taking five focused breaths before bed, also paying attention to the good things that happened each day.
Fourth session	Five-minute practice of seeing and hearing, mindfulness meditation of breathing, body, sounds, and thoughts to reduce inconsistency. Assignment feedback: Definition of stress, relationship between stress and health and behavior, pause technique. Assignment: Body scan practice and taking five focused breaths before bed, also paying attention to sounds and objects in the sleeping area.
Fifth session	Sitting meditation focused on breath, body, sounds and thoughts, how to deal with negative emotions, feedback on assignments, assertive acceptance, doing meditation to face problems. Assignment: Sitting meditation and doing focused breathing when facing unpleasant feelings and thoughts.
Sixth session	Mindfulness meditation, assignment review, generalization of awareness, unpleasant events chart, communication mindfulness, active listening skills, and bold statement steps. Assignment: Five focused breaths before bed and mindfulness practice.
Seventh session	Sitting meditation focused on body, sounds, and thoughts, conscious self-questioning, three-minute breathing space, or mindful walking. Assignment: Five focused breaths before bed and practicing focused breathing when faced with unpleasant feelings and thoughts.
Eighth session	Reviewing the exercise and its differences from the first session's exercise, feedback on completed assignments, reviewing and summarizing past sessions, planning to use the skills learned in the future, and starting a new lifestyle.

Results

The two groups in this study did not differ significantly in terms of demographic variables. In both groups, 17 people were 20-21 years old and 3 people were 22-23 years old (Table 2). The mean pre-test scores of academic self-defeating behaviors and social anxiety in the experimental and control groups were almost equal. However, in the post-test, the mean scores of the experimental group (46.87±5.22) were significantly different from the mean scores of the control group (51.29±5.64) ($p<0.001$). The mean post-test and follow-up scores of academic self-defeating behaviors were also significant compared to the pre-test (46.87±5.22, 46.77±5.21 vs. 51.29±5.64) ($p<0.001$) (Table 3).

Table 2. Demographic information for both groups

Variable	Mindfulness training Number(%)	Control Number(%)	Determining the difference between two groups p-value
Age			
20-21 years	17(85)	17(85)	0.999
22-23 years	3(15)	3(15)	
Father's employment status			
Employee	10(50)	13(65)	0.936
Self-employed	10(50)	7(35)	
Mother's employment status			
Employee	7(35)	10(50)	
Self-employed	1(5)	0(0)	0.908
Housewife	12(60)	10(50)	
Father's educational status			
High school diploma and below	10(50)	7(35)	0.936
Bachelor's degree and above	10(50)	13(65)	
Mother's educational status			
High school diploma and below	10(50)	8(40)	0.945
Bachelor's degree and above	10(50)	12(60)	

Table 3. Comparison of mean pre-test, post-test, and follow-up scores for academic self-defeating behaviors and social anxiety in the experimental and control groups

Group / Variable	Pre-test Mean±SD	Post-test Mean±SD	Follow-up two months later Mean±SD
Self-defeating			
Mindfulness training	51.29±5.64	46.87±5.22	46.77±5.21
Control	51.49±3.91	51.39±3.76	51.34±3.70
Social anxiety			
Mindfulness training	18.57±4.32	15.25±3.14	15.20±3.23
Control	18.68±3.98	18.65±3.97	18.63±3.96
Procrastination			
Mindfulness training	33.48±3.19	30.15±1.26	30.10±1.29
Control	33.68±2.77	33.54±2.65	33.46±2.65

The mean pre-test scores of anxious thoughts in the experimental and control groups were almost equal, but in the post-test and follow-up two months later, the mean scores of anxious thoughts in the experimental group (38.37±4.14 and 38.25±4.30) were significantly different from the mean scores of the control group (48.48±5.60 and 48.34±5.57) (Table 4).

Table 4. Comparison of mean pre-test and post-test scores of anxious thoughts in the experimental and control groups

Group / Variable	Pre-test SD±Mean	Post-test SD±Mean	Follow-up two months later SD±Mean
Meta-Worry			
Mindfulness training	17.52±4.15	14.23±2.10	14.20±2.13
Control	17.65±3.16	17.60±3.21	17.55±3.18
Social Anxiety	18.57±4.32		
Mindfulness Training		15.25±3.14	15.20±3.23
Control	18.68±3.98	18.65±3.97	18.63±3.96
Social Anxiety	12.15±3.79		
Mindfulness Training		8.90±1.97	8.85±1.92
Control	12.28±2.92	12.23±2.95	12.16±2.99
Anxious Thoughts			
Mindfulness Training	48.25±7.53	38.37±4.14	38.25±4.30
Control	48.60±5.45	48.48±5.60	48.34±5.57

In examining the difference in mean values, the results showed that there was a significant difference ($p<0.001$) in the anxious thoughts of female nursing students at Babol University of Medical Sciences between the pre-test and post-test (4.999±0.828) and pre-test and follow-up (5.131±0.846). However, the difference between post-test and follow-up (0.132±0.054) was not significant, which is due to the stability of the treatment.

Discussion

The results of the study demonstrated that mindfulness-based cognitive therapy significantly reduced academic self-defeating behaviors and social anxiety in the experimental group. The mean scores of the experimental group in the post-test and follow-up stages were significantly lower than those of the control group. Furthermore, the difference between pre-test and post-test and between pre-test and follow-up was significant, but no significant difference was observed between post-test and follow-up; this indicates the stability of the intervention effect. These results are also consistent with previous studies (32-36). Various studies have shown that social anxiety and academic self-defeating behaviors have a bidirectional relationship. Individuals with high social anxiety, due to fear of negative evaluation, resort to self-defeating behaviors more often to attribute possible failure to external factors (37). Although these behaviors may reduce anxiety in the short term, they cause a decline in academic performance and exacerbate anxiety in the long term (38). In this regard, Majeed et al. reported that social anxiety is negatively related to academic self-efficacy and that these two variables significantly predict academic success (39). Consequently, social anxiety can increase the risk of self-defeating behaviors by reducing self-efficacy (13).

Evidence suggests that high levels of anxiety are directly related to increased self-defeating behaviors in education, and psychological interventions such as mindfulness can reduce this relationship. Jia et al. also showed that academic anxiety is directly related to increased self-defeating, and academic procrastination plays a mediating role; that is, anxiety causes increased procrastination, and procrastination in turn increases self-defeating (40). On the other hand, the findings of Mirzaei-Alavijeh et al. showed that academic self-defeating is one of the serious obstacles to the active participation of medical students in educational activities (41). These behaviors are usually used as a defensive strategy to protect themselves from the experience of failure, especially when faced with heavy academic workload. Therefore, it can be said that academic self-defeating leads to reduced academic engagement and decreased academic performance, and this cycle will itself lead to the continuation and intensification of self-defeating.

The results of the present study also showed that mindfulness training significantly reduced social anxiety. This finding is consistent with the research of Fazia et al., who reported that mindfulness training reduces anxiety levels by reducing negative self-awareness, improving emotion regulation, and increasing acceptance of social experiences (42). The study of Piri et al. also showed that mindfulness training with the Kabat-Zinn model significantly reduces stress caused by academic expectations and self-defeating behaviors (32). Mohammadi et al. also reported that mindfulness has a mediating role between perfectionism and social anxiety and reduces anxiety severity by reducing rumination and increasing emotional acceptance (33). Mindfulness helps people distance themselves from negative cognitive cycles by reducing rumination and increasing nonjudgmental acceptance. This reduces the need to use self-defeating as a defense mechanism. Furthermore, mindfulness reduces the likelihood of self-defeating behaviors by enhancing self-compassion, resilience, and self-esteem (36). Although the findings of the present study support the effectiveness of mindfulness, some studies have reached different results.

Kuyken et al. showed that comprehensive classroom-based implementation did not have a significant effect on reducing negative behavioral outcomes in adolescents (43). Galla et al. also reported that mindfulness-based interventions were not only ineffective in reducing anxiety, depression, stress, and negative behaviors, but also had no significant effect on improving attention, executive function, mindfulness, and social behavior, and even a slight decrease was observed in some indicators (44). The difference in results may be due to the difference in the statistical population. In the present study, the sample included adult students who have a higher level of self-regulation, abstract cognition, and intrinsic motivation; whereas the study by Galla et al. focused on adolescents, who may have more difficulty understanding and implementing mindfulness exercises. The structure of the training sessions may also be an important factor.

In the present study, mindfulness intervention was provided in eight standard sessions with home exercises and continuous follow-up; whereas in some studies with contradictory results, the number of sessions was limited or no home exercises were provided (45). In addition, differences in the instruments used to measure social anxiety and academic self-defeating could also lead to different results, as some instruments do not have the necessary sensitivity to detect subtle changes (46). Another factor is the level of commitment and active participation of participants, because the effectiveness of mindfulness largely depends on the level of daily practice. In studies where this participation was low, poor results have been reported (47). Therefore, although the findings of the present study are consistent with many studies, the existence of different results indicates that demographic factors, session design, measurement tools, and level of participation can play a role in explaining the heterogeneity of the findings.

The limitations of the present study include samples being limited to students of Babol University of Medical Sciences; therefore, generalization of the results to other groups should be done with caution. The lack of coordination between some organizations in the research process is also another limitation. According to the research findings, it can be concluded that mindfulness-based therapy, through cognitive and emotional mechanisms, effectively plays a role in reducing social anxiety and academic self-defeating behaviors. This intervention disrupts the vicious cycles that link these two dependent variables by increasing momentary awareness, reducing rumination, and improving emotional regulation. Therefore, mindfulness is not only an effective therapeutic tool for reducing social anxiety, but can also be used as a preventive strategy to reduce academic self-defeating behaviors. As a result, mindfulness training as an effective psychological intervention has the potential to be applied in educational, counseling, and preventive programs in universities and can play an important role in promoting students' mental health. Therefore, it is suggested that similar studies be conducted with more diverse samples in terms of gender, field of study, and geographical location. Moreover, the effects of mindfulness training on other variables such as depression, resilience, life satisfaction, and sleep should be examined.

Conflict of interest: The authors declare that there are no financial, scientific, or personal conflicts of interest in connection with the conduct and publication of this research.

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