

Research Paper

Teaching Cognitive Behavioral Techniques on Attachment Styles, Mental health, and Optimism in Medical Students at Islamic Azad University, Mashhad Branch, Iran

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ABSTRACT

Objective: This research investigates the effectiveness of teaching cognitive behavioral techniques on changing attachment styles and increasing mental health and optimism among medical students of Islamic Azad University, Mashhad Branch, Iran.

Methods: This quasi-experimental research adopted a pre-test and post-test with a control group. The statistical population included all medical students of Azad University from 2019 to 2020 in Mashhad City, Iran. A total of 13 medical students were selected by the purposeful sampling method. Then, using a random number table, they were placed in two experimental groups and a control group (n=15 in each group). Medical students in the cognitive behavioral therapy group received eleven 70-min sessions of cognitive behavioral therapy over five weeks (two sessions per week). The control group was considered on the waiting list. The attachment style questionnaire, 28-item general health questionnaire, and the life orientation test-revised were used for data collection. The data were analyzed using the independent t-test and the multivariate analysis of variance in the SPSS software, version 25. The significance level was considered to be <0.05.

Results: There was a statistically significant difference in the mean scores of attachment styles, mental health, and optimism between the two groups immediately after the intervention (P<0.05).

Conclusion: Enhanced secure attachment style, the level of mental health, and optimism increased significantly in the cognitive behavioral therapy group after the intervention. Therefore, it is necessary to take particular measures to regularly hold sessions of cognitive behavioral therapy for medical students with insecure attachment.

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Highlights

Teaching cognitive behavioral techniques is a valuable form of brief therapy that focuses on the relationships between your thoughts, feelings, and actions, and how they can impact each other.

Attachment Styles refer to individuals' level of comfort and confidence in intimate relationships, their fear of rejection and desire for closeness, as well as their tendency towards either self-reliance or maintaining distance in interpersonal connections.

Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community.

Optimism is generally accepted by psychiatrists, psychologists and other caring professionals as a feature of mental health.

Plain Language Summary

Medical students often face a lot of stress and anxiety. Considering that optimism is considered to reduce anxiety and increase mental health, the researchers of this article tried to help this group of important people in the society with a cognitive behavioral therapy approach.

Introduction

The rigorous nature of medical training leads to increased stress levels in medical students, which is normal compared to students in other fields of study and the general population (Colonnello et al., 2022). Many authors widely confirm that the medical field should be aware of the high prevalence of mental health problems, such as mood disorders, anxiety, and psychological distress in medical students (Esmat et al., 2021). Medical education involves producing competent and mentally healthy physicians to meet the physical and psychological health needs of their patients with empathy and professionalism. However, students in the early stages of their medical studies showed a decline in mental health and maintained this state throughout their studies. The reasons for the anxiety are numerous, including high academic pressure, excessive workload, financial difficulties, lack of sleep, and excessive free time (Haykal et al., 2022). A recent study conducted around the world found that more than 25% of medical students felt depressed, and 11.1% had suicidal thoughts (Rotenstein et al., 2016).

Extensive literature has shown the importance of attachment security for the psychological well-being of medical students (Calvo et al., 2022). According to the attachment theory, individual differences in activity pat-

terns and, thus, adult attachment orientations are associated with distinct patterns of coping styles and coping strategies (Mikulincer & Shaver, 2019). The study revealed that secure attachment is the dominant manner in which people establish connections with one another. Medical students could find this attachment style highly advantageous as it enables them to effectively manage stressful situations (Moghadam et al., 2016). In other words, people with different attachment styles use different strategies to regulate emotions and process information (Mikulincer & Shaver, 2019). The results of a study conducted by Moghadam et al. (2016) indicate a relationship between attachment style and feelings of environmental control and dominance (Moghadam et al., 2016). Zilcha-Mano also found that people with an insecure attachment style have limited interpersonal relationships due to their inability to dominate their environment and establish positive relationships (Zilcha-Mano, 2019).

Additionally, there is a high prevalence of mental health issues among medical students, which is a cause of concern for healthcare professionals and educators (Vitorino et al., 2022). The unique circumstances faced by students, such as being away from their family, being part of a large and stressful group, facing economic difficulties, and having limited income, as well as a demanding curriculum and intense competition, make them more vulnerable to mental health deterioration.

As a result, it is crucial to teach coping mechanisms to address these challenges (Deng et al., 2022). Moreover, academic pressure, sleep deprivation, social and familial expectations, financial hardships, and constant exposure to patient suffering and death further contribute to the psychological distress experienced by students, leading to depressive symptoms and declining mental health (Boni et al., 2018). Previous research has found a high prevalence of psychological distress among healthcare university students in Tunisia and identified specific protective factors that can be targeted to reduce mental health problems (Krifa et al., 2022).

Krifa et al. demonstrated that optimism mediates the effects of protective factors on reducing mental health problems (Krifa et al., 2022). Optimism is considered a psychological resource and has been consistently linked with improved well-being and physical health in studies (Chu et al., 2022). It also predicts lower levels of anxiety and depression in cancer patients (Mo et al., 2022) and better sleep quality in the general population (Hernandez et al., 2020). Optimism refers to having a positive attitude and is a concept within the realm of positive psychology. It can be intrinsic to an individual's temperament, with some naturally possessing a more positive outlook on life; on the other hand, it can also be acquired through certain experiences (Singh & Jha, 2013).

In addition, mental health issues are prevalent among medical students, which is a concern for healthcare professionals and educators (Vitorino et al., 2022). The unique circumstances that student face, such as being away from family, participating in a large and stressful group, economic problems, insufficient income, numerous courses, and intense competition, make them vulnerable to mental health deterioration. Accordingly, teaching techniques that help students cope with these conditions are vital at this stage (Deng et al., 2022). The academic pressure, sleep deprivation, social and family expectations, financial difficulties, and daily exposure to patient suffering and death also contribute to the psychological distress experienced by students, leading to depressive symptoms and deteriorating mental health (Boni et al., 2018).

Accordingly, recent experimental studies have examined interventions aimed at increasing attachment security and their positive effects on mental health and optimism (Mikulincer & Shaver, 2007). The six articles included in this series provide examples of how cognitive behavioral therapy (CBT) techniques, primarily designed for outpatient mental health settings, can be adapted for specialized medical settings. They also dis-

cuss specific considerations and recommendations for its implementation (Magidson & Weisberg, 2014). Group CBT sessions effectively alleviate depression, anxiety, and stress, except for self-esteem. Therefore, further research could explore these findings by expanding the population to include different majors (Changklang & Ranteh, 2023). Additionally, the findings suggest that CBT for panic has implications for attachment representations (Zalaznik et al., 2019). The results indicate that CBT is an effective treatment for anxiety, hardiness, and self-efficacy. By managing anxiety, students' levels of hardiness and self-efficacy can be increased, enabling them to better cope with the various challenges in their lives (Sahranavard et al., 2019). Furthermore, CBT techniques improve women's optimism by focusing on communication and conflict resolution skills, leading to a positive attitude and life satisfaction (Dafei et al., 2021).

As a result, medical students must be educated on this subject to handle risky situations in their lives. Additionally, the research gap is centered on the insufficient evidence of psychological interventions to enhance the effectiveness of variables that impact the mental health of medical students. Hence, incorporating the variables mentioned above into this group is novel. The researcher determined that the use of CBT techniques could have a positive impact on the mental health of medical students by altering their attachment style within the research context mentioned above.

Materials and Methods

Design and participants

This quasi-experimental research adopted a pre-test and post-test design with a control group. The statistical population included all medical students of **Islamic Azad University** from 2019 to 2020 in Mashhad City, Iran. A total of 30 medical students were selected via the purposeful sampling method. Then, through a random number table, the participants were divided into two experimental groups and one control group (n=15 in each group). The required sample size was calculated based on an effect size of 0.40, a power level of 0.95, a test power of 0.80, and a dropout rate of 10%. The distribution of the attachment styles questionnaire was conducted to obtain a sample from students who answered the advertised call and were willing to participate in training on CBT techniques (Table 1).

Following the researcher receiving approval to conduct research from the **Islamic Azad University, Mashhad Branch**, they submitted an application to the university's

Medical Sciences Faculty. Subsequently, the attachment-style questionnaire was provided to the students who agreed to participate. A total of 30 individuals with insecure attachment styles were chosen for the study after the test. Next, the envelopes were unsealed, and the study participants were divided into two groups: One control group comprising 15 individuals and an experimental group with 15 individuals to analyze the data statistically. The faculty's education officer coordinated the CBT course and its arrangement. The department's education manager coordinated a cognitive-behavioral engineering education course and its location. For 5 weeks, each session was held for 70 min on Tuesdays and Thursdays. During the initial meeting of the training program, it was revealed that the course was developed in conjunction with the university faculty to investigate this matter.

Medical students were asked about their willingness to participate in these meetings. Medical students expressed their willingness and desire to participate in meetings with researchers. Before implementing the independent variable, the experimental and control groups were assessed using a pre-test administered by a 28-item general health questionnaire (GHQ-28) and life orientation test-revised (LOT-R) as compared to their previous attempts. The experimental group was given CBT training, which was an independent variable, while the control group did not receive any training. Following the training, the experimental and control groups were re-evaluated with a post-test to assess the influence of the independent variable on the dependent variable.

The experimental groups were involved with researchers and students bilaterally discussing issues, followed by students completing homework and engaging in activities. The researchers also inquired about the training's potential effects on the students. The majority of students had a positive outlook on this training. The analysis of the data was carried out using the SPSS software along with descriptive statistics (Mean±SD), independent t-test, and inferential statistics for analysis covariance. The independent t-test was used to compare the pre-test scores of both the control and experimental groups. At the same time, the analysis of the covariance method was employed to determine the effects of training in CBT techniques on attachment styles, mental health, and optimism.

Attachment style questionnaire

Shaver and Hazen (1987) developed the attachment style questionnaire (ASQ), and it was adapted for use in Iran with students from Tehran University. This survey

consists of 15 items, with five items devoted to secure, avoidant, and ambivalent attachment styles. The questionnaire uses a scoring system ranging from very low (score=1) to very high (score=5), and the scores for the attachment subscales are calculated by averaging the responses to the five questions for each subscale. Five items represent each attachment style (secure, avoidant, and ambivalent). Shaver and Hazen (1987) reported a reliability coefficient of 0.8 for the entire questionnaire and a Cronbach α of 0.78. They also found proper face and content and construct validity. Rahimian Boogar et al. (2007) obtained favorable reliability coefficients for the entire questionnaire and the ambivalent, avoidant, and secure styles, with Cronbach α values of 0.75, 0.83, 0.81, and 0.77, respectively. In the present study, the Cronbach α for the entire questionnaire was 0.71.

The 28-item general health questionnaire

To evaluate the effect of the psychosocial intervention on individuals' well-being, we chose the GHQ-28 as the leading indicator of outcomes. Our decision was influenced by the results of a previous study and the tool's effectiveness in measuring emotional stress (Goldberg & Williams, 1988). The GHQ-28 requires participants to rate their general health over the past few weeks using behavioral items based on a 4-point scale, indicating the frequency of their experiences as follows: "Not at all," "no more than usual," "rather more than usual," and "much more than usual." The scoring system used in this study was consistent with the original Likert scale, with scores ranging from 0 to 3. The minimum score on the 28-item version is 0, while the maximum score is 84. Higher scores on the GHQ-28 indicate higher levels of distress (Goldberg & Hillier, 1979). Goldberg suggests that individuals with total scores of 23 or lower may be considered non-psychiatric, while subjects with scores higher than 24 may be classified as psychiatric. However, this threshold is not an absolute cutoff, and it is recommended that researchers establish their cutoff score based on the mean of their specific sample (Goldberg et al., 1998). The Iranian version of the GHQ-28 used in this study demonstrated good internal consistency, with Cronbach α , split-half coefficients, and test re-test reliability coefficients of 0.9, 0.89, and 0.58, respectively (Malekooti et al., 2006). In our study, the Persian version had an internal consistency of 0.78.

The life orientation test-revised questionnaire

The researchers utilized the LOT-R to assess dispositional optimism (Scheier et al., 1994). This test consists of 10 items for participants to complete, with four of the

Table 1. Summary of the structure of cognitive-behavioral techniques training sessions (Henrich et al., 2023)

Sessions	Content
1 st session	Introduction and familiarization with the objectives of the course and pre-test; getting acquainted with the researcher and the subject; trying to establish a good rapport and creating a calm and informal atmosphere; clearly stating the expectations of those participating in the group; conducting a pre-test; stating the training objectives, rules, and how to perform work.
2 nd session	Introducing and explaining the research problem; introducing the cognitive-behavioral approach and becoming familiar with the meaning and concept of attachment styles; helping students understand their way of thinking.
3 rd session	Training and introducing cognitive techniques; familiarity with cognitive distortions and logical and illogical beliefs; recognizing spontaneous thoughts and how to identify them; acquainting students with the fact that their thoughts have behavioral and emotional consequences and these behavioral consequences may be ineffective.
4 th session	Training and introducing behavioral techniques; teaching the technique of stopping thoughts; teaching relaxation behavioral techniques; using a regular desensitization technique.
5 th session	Teaching problem-solving skills; explaining the problem-solving strategy concerning its components (problem, solutions, choices, and consequences); familiarity with the importance and necessity of using strategy (problem-solving) in the field of mental health and positive thinking.
6 th session	Interpersonal and communication skills; teaching ways to improve interpersonal relationships and improve communication skills; self-expression skills training; getting to know the role and importance of having social support.
7 th session	Increasing self-confidence and self-esteem; familiarity with the concept of self-confidence and ways to increase it; familiarity with the concept of self-esteem and ways to increase it.
8 th session	Prevention and coping with depression; familiarizing students with depression, its symptoms, and causes; teaching ways to prevent and reduce depression.
9 th session	Teaching stress coping skills; familiarity with the concept of stress, signs, and factors that cause it; teaching ways to prevent and reduce stress; making students understand the relationship between stress and their personal performance.
10 th session	Educating optimism and promoting it; familiarizing students with the concept of optimism, signs, and factors affecting it; introducing the components and dimensions of optimism (explanatory style); teaching ways to increase optimism.
11 th session	Checking the assignments of the previous session; summarizing and giving feedback; post-test implementation.

items serving as filler to conceal the test's true purpose to some extent. Three scoring elements are created with a positive sentiment, while the remaining three are crafted with a negative viewpoint. Each item is designed to prevent suggesting any particular reason for the anticipation, regardless of whether it originates from the person, the surroundings, or mere chance and external elements. Respondents indicate their level of agreement with each item based on a 5-point scale ranging from "strongly disagree" (0) to "strongly agree" (4), based on their present circumstances. The total score is determined by summing the raw scores from the optimism items and the inverted raw scores from the pessimism items. Scores range from 0 to 24, with higher scores indicating greater optimism and lower scores denoting lower optimism, commonly referred to as pessimism. To translate the LOT-R into Norwegian for this study, multiple forward and backward translation technique was employed. The internal consistency of the Persian version used in this research yielded a reliability coefficient of 0.76.

Results

Thirty medical students with a mean age of 31.39 ± 5.37 years participated in this study. In terms of marital status, 20% were single and 70% married. The Mean \pm SD of the study variables are presented in Table 2.

Table 2 As can be seen, the mean score of the secure domain at baseline were not significantly different in between intervention and control groups. The mean score of secure increased in the post-test phase in the intervention group compared to the control group. Also, the mean scores of avoidance and anxious domains were not significantly different between intervention and control groups at baseline. However, their scores in decreased in the post-test phase in the intervention group, compared to the control group. The scores in the control group did not change significantly.

The mean scores of distress variable (GHQ-28 score) were not significantly different between the two groups at baseline either. In the post-test phase, its score in the intervention group decreased compared to the control group, indicating that the mental health level increased

Table 2. Score of the study variables

Variables	Groups	N	Mean±SD	
			Baseline	Post-test
Secure	Experiment	15	10.93±1.667	18.40±1.919
	Control	15	10.66±1.718	11.86±1.302
Avoidance	Experiment	15	13.86±2.231	8.66±1.759
	Control	15	14.80±2.007	14.60±1.638
Anxious	Experiment	15	14.06±3.594	10.06±2.344
	Control	15	14.60±3.065	14.13±3.522
Distress	Experiment	15	46.46±5.166	30.33±2.126
	Control	15	45.73±5.105	44.26±4.620
Optimism	Experiment	15	11.40±1.502	19.33±1.632
	Control	15	12.00±1.889	11.86±1.726

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in the intervention group. Finally, the mean score of dispositional optimism variable (LOT-R score) in the intervention group increased in the post-test phase compared to baseline, while no change in the scores of the control group were reported.

The results of the analysis of covariance are presented in Table 3. As can be seen, there was a significant difference in secure ($P<0.001$, $\eta^2=83.5\%$), avoidance ($P<0.001$, $\eta^2=76\%$), and anxious ($P=0.001$, $\eta^2=34.6\%$) between the groups over time. Moreover, there was a significant difference in distress ($P<0.001$, $\eta^2=80.7\%$) and dispositional optimism ($P<0.001$, $\eta^2=83.6\%$) between the groups over time. Table 4 presents the results for testing within-subjects effects. According to the results, since the $P<0.05$ in all study variables, it can be said that there was a significant difference between the two evaluation phases. Overall, it can be said that there was a significant difference in attachment style, mental health and optimism between the two intervention and control groups after removing the effect of the pre-test score. Therefore, the CBT caused significant changes in the levels of attachment style, mental health and optimism of medical students.

Discussion

This research assessed the efficacy of CBT in changing attachment style, enhancing mental well-being, and promoting optimism among medical university students.

The findings of the study, as revealed by the multivariate analysis of covariance, indicated that the mean scores for attachment style were significantly different between the group of students who received the educational intervention and the control group. The utilization of CBT proved effective in modifying the attachment styles of the students. These results are in line with the findings of previous studies (Zalaznik et al., 2019; Lange et al., 2021; Anvari et al., 2022). Furthermore, insecure attachment predicted a negative longitudinal trajectory of eating disorder psychopathology, which indirectly contributed to increased levels of body uneasiness, as supported by mediation analyses. A study by Rossi et al. (2022) confirmed the well-established effectiveness of enhanced CBT in individuals with anorexia nervosa or bulimia nervosa.

Training in CBT can impact how individuals perceive and express secure attachment in close relationships. This influence may arise due to the required energy and time commitment, which can consequently affect personal life and close relationships. These reciprocal influences align with previous understandings of attachment, which encompass both trait and state components. While attachment is considered moderately stable throughout one's lifetime, the influence of various life circumstances on attachment has also been acknowledged (Darban et al., 2020).

Table 3. Test of Between-Subjects Effects using analysis of covariance

Variables	Source	Dependent Variables	Sum of Squares	Mean Square	F	P	η^2
Secure	Pre-test	Hypothesis	10.671	10.671	4.456	0.044	0.142
		Error	64.662	2.395	-	-	-
	Group	Hypothesis	327.556	327.556	136.773	<0.001	0.835
		Error	64.662	2.395	-	-	-
Avoidance	Pre-test	Hypothesis	0.374	0.374	0.125	0.726	0.005
		Error	80.560	2.984	-	-	-
	Group	Hypothesis	255.349	255.349	85.582	<0.001	0.760
		Error	80.560	2.984	-	-	-
Anxious	Pre-test	Hypothesis	7.766	7.766	.863	0.361	0.031
		Error	242.900	8.996	-	-	-
	Group	Hypothesis	128.339	128.339	14.266	0.001	0.346
		Error	242.900	8.996	-	-	-
Distress	Pre-test	Hypothesis	12.149	12.149	.937	0.342	0.034
		Error	350.117	12.967	-	-	-
	Group	Hypothesis	1467.742	1467.742	113.188	<0.001	0.807
		Error	350.117	12.967	-	-	-
Optimism	Pre-test	Hypothesis	0.110	0.110	0.038	0.847	0.001
		Error	78.956	2.924	-	-	-
	Group	Hypothesis	402.353	402.353	137.589	<0.001	0.836
		Error	78.956	2.924	-	-	-

Attachment theory examines how an individual's dominant attachment style (secure or insecure) influences their ability to engage in safe and secure relationships and experience internal feelings of safety. By identifying an individual's predominant attachment style, a person can assess how it might hinder their capacity to develop close, healthy relationships. This awareness allows them to make changes that promote greater closeness with others and cultivate a sense of security within themselves. Additionally, understanding the underlying reasons and purposes of a particular attachment style enables individuals to heal past emotional wounds and traumas (Fearon & Roisman, 2017).

Increasing attachment security yields positive effects on mental health and prosocial behavior (Mikulincer

& Shaver, 2007). Additionally, medical students with an anxious attachment style and limited access to emotion regulation strategies are impacted (Colonnello et al., 2022). Darban et al. (2020) found that attachment style predicts the quality of life among students and suggested that focusing on attachment style could serve as an intervention avenue to improve the well-being of medical students and establish a basis for long-term monitoring. To develop such interventions, the initial step is to examine the specific characteristics of healthcare students who may be experiencing psychological distress and identify potential protective factors in this population. Numerous protective factors have been identified that can enhance student well-being and mitigate the impacts of risk factors on student stress and psychological distress (Magidson & Weisberg, 2014).

Table 4. Tests of Within-Subjects Effects

Variables	Source of Changes	SS	df	Mean Square	F	P	Partial η^2
Secure	Sphericity assumed	281.667	1	281.667	73.661	<0.001	0.725
	Greenhouse-Geisser	281.667	1	281.667	73.661		
	Huynh-Feldt	281.667	1	281.667	73.661		
	Lower-bound	281.667	1	281.667	73.661		
Avoidance	Sphericity assumed	109.350	1	109.350	27.734	<0.001	0.498
	Greenhouse-Geisser	109.350	1	109.350	27.734		
	Huynh-Feldt	109.350	1	109.350	27.734		
	Lower-bound	109.350	1	109.350	27.734		
Anxious	Sphericity assumed	74.817	1	74.817	6.331	0.018	0.184
	Greenhouse-Geisser	74.817	1	74.817	6.331		
	Huynh-Feldt	74.817	1	74.817	6.331		
	Lower-bound	74.817	1	74.817	6.331		
Distress	Sphericity assumed	1161.600	1	1161.600	71.368	<0.001	0.718
	Greenhouse-Geisser	1161.600	1	1161.600	71.368		
	Huynh-Feldt	1161.600	1	1161.600	71.368		
	Lower-bound	1161.600	1	1161.600	71.368		
Optimism	Sphericity assumed	228.150	1	228.150	76.658	<0.001	0.732
	Greenhouse-Geisser	228.150	1	228.150	76.658		
	Huynh-Feldt	228.150	1	228.150	76.658		
	Lower-bound	228.150	1	228.150	76.658		

In addition, the results indicated that CBT has the potential to enhance the mental well-being of medical students. Previous research findings are in line with the rephrased outcome, as stated by [Magidson and Weisberg in 2014](#) and [Sahranavard et al. in 2019](#). [Magidson & Weisberg \(2014\)](#) explained that specialty medical care utilizing CBT may directly target various psychological symptoms, such as depression and anxiety, aiming to improve overall functioning and quality of life and address cognitive and behavioral aspects relevant to managing a medical condition. [Muller and Yardley \(2011\)](#) conducted a comprehensive analysis and systematic review of the impact of telehealth-delivered CBT on medical populations, examining studies that assessed the effects of telehealth-delivered CBT on physical health outcomes. The results of the meta-analysis revealed that CBT yielded

significant improvements in physical health outcomes, characterized by a small to medium effect size. It was particularly effective for patients with chronic conditions that were not immediately life-threatening. Furthermore, considering gender, the majority of participants who received CBT therapy were female (90.3%). This dominance aligns with the two-to-one female-to-male depression prevalence ratio ([Changklang & Ranteh, 2023](#)). When anxiety levels rise in students, their ability to manage situations, adapt, cope, and confront challenges diminishes over time, resulting in increased anxiety. Consequently, these students become less optimistic about their future and their problem-solving abilities. As a result, their academic performance and dormitory life may be disrupted. Conversely, by effectively managing anxiety and stress, students can enhance their problem-

solving abilities and overall mental well-being. The findings of this study will aid students in improving their mental health through stress management techniques (Sahranavard et al., 2019).

The authors discuss how training in CBT introduces students to the concepts related to mental health. By utilizing these techniques, students learn to view the situations they encounter as problems that can be solved. The course covers various approaches to problem-solving, enabling participants to feel more in control of their environment and perceive difficult situations as less daunting. Consequently, individuals will be better equipped to effectively manage life events by acquiring the necessary coping skills, which can contribute to improved mental health. Moreover, one of the factors contributing to poor mental health is perceiving situations as threatening. By learning to identify and challenge spontaneous negative thoughts through this course, participants have the opportunity to reassess and modify these thoughts. Additionally, relaxation training assists individuals in achieving a state of relaxation by counteracting the symptoms of stress, thereby allowing them to have a greater ability to control their emotions.

The instruction of CBT can boost students' optimism. This finding is in line with previous research conducted by Geschwind et al. (2019), Dafei et al. (2021), and Moloud et al. (2022). According to Moloud et al., optimism and self-esteem significantly increased among the CBT group following the intervention. However, these levels decreased in the long term due to the discontinuation of CBT sessions (Moloud et al., 2022). Optimism is considered an essential psychological resource and has consistently been associated with significant positive emotions and decreased negative psychological symptoms, such as anxiety and depression (Öcal et al., 2022; Chung et al., 2023). Optimistic individuals tend to reframe challenging situations as opportunities in disguise, leading to higher psychological and mental well-being during difficult times (Chu et al., 2022).

Managing mental stress can be achieved by practicing positive thinking and refraining from entertaining negative thoughts. Maintaining a positive mood enhances cognitive processing abilities, promotes altruism, and boosts self-esteem. Optimistic individuals tend to outperform pessimistic individuals in various areas of life, experiencing more success and enjoying greater social fulfillment. The central focus of CBT lies in understanding emotions, behavior, and cognitive representations of experiences, shaping the foundation of personality development, and addressing pathological cognitive pat-

terns. The primary objective of cognitive-behavioral assessment is to establish a treatment plan and achieve regulation. It is worth mentioning that cognitive-behavioral techniques are typically learned through collective activities, potentially benefiting from the positive dynamics of a group and addressing general challenges associated with interpersonal relationships.

Conclusion

After analyzing the findings, it was determined that the CBT group displayed a significant improvement in their secure attachment style, mental health level, and optimism following the intervention. Consequently, it is vital to implement regular CBT sessions for medical students who have insecure attachments to address this issue effectively.

Study limitations

One limitation of this study is the researcher's inability to control the motivation and cooperation of the subjects when answering the questionnaire, which may impact the study's results. Additionally, demographic characteristics, including economic, social, and cultural status, are outside the researcher's control and may influence the outcomes. Based on the findings from this study, future researchers are advised to conduct similar studies with larger sample sizes, explore different research domains, increase the number of meetings and meeting duration for more effective interventions, and examine group and individual differences that may impact the success of executive programs to cater to diverse backgrounds. To validate the intervention's impact and its benefits on the control group, it is recommended to apply this method to the control group as well, assessing its effects on attachment style, health psychology, and optimism. Further trials should also be conducted to assess the stability of the intervention effect and confirm the training's effectiveness.

Ethical Considerations

Compliance with ethical guidelines

This article observed all the ethical guidelines. The individuals participating were informed of the purpose and methodology behind the research. The participants were assured that their data would be kept confidential, and they had the option to withdraw from the study.

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Authors' contributions

All authors contributed equally to preparing this article.

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