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RESEARCH ARTICLE

The Efficacy of Cognitive Behavioral Therapy on Sense of Coherence, Social Support, and Spiritual Well-being in Students with Post-Traumatic Stress Disorder

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Post-traumatic stress disorder (PTSD) is a devastating mental health condition that can arise following exposure to traumatic events. This study aims to investigate the effects of cognitive behavioral therapy (CBT) on the sense of coherence, social support, and spiritual well-being among students diagnosed with PTSD. The research employed a semi-experimental, pre-, post-test design with a control group. The statistical population included students diagnosed with PTSD at the University of Tehran during the 2023-2024 academic year. A total of 36 students with PTSD were selected using purposive sampling and were divided into experimental (n=18) and control (n=18) groups. The experimental group attended eight 90-minute CBT sessions, while the control group received no intervention. Data collection involved administering the Post-Traumatic Stress Disorder Scale (Keane et al., 1998), the Sense of Coherence Scale (Antonovsky, 1993), the Social Support Questionnaire (Sherbourne & Stewart, 1991), and the Spiritual Well-Being Scale (Paloutzian & Ellison, 2012). The data were analyzed using multivariate covariance (MANCOVA) analysis in SPSS-24. The results indicated that CBT significantly increased the sense of coherence (F=40.69, p=0.001, η^2=0.58), social support (F=60.50, p=0.001, η^2=0.67), religious well-being (F=52.16, p=0.001, η^2=0.64), and existential well-being (F=54.50, p=0.001, η^2=0.65) in students with PTSD. These results support the incorporation of CBT into therapeutic programs for students with PTSD to foster resilience and holistic well-being. Future research could explore the long-term effects of CBT and its impact on other psychological and behavioral outcomes in diverse student populations.

Keywords: Cognitive Behavioral Therapy; Sense of Coherence; Social Support; Spiritual Wellbeing; Post-traumatic Stress Disorder.

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Introduction

Post-Traumatic Stress Disorder (PTSD) is a severe mental health condition that can emerge after experiencing or witnessing traumatic events (Wathelet et al., 2021). While commonly associated with military veterans and survivors of severe traumatic incidents, PTSD also significantly affects university students, a demographic often overlooked in discussions about this disorder (Danielsson et al., 2018). Students with PTSD face a unique set of challenges that can profoundly impact their academic performance, social interactions, and overall well-being (Lampe et al., 2024). The transition to university life, with its inherent academic pressures, social dynamics, and often unfamiliar environments, can exacerbate the symptoms of PTSD (Kalmakis et al., 2020). These symptoms, which may include flashbacks, anxiety, depression, and difficulty concentrating, can make it challenging for students to engage fully with their coursework and participate in campus life (Umucu et al., 2022). The stressors of university life can trigger or intensify PTSD symptoms, leading to a cycle of academic struggles and emotional distress (Idoiaga et al., 2022).

Understanding PTSD in students requires a nuanced approach that acknowledges the diverse sources of trauma they may have experienced (Wilkinson et al., 2017). These can range from personal losses and accidents to experiences of violence or abuse (Yang et al., 2022). The academic and social demands of university life can further complicate their recovery process, necessitating targeted support and interventions (Hu et al., 2023). A crucial concept in understanding how people cope with PTSD is the Sense of Coherence (SOC), a theoretical framework introduced by sociologist Antonovsky (Sölva et al., 2020). SOC encompasses three core components: comprehensibility, manageability, and meaningfulness, which influence how individuals perceive and handle stress (González-Siles et al., 2022).

The relationship between PTSD and SOC is pivotal in the field of mental health. Individuals with a strong SOC perceive the world as structured and predictable, believe they have the resources to meet life's demands and find purpose in their experiences (Ferrajão & Oliveira., 2016). This mindset can significantly buffer the effects of traumatic stress, aiding in resilience and recovery (Veronese et al., 2022). In contrast, a weak SOC may leave individuals feeling overwhelmed, helpless, and unable to find meaning in their suffering, increasing their susceptibility to PTSD (Valsø et al., 2020). Research into the interaction between PTSD and SOC reveals that enhancing an individual’s SOC can be a powerful strategy for mitigating PTSD symptoms and promoting psychological well-being (Veronese & Pepe., 2017; Kaźmierczak et al., 2016). Interventions aimed at bolstering SOC might include cognitive-behavioral therapies (CBT) that help reframe traumatic experiences, stress management techniques, and fostering supportive social networks (Ragger et al., 2019). These approaches can help individuals build a stronger sense of comprehensibility, manageability, and meaningfulness in their lives (Schäfer et al., 2019).

One of the most critical factors in managing and mitigating the effects of PTSD is social support, which encompasses the emotional, informational, and practical assistance received

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from family, friends, and the broader community (Allen et al., 2021). Social support plays a pivotal role in the lives of individuals suffering from PTSD (Xi et al., 2020). It can provide a sense of safety, belonging, and understanding, which are essential for emotional healing and recovery (Zhao et al., 2020). Strong social support networks can help reduce the severity of PTSD symptoms by offering comfort and reassurance, facilitating access to resources, and encouraging individuals to seek professional help (Gottvall et al., 2019). Emotional support, such as empathy and companionship, helps individuals feel valued and understood, while informational support can provide crucial guidance and coping strategies (Zhou et al., 2018). Practical support, which includes assistance with daily tasks and responsibilities, can alleviate stress and allow individuals to focus on their recovery (Cui & Chi., 2021).

The interplay between PTSD and social support is a vital area of research and intervention. Studies consistently show that individuals with robust social support systems experience fewer and less severe PTSD symptoms compared to those with weaker support networks (Allen et al., 2021). The presence of supportive relationships can act as a buffer against the development of PTSD and enhance resilience in the face of trauma (Zhang et al., 2023). Conversely, a lack of social support can exacerbate feelings of isolation and hopelessness, making it more challenging for individuals to recover (Dai et al., 2016). Effective interventions aimed at enhancing social support for individuals with PTSD include building and strengthening community networks, promoting family involvement in treatment, and developing peer support programs (Nickerson et al., 2017). Mental health professionals can also play a significant role by facilitating group therapy sessions and creating environments that foster social connections and mutual support among clients (Khaleel & Al-Doori., 2019).

Amidst the complexity of PTSD treatment and management, one dimension that emerges as a potent resource is spiritual well-being (Grupp et al., 2021). Spiritual well-being encompasses a deep sense of connection to one's inner self, others, and the universe at large, often rooted in religious beliefs, personal values, or existential exploration (Florez et al., 2018). For individuals grappling with PTSD, spiritual well-being can serve as a profound source of strength, resilience, and healing (Eames & O'Connor., 2022). Spiritual practices, such as prayer, meditation, mindfulness, or engagement in religious rituals, offer avenues for individuals to find solace, meaning, and hope in the aftermath of trauma (Bashir et al., 2024). These practices provide a sanctuary for reflection, acceptance, and transcendence, fostering a sense of inner peace and equanimity amidst life's tumultuous experiences (Feng et al., 2024).

The research underscores the protective role of spiritual well-being in mitigating the impact of trauma and facilitating recovery from PTSD (Mousa Thabet & Vostanis., 2017). Individuals with a strong spiritual foundation often exhibit greater psychological resilience, lower levels of distress, and more adaptive coping strategies in the face of adversity (Wood et al., 2018). Spirituality can imbue individuals with a sense of purpose and interconnectedness, reframing their trauma narratives from stories of victimhood to narratives of growth, transformation, and transcendence (Gündüz et al., 2023). Moreover, spiritual communities and support networks

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offer invaluable resources for individuals navigating the complexities of PTSD (Ramadan et al., 2022). These communities provide a space for individuals to share their experiences, receive empathetic understanding, and draw strength from collective wisdom and compassion. Participation in spiritual communities fosters a sense of belonging, acceptance, and mutual support, counteracting feelings of isolation and alienation often associated with PTSD (Grupp et al., 2021). Integrating spiritual well-being into PTSD treatment involves a holistic and person-centered approach that acknowledges the interconnectedness of mind, body, and spirit (Seo & Kwon., 2018). Mental health professionals can incorporate spiritual assessments, spiritual counseling, and mindfulness-based interventions into therapeutic practices to honor and support the spiritual dimensions of healing (Wood et al., 2018). By respecting and affirming individuals' spiritual beliefs and practices, clinicians can co-create treatment plans that resonate with clients' deepest values, aspirations, and sources of meaning (Bashir et al., 2024).

Among the various therapeutic approaches available, Cognitive Behavioral Therapy (CBT) has emerged as one of the most widely studied and effective treatments for PTSD (Bisson et al., 2022). CBT is a structured, goal-oriented psychotherapy that aims to identify and modify maladaptive thought patterns and behaviors contributing to distressing symptoms (Xian-Yu et al., 2022). It operates on the premise that how we think about and interpret events influences our emotions and behaviors (Adelufosi et al., 2017). In the context of PTSD, CBT helps individuals understand and reframe their traumatic experiences, develop coping skills to manage distressing symptoms, and gradually confront avoided situations or memories in a safe and controlled manner (Bryant et al., 2019). The efficacy of CBT in treating PTSD has been extensively researched and supported by empirical evidence (El-Solh et al., 2019). Numerous randomized controlled trials, meta-analyses, and systematic reviews have consistently demonstrated the effectiveness of CBT in reducing PTSD symptoms, improving overall functioning, and enhancing the quality of life for individuals affected by the disorder (Simon et al., 2021). CBT interventions for PTSD commonly include components such as exposure therapy, cognitive restructuring, stress inoculation training, and skills-building exercises tailored to address specific symptoms and needs (Lewis et al., 2019).

One of the key strengths of CBT is its flexibility and adaptability to diverse populations and contexts (Haller et al., 2023). It can be delivered in individual or group formats, face-to-face or via telehealth platforms, and can be modified to accommodate cultural, linguistic, and developmental considerations (Simon et al., 2019). Additionally, CBT can be integrated with other evidence-based treatments, such as pharmacotherapy or mindfulness-based interventions, to enhance treatment outcomes and address comorbid conditions commonly associated with PTSD, such as depression or substance use disorders (Mavranezouli et al., 2020). Despite its demonstrated efficacy, challenges remain in the dissemination and implementation of CBT for PTSD in real-world settings (Murray et al., 2020). Barriers such as limited access to trained providers, the stigma surrounding mental health treatment, and systemic inequities in healthcare access pose significant obstacles to the widespread adoption of CBT (Hébert & Amédée et al.,

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2020). Efforts to address these barriers through workforce training, public awareness campaigns, and policy initiatives are essential to ensure that individuals with PTSD can access timely and effective treatment (Ennis et al., 2021).

The importance of this study lies in its necessity to address the mental health needs of university students diagnosed with PTSD. PTSD can significantly impair academic performance, social relationships, and overall well-being among students, posing a serious challenge to their academic success and personal development. Therefore, understanding effective therapeutic interventions for this population is crucial in promoting their psychological resilience and recovery. Furthermore, the objectives of this study are aligned with the broader goal of improving mental health outcomes and quality of life for students with PTSD. By determining whether CBT enhances the SOC, social support, and spiritual well-being in this population, the study aims to provide evidence-based insights that can guide the implementation of effective interventions within university settings. Ultimately, the findings of this study have the potential to contribute to the advancement of student mental health services and promote a supportive and inclusive campus environment conducive to academic success and holistic well-being.

Literature Review

This literature review explores the prevalence, risk factors, impact, and management of PTSD among university students, a population vulnerable to various stressors and traumas (Hu et al., 2023). Recent studies indicate a notable prevalence of PTSD among students, with rates varying across different demographics and contexts (Kalmakis et al., 2020). Common traumatic events experienced by students include sexual assault, physical violence, accidents, natural disasters, and academic-related stressors (Wilkinson et al., 2017). Estimates suggest that approximately 10-20% of students may meet the criteria for PTSD, highlighting the significant burden of trauma-related distress in this population. Several risk factors contribute to the development of PTSD among students (). These include exposure to trauma, prior history of trauma or adverse childhood experiences, lack of social support, perceived threat to safety, and ongoing stressors such as academic pressure, financial difficulties, and interpersonal conflicts (Umucu et al., 2022). Additionally, demographic factors such as gender, ethnicity, and sexual orientation may influence the likelihood of experiencing trauma and subsequent PTSD symptoms. PTSD can have profound implications for students' academic, social, and emotional well-being (Idoiaga et al., 2022). Symptoms of PTSD, including intrusive thoughts, hyperarousal, and avoidance behaviors, may interfere with concentration, memory, and academic performance (Wathelet et al., 2021). Moreover, PTSD can disrupt interpersonal relationships, leading to social withdrawal, isolation, and difficulties in forming and maintaining connections with peers and faculty members. Left untreated, PTSD can exacerbate psychological distress and impair students' overall functioning and quality of life (Lampe et al., 2024).

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Sense of Coherence and Post-Traumatic Stress Disorder

Research suggests that SOC plays a crucial role in individuals' resilience to trauma and their ability to adapt to adverse life events (Schäfer et al., 2019). High levels of SOC have been consistently associated with lower levels of PTSD symptoms and greater psychological well-being following trauma exposure (Valsø et al., 2020). Individuals with a strong SOC tend to perceive traumatic experiences as comprehensible, manageable, and meaningful, which buffers the development of PTSD (Sölva et al., 2020). Several mechanisms have been proposed to explain the protective effects of SOC on PTSD. A strong SOC may enhance individuals' cognitive appraisals of stressors, fostering adaptive coping strategies and promoting a sense of mastery and control over adverse circumstances (Ferrajão & Oliveira., 2016). Additionally, SOC may facilitate the utilization of social support networks and other external resources, which can mitigate the impact of trauma on psychological functioning (Veronese & Pepe., 2017). Furthermore, a meaningful orientation towards life may enable individuals to derive positive growth and personal development from traumatic experiences, leading to post-traumatic growth rather than pathology (González-Siles et al., 2022).

Social Support and Post-Traumatic Stress Disorder

Extensive research has demonstrated a robust inverse relationship between social support and PTSD symptoms (Allen et al., 2021). Higher levels of social support have been consistently associated with lower levels of PTSD symptom severity and greater psychological resilience following trauma exposure (Xi et al., 2020). Social support serves as a protective factor against the development of PTSD by providing individuals with emotional validation, practical assistance, and a sense of belonging and connectedness (Dai et al., 2016). Several mechanisms have been proposed to explain the beneficial effects of social support on PTSD (Gottvall et al., 2019). Social support may serve as a buffer against the impact of trauma by attenuating the physiological stress response, promoting adaptive coping strategies, and fostering a sense of safety and security (Cui & Chi., 2021). Additionally, social support can facilitate the processing and integration of traumatic experiences through interpersonal communication, empathy, and shared understanding (Khaleel & Al-Doori., 2019). Furthermore, social support may enhance individuals' self-efficacy and perception of control over their circumstances, thereby reducing feelings of helplessness and hopelessness characteristic of PTSD (Zhao et al., 2020).

Spiritual Wellbeing and Post-Traumatic Stress Disorder

Emerging evidence suggests that spiritual well-being may serve as a protective factor against the development and exacerbation of PTSD symptoms (Bashir et al., 2024). Individuals with higher levels of spiritual well-being tend to exhibit greater psychological resilience and adaptive coping strategies following trauma exposure (Wood et al., 2018). Spiritual beliefs and practices can provide a framework for making sense of and finding meaning in traumatic experiences, facilitating the process of post-traumatic growth and recovery (Grupp et al., 2021). Several

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mechanisms have been proposed to explain the beneficial effects of spiritual well-being on PTSD (Ramadan et al., 2022). Engaging in spiritual practices such as prayer, meditation, and mindfulness may promote emotional regulation, stress reduction, and enhanced coping skills (Seo & Kwon., 2018). Spiritual beliefs and values can provide individuals with a sense of purpose, hope, and inner strength, fostering a positive outlook and facilitating adaptive coping strategies in the face of adversity (Gündüz et al., 2023). Furthermore, spiritual communities and support networks can offer social support, validation, and a sense of belonging, which are essential for psychological resilience and recovery (Mousa Thabet & Vostanis., 2017).

Cognitive Behavioral Therapy and Post-Traumatic Stress Disorder

Numerous randomized controlled trials and meta-analyses have demonstrated the efficacy of CBT in reducing PTSD symptoms and improving overall functioning in trauma survivors (Simon et al., 2021). CBT interventions tailored for PTSD typically incorporate elements of cognitive restructuring to address trauma-related beliefs and cognitive distortions, as well as exposure-based techniques to facilitate the emotional processing of traumatic memories and reduce avoidance behaviors (Bisson et al., 2022). Prolonged Exposure and Cognitive Processing Therapy are among the most widely studied and empirically supported CBT protocols for PTSD, with research consistently showing significant reductions in PTSD symptom severity and associated impairment following treatment (Mavranezouli et al., 2020). Several mechanisms have been proposed to explain the therapeutic effects of CBT on PTSD (Haller et al., 2023). Cognitive restructuring techniques help individuals challenge and modify maladaptive beliefs about themselves, others, and the world, thereby reducing negative appraisals of threat and vulnerability (Hébert & Amédée et al., 2020). Exposure-based interventions facilitate habituation to traumatic memories and cues, allowing individuals to confront and process feared stimuli without experiencing overwhelming distress (Ennis et al., 2021). Additionally, CBT interventions promote the development of adaptive coping skills, emotion regulation strategies, and problem-solving abilities, which enhance resilience and promote recovery from PTSD (Bryant et al., 2019).

Methodology

Setting and Participants

The current research design was semi-experimental with a pre-test-post-test design with a control group. The study focused on students with PTSD enrolled at the University of Tehran in 2023-2024. After administering the PTSD, individuals scoring above 65 were chosen as the final sample. Out of these, 36 students were randomly allocated, via lottery, into either the experimental (n=18) or control group (n=18). The sample size was determined using G*Power software, taking into account key factors for an analysis of covariance (ANCOVA). Specifically, parameters such as the desired statistical power (e.g., 0.80 or higher), significance level (alpha, typically set at 0.05), and effect size (based on prior research or pilot data) were

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entered to ensure sufficient sensitivity for detecting meaningful differences between groups (Sheykhangafshe., 2024). The inclusion criteria for this research encompassed meeting a cutoff score on the Post-Traumatic Stress Disorder Scale (Keane et al., 1998), being aged between 20 and 40 years, not undergoing any severe physical or psychological treatments, and demonstrating personal willingness and satisfaction to participate. For exclusion criteria, factors such as missing more than two sessions, causing disruptions in the program, displaying insufficient interaction and cooperation, or a lack of continued interest and personal satisfaction were grounds for removal from the study. It is noteworthy that, in this study, all ethical considerations—such as obtaining informed consent, safeguarding personal information, and ensuring voluntary participation—were rigorously observed in line with the Helsinki ethical principles.

Research Tools

1) Post-traumatic Stress Disorder Scale (PTSDS): This 39-item scale is designed to assess PTSD. The objects are rated on a five-factor Likert scale, starting from 1-5, and some of them are reversely scored. Total scores range from 0-195. Scores below 65, 65-130, and above 130 indicate mild, moderate, and severe impairments, respectively. This questionnaire consists of four subscales: penetrating memories, difficulty in interpersonal communication, inability to control emotions, and depression. Regarding the validity of this questionnaire, it was demonstrated that its sensitivity coefficient for separating groups with disorder and groups without disorder was 0.93 (Keane et al., 1998). In Iran, the validity of the test by internal consistency method and split-half method was 0.92; moreover, it was obtained at 0.91 based on the test-retest method with a one-week interval (Goodarzi, 2003). The investigations carried out in the present study also indicated that Cronbach's alpha coefficient (0.89) of the PTSD scale was favorable.

2) Sense of Coherence Scale (SOCS): Antonovsky's (1993) SOC was used to measure the amount of bodybuilding. Antonovsky's SOC was made in 1993 and has 16 phrases. Every subject responds to this scale rarely, sometimes, and often. This scale's minimum and maximum scores are 14 and 42, respectively. The alpha coefficient of this scale is reported to be 0.82. The correlation coefficient between the short and long forms of the scale is a significant SOC (r = 0.74). Internally, Mohammad Zadeh, Pour Sharifi & Alipour (2010) examined the psychometric properties of version 13 of this questionnaire. The internal consistency test showed that all 13 cases correlated very highly with the overall score. Cronbach's alpha was also 0.77, which is 0.75 for men and 0.78 for women. In the present study, Cronbach's alpha coefficient of the questionnaire ($\alpha = 0.87$) was obtained.

3) Social Support Questionnaire (SSQ): It was created in 1991 by Sherbourne & Stewart. This scale, which measures the amount of social support received by the subject, includes 19 functional support items. Using confirmatory factor analysis, Sherbourne & Stewart (1991) confirmed the existence of five dimensions in this test. This scale is a self-report tool, and the

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subject measures his or her disagreement or agreement with each of It specifies the statements in a 5-point Likert scale (never = 1, rarely = 2, sometimes = 3, often = 4, always = 5). The lowest score in this test is 19 and the highest score is 95. All points are added together to get a total score. The subject's high score on this scale indicates that the subject is supported It has a favorable social status. Cronbach's alpha method was also used to check the reliability of this test. Cronbach's alpha coefficient for the whole scale was 0.97. Also, the results showed the appropriate correlation of the social support measure with tools for measuring loneliness, social ties, family function, marital function, mental health, physical health, and pain intensity, which showed the appropriate validity of the social support measure (Sherbourne & Stewart, 1991). In Iran, Bagheri Sheykhangafshe and Shabahang (2020) reported Cronbach's alpha coefficient of this questionnaire to be 0.93. In the upcoming study, Cronbach's alpha coefficient of this questionnaire was 0.81.

4) Spiritual Wellbeing Scale (SWS): This scale was created by Paloutzian and Ellison in 2012 and consists of 20 questions and two subscales: Religious Well-being and Existential Well-being. The odd-numbered questions pertain to the Religious Well-being subscale, measuring the test-taker's experience of a satisfying relationship with God, while the even-numbered questions pertain to the Existential Well-being subscale, assessing the sense of purpose and satisfaction with life. The response scale for the questions is a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree." The scoring method for the questions ranges from 1 to 5, with "Strongly Agree" receiving a score of 5 and "Strongly Disagree" receiving a score of 1 for positive questions. The scoring for negative questions is reversed (questions 1, 2, 5, 6, 9, 12, 13, 16, and 18 are negative questions). By scoring this scale, the scores for Religious Well-being, Existential Well-being, and the overall Spiritual Well-being score are obtained. The overall Spiritual Well-being score ranges from 20 to 100. The test-retest reliability coefficients for the Religious Well-being subscale, Existential Well-being subscale, and the overall scale were reported as 0.96, 0.86, and 0.93, respectively, and the Cronbach's alpha coefficients were reported as 0.91, 0.91, and 0.93, respectively. Dehshiri et al (2008) conducted a comprehensive study in Iran to assess the validity and reliability of this instrument. The test-retest coefficients for the overall scale, Religious Well-being subscale, and Existential Well-being subscale were 0.85, 0.78, and 0.81, respectively. Additionally, Cronbach's alpha for the overall scale was 0.90, and for the subscales of Religious Well-being and Existential Well-being, it was 0.82 and 0.87, respectively. In the present study, Cronbach's alpha coefficients for Religious Well-being and Existential Well-being were reported as 0.89 and 0.83, respectively.

5) Cognitive-behavioral intervention protocol: Before the treatment sessions began, research questionnaires were distributed to the patients as part of the pre-test phase. Following the completion of the pre-test, 18 students underwent CBT administered by a therapist over eight 90-minute sessions spanning two months (Wright et al., 2017). After the experimental group completed their treatment sessions, all participants took part in a post-test and answered the research questionnaires again. To minimize dropout, we emphasized the importance of commitment during

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the initial interviews with all group members, which was reinforced throughout the meetings. The resulting solidarity among the group members helped maintain group cohesion. Below is a summary of the CBT group sessions for students with PTSD (Table 1).

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Table 1 Characteristics of CBT Training Sessions (Wright et al., 2017)

Session	Target
1	Introducing and explaining the basic principles of CBT, introducing the fundamental concepts of therapy, setting the schedule of sessions, discussing the rules of sessions
2	Determining the agenda of the meeting, evaluating, formulating, conceptualizing the subjects' problems, and filling the formulation worksheet
3	Determining the agenda of the meeting, selecting goals and determining treatment goals with the help of members, preparing notebooks for treatment and activity planning
4	Determining the agenda of the meeting, identifying and recognizing their thoughts, practicing recording thoughts, and assigning them to the patient as homework
5	Changing and correcting one's thoughts, teaching the technique of creating a logical alternative, introducing the weekly activity registration form as homework
6	Diagnosing cognitive errors, examining evidence, and preparing confrontation cards
7	Graded task design, use of visual confrontation technique
8	Review of uncompleted activities, homework, and therapy notebooks, answers to members' questions, and summaries

Data Collection and Analysis

The study's participants consisted of all male and female students at the University of Tehran during the 2023-2024 academic year. Initially, 384 students were assessed. Following the evaluation of eligibility criteria, 36 students diagnosed with PTSD were selected as the final sample (Figure 1). The research data were analyzed using descriptive statistics, such as mean and standard deviation, along with covariance analysis, based on their assumptions, using SPSS-24 software. The significance level for these tests was set at 0.05.

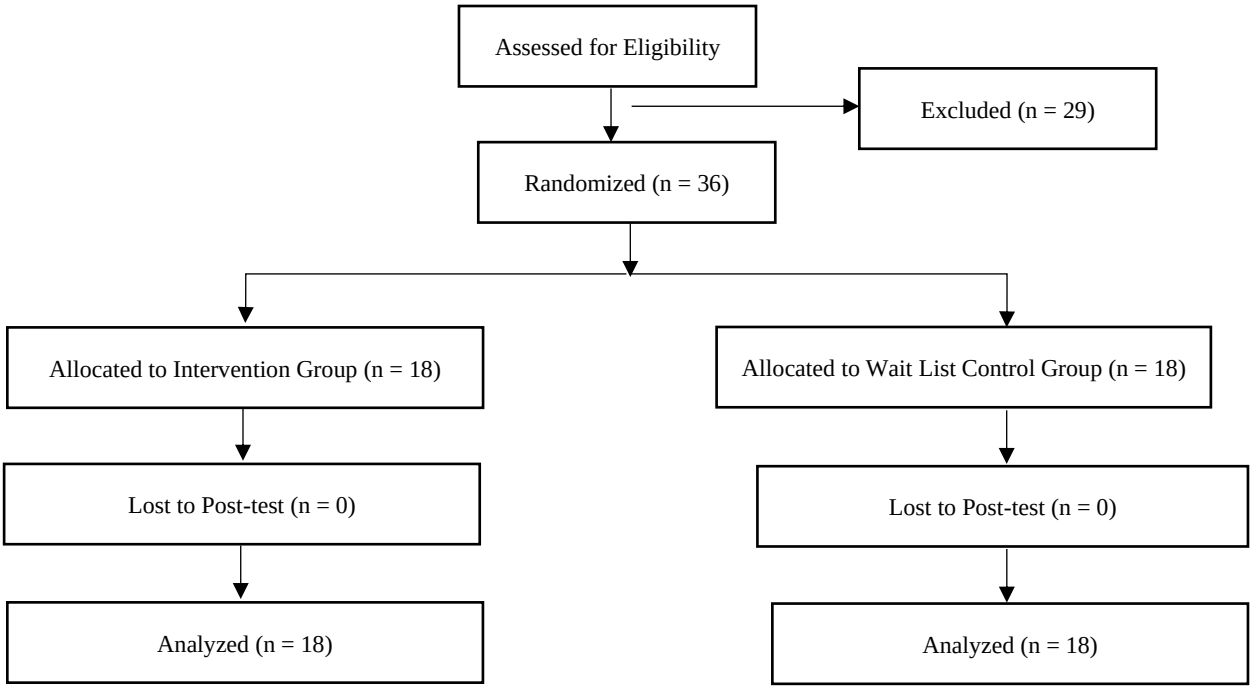

Figure 1 The CONSORT flow diagram of the study

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Results

The mean age of students with PTSD in the experimental group was 27.68 (SD=5.69), and the control group was 26.93 (SD=5.34) years. The chi-square test was used to check the demographic information of students with PTSD, and the results are reported in Table 2.

Table 2 Demographic Information of Students

	Experimental Group		Control Group		Chi-square (P-value)
Gender	**Frequency**	**Percentage**	**Frequency**	**Percentage**	
Female	11	61.1	10	55.6	P=>0.057
Male	7	38.9	8	44.4	
Marital Status	**Frequency**	**Percentage**	**Frequency**	**Percentage**	
Married	7	38.9	9	50	P=>0.063
Single	11	61.1	9	50	
Education	**Frequency**	**Percentage**	**Frequency**	**Percentage**	
Masters	9	50	8	44.4	P=>0.060
PhD	9	50	10	55.6	

The chi-square test results showed that the intervention and control groups had no significant differences in gender, marital status, and education (P>0.05). The mean and SD of pre-test-post-test scores of senses of coherence, social support, and spiritual well-being in students with PTSD in the experimental and control groups are presented in Table 3. Also in this table, the Shapiro-Wilk test (S-W) results are reported to check the normality of the distribution of variables in the two groups. According to this table, Shapiro-Wilk statistics is not significant for all variables. Therefore, it can be concluded that the distribution of variables is normal (Table 3).

Table 3 Descriptive Indices of Study's Variables in Control and Experimental Groups

Variables		Groups	Mean	SD	S-W	P*
PTSD	Pre-test	Experimental	71.68	5.42	0.106	0.058
		Control	71.06	5.39	0.132	0.063
	Post-test	Experimental	65.19	5.88	0.109	0.057
		Control	71.36	5.10	0.116	0.071
Sense of Coherence	Pre-test	Experimental	27.66	2.30	0.128	0.063
		Control	27.55	2.14	0.098	0.084
	Post-test	Experimental	31.12	1.87	0.094	0.081
		Control	27.78	1.92	0.116	0.056
Social Support	Pre-test	Experimental	62.12	3.68	0.140	0.073
		Control	62.23	3.91	0.112	0.055
	Post-test	Experimental	65.94	4.25	0.105	0.061
		Control	62.01	4.69	0.089	0.059

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Religious Well-being	Pre-test	Experimental	41.55	2.76	0.114	0.070
		Control	41.67	2.90	0.096	0.066
	Post-test	Experimental	45.23	2.55	0.085	0.053
		Control	41.67	3.18	0.117	0.057
Existential Well-being	Pre-test	Experimental	42.61	3.59	0.096	0.061
		Control	42.73	3.87	0.122	0.053
	Post-test	Experimental	46.45	4.05	0.131	0.075
		Control	44.58	4.22	0.094	0.064

* *Shapiro-Wilk test*

Multivariate analysis of covariance was used to evaluate the efficacy of CBT on SOC, social support, and spiritual well-being in students with PTSD. The results of the Levin test to examine the homogeneity of variance of dependent variables in groups showed that the variance of SOC (F=0.53, P=0.479), social support (F=1.98, P=0.168), and spiritual well-being (F=1.84, P=0.127) were equal in the groups. The results of the M box test to evaluate the equality of the covariance matrix of dependent variables between the experimental and control groups also showed that the covariance matrix of the dependent variables is equal (Box M= 2.52, F=0.22, P=0.995). The significance of the box test is greater than 0.05, so this assumption is valid. Also, the results of the Chi-square-Bartlett test to examine the sphericity or significance of the relationship between SOC, social support, and spiritual well-being showed that the relationship between them is significant (χ^2=109.82, df=24, P<0.05). Another important assumption of multivariate analysis of covariance is the homogeneity of regression coefficients. It should be noted that the homogeneity test of regression coefficients was examined through the interaction of dependent variables and independent variables (intervention method) in the pre-test and post-test. The interaction of these pre-tests and post-tests with the independent variable was not significant and indicated the homogeneity of regression slope; Therefore, this assumption also holds. Due to the establishment of multivariate analysis of covariance, the use of this test will be allowed. Then, to find out the differences between the groups, a multivariate analysis of covariance was performed (Table 4).

Table 4 The Results of Multivariate Analysis of Covariance on Mean Post-Test Scores

Test	Value	F	df	Error df	P	Effect Value
Pillai's Trace	0.694	15.285	4	27	<0.001	0.69
Wilks Lambda	0.306	15.285	4	27	<0.001	0.69
Hotelling Trace	2.264	15.285	4	27	<0.001	0.69
Roy's Largest Root	2.264	15.285	4	27	<0.001	0.69

According to Table 4, the results showed the effect of the independent variable on the dependent variables; In other words, experimental and control groups have a significant difference in at least one of the variables of SOC, social support, and spiritual well-being, which

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according to the calculated effect size, 69% of the total variance of experimental and control groups is due to the effect of the independent variable. Also, the statistical power of the test is equal to 1, which indicates the adequacy of the sample size. However, to determine in which areas the difference is significant, a univariate analysis of the covariance test was used in the MANCOVA, the results of which are reported in Table 5.

Table 5 Results of Univariate Analysis of Covariance on the Mean of Post-Test Scores of Dependent Variables in Experimental and Control Groups

Variables	SS	SS Error	DF	MS	MS Error	F	P	Effect Value
Sense of Coherence	93.950	69.34	1	93.950	2.31	40.64	<0.001	0.58
Social Support	146.55	72.65	1	146.55	2.42	60.52	<0.001	0.67
Religious Well-being	119.131	68.51	1	119.131	2.28	52.16	<0.001	0.64
Existential Well-being	130.655	71.92	1	130.655	2.39	54.50	<0.001	0.65

Based on the content in Table 5, the F statistic is significant for SOC (F=40.64), social support (F=60.52), religious well-being (F=52.16), and existential well-being (F=54.50) at the 0.001 threshold. These findings indicate that there is a significant difference between the groups in these variables. Additionally, based on the determined effect value, 58% of the SOC, 67% of the social support, 64% of the religious well-being, and 65% of the existential well-being were independent of the effect of the variable; As a result, it can be stated that CBT significantly increases of SOC, social support, religious well-being, and existential well-being in students with PTSD.

Discussion

This study aims to investigate the effects of CBT on SOC, social support, and spiritual well-being among students diagnosed with PTSD. The current study's findings shed light on how CBT effectively increases the SOC in students with PTSD. The noted improvements in coherence following CBT underscore its therapeutic potential for addressing the challenges faced by these students in maintaining a coherent understanding of their experiences.

CBT stands as a cornerstone in the treatment of PTSD, offering a structured and evidence-based approach to symptom reduction and recovery (Ennis et al., 2021). By harnessing the power of cognitive restructuring, exposure techniques, and skills training, CBT empowers individuals to confront and overcome the debilitating effects of trauma, reclaiming their lives and restoring a sense of hope and resilience (Murray et al., 2020). Continued research, advocacy, and investment in CBT for PTSD are crucial to maximize its impact and reach, ensuring that all individuals affected by trauma can access the care and support they deserve (Mavranezouli et al., 2020). PTSD often disrupts an individual’s ability to perceive life as comprehensible, manageable, and meaningful, which are the core components of SOC (Sölva et al., 2020). By focusing on altering dysfunctional thoughts and behaviors, CBT helps

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individuals reframe their traumatic experiences in a way that fosters a more coherent and structured understanding of their lives (Bisson et al., 2022).

The improvements in the SOC observed in the experimental group post-intervention highlight the efficacy of CBT in addressing these disruptions (Schäfer et al., 2019). Students who underwent CBT reported feeling better equipped to make sense of their experiences and to perceive their lives as more organized and understandable (Lewis et al., 2019). This is particularly important in a university setting, where maintaining psychological stability and resilience is crucial for academic success and personal development (Haller et al., 2023). Moreover, these findings align with existing literature that supports the use of CBT for PTSD treatment (Zandpour et al., 2024). Previous studies have shown that CBT can effectively reduce PTSD symptoms and improve overall mental health. However, this study extends those findings by specifically examining the SOC, providing a more nuanced understanding of how CBT can benefit individuals with PTSD (González-Siles et al., 2022). It is also noteworthy that SOC is closely linked to other aspects of well-being, such as social support and spiritual well-being, which were also shown to improve with CBT in this study. This suggests that CBT not only addresses the immediate symptoms of PTSD but also contributes to a broader enhancement of psychological and social functioning (El-Solh et al., 2019).

The findings from this study present strong evidence supporting the positive impact of CBT on social support among students diagnosed with PTSD. In particular, the enhancements observed in social support following CBT intervention underscore the therapeutic potential of this approach in bolstering individuals' support networks as they navigate the challenges of PTSD.

Social support is a crucial factor in the recovery and well-being of individuals with PTSD, as it offers emotional, informational, and practical assistance that can significantly alleviate the burden of traumatic stress (Zhang et al., 2023). The observed enhancements in social support following the CBT intervention indicate that this therapeutic approach effectively strengthens the support networks of students with PTSD (Allen et al., 2021). CBT likely facilitates these improvements by addressing the cognitive and behavioral barriers that impede the formation and maintenance of supportive relationships (Hébert & Amédée et al., 2020). For example, individuals with PTSD often struggle with trust issues, social withdrawal, and negative beliefs about themselves and others, which can hinder their ability to seek and accept support (Ennis et al., 2021). By helping students reframe these negative thoughts and encouraging adaptive behaviors, CBT enables them to engage more positively with their social environments. The enhancement in social support observed in this study aligns with existing literature that highlights the role of CBT in improving interpersonal functioning (Simon et al., 2021). Studies have shown that as individuals with PTSD learn to manage their symptoms more effectively through CBT, they also become more open to building and maintaining supportive relationships (Bryant et al., 2019). This is particularly relevant in a university setting, where strong social support networks can provide critical resources for coping with academic and personal stressors

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(Xian-Yu et al., 2022). Furthermore, the increase in social support may also contribute to the overall effectiveness of CBT by providing an additional buffer against stress and promoting a sense of community and belonging. This reciprocal relationship between therapy and social support underscores the importance of integrating social components into therapeutic interventions for PTSD (Adelufosi et al., 2017).

The results of this study offer compelling evidence supporting the favorable effects of CBT on the spiritual well-being of students with PTSD. The noted enhancement in spiritual well-being post-CBT intervention underscores the therapeutic potential of this approach in nurturing a more positive self-perception and improving overall well-being among individuals coping with PTSD.

Spiritual well-being, which encompasses both religious and existential dimensions, plays a vital role in how individuals make sense of their lives and cope with distress (Simon et al., 2021). For students with PTSD, enhancing spiritual well-being can be particularly beneficial in fostering a more positive self-perception and a sense of meaning and purpose, which are often disrupted by traumatic experiences (Grupp et al., 2021). The observed improvements in spiritual well-being following CBT intervention suggest that this therapeutic approach effectively addresses the spiritual and existential challenges faced by students with PTSD (Eames & O'Connor., 2022). CBT's focus on restructuring negative thought patterns and promoting adaptive coping strategies likely contributes to these enhancements (Xian-Yu et al., 2022). By helping individuals reinterpret their traumatic experiences in a more positive light and encouraging the development of a more coherent and hopeful worldview, CBT supports the growth of spiritual well-being (Mavranezouli et al., 2020).

These findings align with existing literature that highlights the broader benefits of CBT beyond symptom reduction (Haller et al., 2023). While CBT is traditionally known for its efficacy in alleviating PTSD symptoms such as intrusive memories and heightened arousal, this study demonstrates its potential to positively influence deeper aspects of personal identity and existential well-being (Murray et al., 2020). The dual focus on symptom management and spiritual growth underscores the holistic nature of CBT and its capacity to promote comprehensive mental health recovery (Grupp et al., 2021). Additionally, the improvement in spiritual well-being observed in this study has significant implications for the overall well-being of students with PTSD. Enhanced spiritual well-being is associated with greater resilience, better coping skills, and improved mental health outcomes (Bisson et al., 2022). As such, the integration of spiritual components into CBT may further enhance its therapeutic effectiveness and provide a more nuanced approach to treating PTSD in university settings (Gündüz et al., 2023).

One limitation of this study is its reliance on a relatively small sample size from a single university, which may limit the generalizability of the findings. Additionally, the study's use of self-report measures for assessing outcomes such as SOC, social support, and spiritual well-being may introduce response bias and measurement error, potentially influencing the accuracy

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of the results. Moreover, the study's design as a semi-experimental pre-test-post-test with a control group may not fully account for confounding variables or control for other potential interventions or treatments received by participants outside of the study. To address the limitations mentioned above, future research could employ a larger and more diverse sample size drawn from multiple universities or academic institutions. This would enhance the external validity of the findings and allow for greater generalizability to broader student populations. Additionally, researchers could consider using a longitudinal design to assess the long-term effects of CBT on SOC, social support, and spiritual well-being among students with PTSD. To mitigate the potential biases associated with self-report measures, researchers could incorporate objective measures or observational methods to supplement the data collected. Utilizing structured interviews or behavioral observations could provide a more comprehensive understanding of participants' experiences and outcomes. Furthermore, future studies could explore alternative therapeutic approaches or combinations of interventions to compare their effectiveness with CBT in addressing the psychosocial dimensions of well-being among students with PTSD. Additionally, conducting follow-up assessments at different time points post-intervention could provide insights into the sustainability of treatment effects and inform recommendations for long-term care and support for this population.

Conclusion

This study sheds light on the potential of CBT as an effective intervention for addressing the multifaceted challenges faced by students diagnosed with PTSD. The findings revealed significant improvements in SOC, social support, religious well-being, and existential well-being among students who underwent CBT sessions. These results underscore the potential of CBT not only to alleviate PTSD symptoms but also to enhance broader aspects of psychological resilience and holistic well-being among affected students. The implications of this study are significant, suggesting the integration of CBT into therapeutic programs tailored for university students with PTSD. By addressing diverse dimensions of well-being, CBT can promote resilience and facilitate the recovery process, ultimately fostering a supportive environment conducive to academic success and personal growth. Looking ahead, future research could delve deeper into the long-term effects of CBT interventions and explore their impact on additional psychological and behavioral outcomes across diverse student populations. By advancing our understanding of effective therapeutic approaches, we can better support the mental health needs of students affected by PTSD and contribute to the creation of more inclusive and nurturing campus communities.

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اثربخشی درمان شناختی-رفتاری بر حس انسجام، حمایت اجتماعی و سلامت معنوی در دانشجویان مبتلا به اختلال استرس پس از سانحه

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چکیده

اختلال استرس پس از سانحه یک وضعیت ناتوان‌کننده در حوزه سلامت روان است که ممکن است پس از مواجهه با وقایع آسیب‌زا ایجاد شود. این مطالعه با هدف بررسی تأثیرات درمان شناختی-رفتاری بر حس انسجام، حمایت اجتماعی و سلامت معنوی در میان دانشجویان مبتلا به اختلال استرس پس از سانحه انجام شد. روش پژوهش از نوع نیمه‌آزمایشی با طرح پیش‌آزمون-پس‌آزمون و گروه کنترل بود. جامعه آماری شامل دانشجویان مبتلا به اختلال استرس پس از سانحه در دانشگاه تهران در سال تحصیلی ۱۴۰۲-۱۴۰۳ بود. تعداد ۳۶ دانشجوی مبتلا به این اختلال به روش نمونه‌گیری هدفمند انتخاب شدند و به دو گروه آزمایش (۱۸ نفر) و کنترل (۱۸ نفر) تقسیم شدند. گروه آزمایش در هشت جلسه ۹۰ دقیقه‌ای درمان شناختی-رفتاری شرکت کردند، در حالی که گروه کنترل هیچ مداخله‌ای دریافت نکرد. ابزار گردآوری داده‌ها شامل مقیاس اختلال استرس پس از سانحه (کین و همکاران، ۱۹۹۸)، مقیاس حس انسجام (آنتونوفسکی، ۱۹۹۳)، پرسشنامه حمایت اجتماعی (شربورن و استوارت، ۱۹۹۱) و مقیاس سلامت معنوی (پالوتزیان و الیسون، ۲۰۱۲) بود. داده‌ها با استفاده از تحلیل کوواریانس چندمتغیره در نرم‌افزار تحلیل آماری نسخه ۲۴ تحلیل شدند. نتایج نشان داد که درمان شناختی-رفتاری به‌طور معناداری حس انسجام، حمایت اجتماعی، سلامت دینی و سلامت وجودی را در دانشجویان مبتلا به اختلال استرس پس از سانحه افزایش داد. این نتایج از ادغام درمان شناختی-رفتاری در برنامه‌های درمانی دانشجویان مبتلا به این اختلال برای تقویت تاب‌آوری و سلامت جامع حمایت می‌کند. تحقیقات آینده می‌توانند اثرات بلندمدت درمان شناختی-رفتاری و تأثیر آن بر سایر پیامدهای روان‌شناختی و رفتاری در جمعیت‌های متنوع دانشجویان را بررسی کنند.

کلیدواژگان: درمان شناختی-رفتاری، حس انسجام، حمایت اجتماعی، سلامت معنوی، اختلال استرس پس از سانحه.

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