Journal of Shahrekord University of Medical Sciences
doi:10.34172/jsums.2022.07 2022;24(1):35-41 http://j.skums.ac.ir

Original Article

The effectiveness of mindfulness-based cognitive therapy and acceptance and commitment therapy on medical science students' subjective well-being, psychological distress, and emotion regulation

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Abstract

Background and aims: Subjective well-being as a major prerequisite of health ensures mental and physical health, a long life, happiness, improved quality of life, and higher socioeconomic indices. The present study aimed to investigate the effectiveness of mindfulness-based cognitive therapy (MBCT) and acceptance and commitment therapy (ACT) on subjective well-being, psychological distress, and emotion regulation in medical science students.

Methods: The statistical population of this semi-experimental comprised all female students at Kerman University of Medical Sciences (Iran) in the academic year of 2019-2020. Forty-five students referring to the university counseling center were selected as the sample of the study using convenience sampling and randomly divided into two experimental groups and a control group (n=15 per group). The first and second experimental groups underwent eight 90- and 45-sessions (twice a week) of MBCT and of ACT, respectively. The research instruments included the Subjective Well-being Scale (SWS), the Depression, Anxiety, and Stress Scale, and the Cognitive Emotion Regulation Questionnaire.

Results: The results showed that MBCT and ACT were effective in improving the components of subjective well-being and emotion regulation in medical students ($P<0.001$). Moreover, MBCT and ACT significantly reduced the post-test scores of psychological distress subscales in the experimental group compared to the control group ($P<0.001$). Finally, no difference was observed between the two therapies in terms of effectiveness.

Conclusion: According to the results, MBCT and ACT effectively promoted female students' subjective well-being and emotion regulation and alleviated their psychological distress.

Keywords: Mindfulness, Acceptance and commitment therapy, Subjective well-being, Psychological distress, Emotion

Received: 4 October 2021, Accepted: 29 November 2021, ePublished: 26 January 2022

Introduction

Skilled human resources contribute to the development of countries and are considered as the major assets of societies. As such, they merit special attention and should be empowered through education (1). Universities are the first and foremost institutions in charge of the development of skilled human resources. These organizations recruit a considerable percentage of the young population annually, nurture their scientific and practical competencies over a specified period, and eventually deliver trained and skilled forces to society (2). Academic education is a stressful period due to several factors, and more vulnerable students are thus expected to be at risk of specific psychological conditions (3,4). Numerous factors can affect students' health. Subjective well-being as a major prerequisite of health ensures mental and physical health, a long life, happiness, improved quality of life, and higher socioeconomic indices (5). Nonetheless, students run a greater risk of psychological disorders. Stressors such as presence in a new environment far away from the family, educational and financial problems, competition with other students, exams, future employment prospects, impaired decision-making, and attendance in extensive classes cause depression and anxiety among the students (6). Consequently, they suffer from psychological distress and have lower well-being and quality of life indices due to their inappropriate and stressful educational and occupational conditions (7).

Emotion regulation is a psychological trait that prevents mood disorders and determines health and successful social interactions (8). Internalizing and externalizing problems are associated with a deficit in emotion regulation. Effective and efficient emotion regulation is vital to mental health, and a wide range of dysfunctional behaviors and psychological disorders (e.g., substance abuse, self-harm, depression, anxiety, borderline personality disorder, and post-traumatic stress disorder) are associated with emotion dysregulation (9,10).

Today, third-wave psychological interventions, including mindfulness-based cognitive therapy (MBCT) and acceptance and commitment therapy (ACT), aim to promote individuals' psychological relationship with their thoughts and emotions instead of cognitive modifications (11,12). MBCT is a therapy that seeks to mitigate distress and trains the mental representation of conditions that are beyond one's control through breathing and thinking. In addition, it alleviates psychological distress and the symptoms of depression and anxiety, promotes sleep quality, as well as mental, physical, emotional, and spiritual well-being, and mitigates somatic signs and symptoms (13). Mindfulness predicts self-regulation behavior and positive emotional states and can enhance well-being by integrating happiness and positive attitudes into experiences. This therapy further improves the quality of life, alleviates depression and aggression, and reduces short- and long-term depressive symptoms (14). Several studies have demonstrated the significant and positive effects of mindfulness training on subjective well-being, psychological distress, and emotion regulation (15-18).

A variety of models are adopted by psychotherapy for treating and mitigating psychological symptoms. One of such models is the ACT that has proved to be effective in the treatment and mitigation of the symptoms of psychological disorders. ACT mainly aims to promote psychological flexibility (19). In this method, verbal methods and cognitive processes interacting with non-verbal associations underpin healthy functions. In other words, a change is brought about indirectly (20). ACT has been shown to significantly influence subjective well-being, psychological distress, and emotion regulation (21,22).

Evaluation and explanation of MBCT and ACT for psychological characteristics such as subjective well-being, psychological distress, and emotion regulation in medical science students are among the most important innovations of this study. Therefore, based on the above-mentioned considerations, the present study sought to investigate the effectiveness of MBCT and ACT on subjective well-being, psychological distress, and emotion regulation in medical science students.

Materials and Methods

A semi-experimental method with a pre-test and post-test design, along with a control group was applied in this research. The statistical population included all female students at Kerman University of Medical Sciences (Iran) in the academic year of 2019-2020. Forty-five students referring to the university counseling center were selected as the study sample using convenience sampling and randomly classified into two experimental groups and a control (n = 15 per group) group. In the present study, G*Power software was used to calculate the sample size, and based on the results, 15 participants were included in each group with an effect size of 1.70, a test power of 0.95, and $\alpha = 0.05$ (23). Furthermore, randomization was performed by the authors, and participants were assigned to the groups by a coin-throwing method. The inclusion criteria were obtaining a score above the mean in the depression while an anxiety and stress scale and a score lower than the mean in the subjective well-being scale, as well as providing informed consent for participation and attending all the therapeutic intervention sessions. On the other hand, the exclusion criteria were showing their lack of cooperation, not attaining the cut-off scores on both scales, and missing more than two therapeutic intervention sessions. For ethical considerations, the researchers received written consent from the participants for participation in the research.

Instruments

Subjective Well-being Scale (SWS): The 45-item SWS, which was developed by Keyes and Magyar-Moe in 2003, comprises three subscales of emotional, psychological, and social well-being. There are 12, 18, and 15 items for the subscales of emotional, psychological, and social well-being, respectively, and each subscale yields a different raw score. Items assessing emotional well-being are scored from 0 to 4 while those evaluating psychosocial and social well-being are scored from 1 to 7. Higher total scores indicate higher subjective well-being (24). The authors reported its reliability as 0.77 (25). Based on the face, concurrent criterion, and construct validity measures, the validity of the Persian version of this scale was confirmed, and its reliability was reported to be 0.78 (26). In the present study, its Cronbach's alpha was 0.80.

The Depression, Anxiety, and Stress Scale (DASS-21): The DASS-21 (psychological distress), which was developed by Lovibond and Lovibond in 1995, has two forms. The original form includes 42 statements and evaluates the mental constructs of depression, anxiety, and stress, each with 14 statements. The short-form measures each factor or mental construct with 7 statements (27). A three-point Likert-type scale was used for scoring, which started from zero (does not apply to me at all), to 3 (absolutely applies to me). The minimum and maximum scores obtainable for each subscale are 0 and 21, respectively. Sahebi et al (28) validated the short 21-item form for the Iranian population and reported that the content validity of the questionnaire was acceptable. In another study by Sahebi et al (28), the validity of the Persian version of the DASS-21 was assessed and confirmed by nine experts, including its content validity ratio (CVI) = 0.94 and content validity index (CVR) = 0.91. In the present study, Cronbach's alpha was 0.97 for the scale.

The Cognitive Emotion Regulation Questionnaire (CERQ): The Emotion Regulation subscale of the CERQ (29) was administered to examine emotion regulation. Participants indicated their agreement or disagreement with each statement on a five-point Likert-type scale from "totally disagree" (1) to "totally agree" (5). Toghyani and Yousefi (30) reported that the content validity of the Persian version of this questionnaire was acceptable. They

also reported a Cronbach's alpha coefficient of 0.81 for the questionnaire. Furthermore, the CVR and CVI were found to be 0.92 and 0.89 in the Persian version of the CERQ, respectively (30). In the current study, its Cronbach's alpha was 0.79.

Interventions

The first experimental group underwent eight 90-minute sessions (twice a week) of MBCT, and the second experimental group participated in eight 45-minute sessions (twice a week) of ACT. Tables 1 and 2 present a summary of sessions.

Statistical analyses

Data were analyzed by descriptive and inferential statistics, including mean, standard deviation, and Bonferroni's post-hoc test using SPSS, version 22. The effectiveness of MBCT and ACT on subjective well-being, psychological distress, and emotion regulation in medical science students was compared between the three groups using Bonferroni's post-hoc test.

Results

The participants included 45 female students (22.08 ± 3.39 years old) at Kerman University of Medical Sciences. Table 3 presents the mean and standard deviation (SD) of research variables in the experimental and control groups in the pre-test and post-test.

The experimental and control groups significantly differed in at least one dependent variable (subjective well-being, psychological distress, or emotion regulation), thereby confirming the effectiveness of the MBCT and ACT ($P < 0.001$). According to Table 4, a significant difference was observed between all the post-test scores of the experimental and control groups. However, no significant difference was found between the experimental groups (i.e., different therapies).

Discussion

The present study attempted to evaluate the effectiveness of MBCT and ACT on subjective well-being, psychological distress, and emotion regulation in medical science students. The results revealed the significant effects of MBCT on subjective well-being, psychological distress, and emotion regulation, which is consistent with the research results of Cotton et al (33), and Hearn and Cross (34).

Mindfulness directly affects mental health as it helps people experience every moment, thereby strengthening their touch with reality. Moreover, mindfulness techniques help students identify situations inducing depression, anxiety, and stress, and gradually release

Table 1. A summary of the MBCT sessions (31)

Session	Content of the Session in Brief
1	Developing a therapeutic relationship and receiving consent
2	Introducing a new form of conversation to the therapy, dealing with automatic thoughts, practicing three-minute breathing space, mindful walking, and mindfulness of unpleasant emotions
3	Understanding brain function in depression and the effects of mindfulness on it, objectifying the problem, training the brain, and training some examples of mindfulness in daily activities
4	Practicing acceptance, using metaphors, automatic thoughts, the criteria for depression, defining and diagnosing depression, and practicing three-minute breathing space + review
5	The relationship between mood and feelings, how to take care of ourselves in the best way possible, body scan exercise.
6	Liberation through forgiveness: Training liberation mindfulness and promoting self-value
7	Showing a feeling of friendship with and kindness for oneself and others, establishing a relationship with oneself, and practicing mindful listening to improve relationships
8	Patience, thanksgiving, reflection, and change; regular practice

Note. MBCT: Mindfulness-based cognitive therapy.

Table 2. The content of ACT sessions (32)

Sessions	Objective	Content
1	Introduction and explanation of the therapeutic agenda	Familiarizing the participants with one another and with therapeutic goals, establishing a therapeutic relationship, assessing the severity of problems, and performing awareness-based training (concentration practice)
2	Behavior modification and mindfulness	Developing creative hopelessness for the applied solutions in the past through metaphors and questions and performing mindfulness practice
3	Values	Acceptance values
4	Clarification of values and objectives	Clarifying values, examining barriers, setting objectives, introducing committed action, performing mindfulness practice (body scan), and filling out the valued direction form
5	Defusion	A review of exercises, defusion of linguistic threats, and mindfulness
6	Committed action	A review of the therapy, committed action, mindfulness, observing the self-exercise
7	Satisfaction	Primary and secondary suffering, commitment and barriers to satisfaction, and mindful walking
8	Wrap up and conclusion	Clarifying the values, relapse, and events, practicing preparedness instead of prevention, and conducting post-tests

Note. ACT: Acceptance and commitment therapy.

Table 3. Mean ± SD of research variables in experimental and control groups

Variable	Subscales	Phases	MBCT	ACT	Control	*P* value (between groups)
			M ± SD	M ± SD	M ± SD	
Subjective well-being	Emotional well-being	Pre-test	2.24 ± 0.61	2.19 ± 0.50	2.38 ± 0.70	0.869
		Post-test	3.56 ± 0.45	3.38 ± 0.64	2.33 ± 0.78	0.001
		P (within groups)	0.001	0.001	0.419	-
	Psychological well-being	Pre-test	3.77 ± 0.70	3.99 ± 0.78	3.58 ± 0.74	0.999
		Post-test	6.25 ± 0.87	6.21 ± 0.77	3.74 ± 0.71	0.001
		P (within groups)	0.001	0.001	0.726	-
	Social well-being	Pre-test	3.96 ± 0.84	4.07 ± 0.91	3.75 ± 0.62	0.721
		Post-test	6.22 ± 0.51	6.55 ± 0.53	3.82 ± 0.61	0.001
		P (within groups)	0.001	0.001	0.339	-
Psychological distress	Depression	Pre-test	11.66 ± 2.89	10.80 ± 1.91	11.33 ± 2.06	0.713
		Post-test	4.13 ± 1.51	6.46 ± 1.35	11.00 ± 1.92	0.001
		P (within groups)	0.001	0.001	0.420	-
	Anxiety	Pre-test	11.33 ± 2.12	10.80 ± 1.01	11.00 ± 1.19	0.999
		Post-test	5.13 ± 1.35	4.13 ± 1.39	11.00 ± 1.35	0.001
		P (within groups)	0.001	0.001	0.680	-
	Stress	Pre-test	10.80 ± 2.77	10.93 ± 1.09	10.80 ± 1.94	0.999
		Post-test	6.06 ± 1.06	5.20 ± 1.41	10.80 ± 1.01	0.001
		P (within groups)	0.001	0.001	0.710	-
Emotion regulation		Pre-test	3.06 ± 0.46	2.98 ± 0.44	2.98 ± 0.52	0.780
		Post-test	4.71 ± 0.32	4.40 ± 0.51	3.22 ± 0.49	0.001
		P (within groups)	0.001	0.001	0.360	-

Note. MBCT: Mindfulness-based cognitive therapy; ACT: Acceptance and commitment therapy; M: Mean; SD: Standard deviation.

Table 4. Results of pairwise comparison of the variables across time series

Variable	Groups	Mean Difference	SE	*P* value
Emotional well-being	MBCT - ACT	0.14	0.18	0.990
	MBCT - Control	1.28	0.17	0.001
	Control - ACT	-1.14	0.17	0.001
Psychological well-being	MBCT - ACT	0.33	0.21	0.390
	MBCT - Control	2.47	0.20	0.001
	Control - ACT	-2.13	0.21	0.001
Social well-being	MBCT - ACT	-0.22	0.18	0.680
	MBCT - Control	2.31	0.17	0.001
	Control - ACT	-2.53	0.18	0.001
Depression	MBCT - ACT	2.09	0.19	0.990
	MBCT - Control	6.69	0.17	0.001
	Control - ACT	-5.79	0.18	0.001
Anxiety	MBCT - ACT	1.06	0.22	0.990
	MBCT - Control	-5.88	0.21	0.010
	Control - ACT	6.95	0.22	0.001
Stress	MBCT - ACT	-0.86	0.21	0.750
	MBCT - Control	-4.25	0.19	0.001
	Control - ACT	6.61	0.20	0.001
Emotion regulation	MBCT - ACT	0.34	0.17	0.150
	MBCT - Control	1.44	0.16	0.001
	Control - ACT	-1.09	0.17	0.001

Note. MBCT: Mindfulness-based cognitive therapy; ACT: Acceptance and commitment therapy; SE: Standard error.

themselves from worries, anxiety, fatigue, depression, and dissatisfaction (35). More importantly, mindfulness is a major prerequisite for liberation as it effectively stops internal and external pressures, which, in this approach, are viewed as the cause of numerous psychological disorders (36). In addition to teaching students how to discover peace and satisfaction within, mindfulness helps them integrate peace and satisfaction into their lifestyle, thus enhancing their quality of well-being.

With this skill, students can maintain their concentration on the present rather than the past or future. Instead of avoiding and, thus, prolonging stressors and distressing emotions, mindfulness creates a flexible and accepting mentality. It helps people realize that although negative emotions may occur, they are not a stable and constant part of their personality. Mindfulness also helps people formulate a calculated response to events instead of an automatic and ill-thought one (37). More precisely, with emotion regulation and close observation of their internal reality, people realize that happiness or sadness does not depend on external elements and changes in the outside world (38). No matter how negative the thoughts are, the main problem is the method of reacting to them rather than their content. This reaction happens after the activation of a mental state that relies on discerned differences and thus prolongs and intensifies negative thoughts. By facilitating the timely identification of behavioral patterns, feelings, and physical sensations, mindfulness helps students

neutralize these patterns before their expansion. Further, promoting awareness via this method enables students to observe the stimulation of ruminating and negative reactions more clearly and divert their attention from these patterns of thought.

The results also revealed the significant effects of ACT on subjective well-being, psychological distress, and emotion regulation. This finding is in line with the results of Pielech et al (39) and Reilly et al (40).

ACT boosts the quality of students' well-being, leads to satisfactory life experiences, and reduces psychological distress by enhancing emotion regulation skills. Students' emotion regulation processes are expected to be further facilitated with the applied techniques in the ACT, including conflicts, meditation, experiencing exercises, metaphors, and language conventions (41). Emotion regulation balances emotions, improves one's ability to cope with factors causing stress, depression, and anxiety, and enhances psychological well-being through positive psychology. By moving in the direction of subjective well-being quality values, students are motivated and their psychological distress is mitigated, and these issues positively affect therapeutic outcomes (20).

The components of acceptance motivate students to deal with their problems. This enhanced acceptance directs ineffectual arguments toward breakthrough and fundamental transformations and provides a space in which students can perceive and feel their thoughts and emotions without attempting to alter them. Concentration practices in the intervention help students directly access stressful events, especially during therapeutic sessions, and experience their unpleasant thoughts and emotions without controlling or fighting them. Accordingly, they can attain a full experience of thoughts and emotions. The commitment approach asks students to specify their values and commit to the movement toward them. This approach encourages connection to real values in life (42). As such, it recommends that students accept the existing conditions, avoid unnecessary conflicts and fusion with unwanted thoughts, and realize other values or exploit the intact aspects of their lives. These actions maintain and improve positive emotional components while alleviating the negative ones, which is the main objective of emotion regulation. In other words, this skill focuses on emotion comprehension and expression, as well as experience adjustment.

By reinforcing emotion regulation skills, ACT mitigates and controls negative emotions, promotes a positive use of emotions, and thus enhances students' emotion regulation. Emotion regulation skills are vital for female students who face a variety of barriers and stressful challenges. Stressful events form negative emotions and feelings in students' minds which, in turn, negatively impact their individual and social functioning. Emotion regulation greatly contributes to a coordinated and integrated relationship between internal forces and brings about stability, compatibility, harmony, and a close relationship with oneself and others. It also plays a pivotal role in students' adaptation to stress, anxiety, and depression and improves the quality of subjective well-being while reducing their mental distress (43). When emotion regulation is at risk, people may experience disorders and distresses such as stress, depression, and anxiety, which reduce the quality of their subjective well-being. With the aid of emotion regulation, students' overall subjective well-being and psychological distress are improved by exploiting the intact aspects of their lives, overcoming the disturbing dimensions, and abandoning avoidance strategies.

The findings revealed no significant difference between MBCT and ACT, and both therapies were equally effective. MBCT and ACT are both third-wave therapies that are mainly characterized by the centrality of awareness and acceptance of the current conditions for transformation. The effectiveness of these widely-used third-wave therapies has been confirmed for a wide spectrum of disorders. The theory explaining psychological pathology in these two therapies relies on emotion dysregulation and awareness of automatic reactions to negative emotions that are activated when trying to alleviate psychological distress. The theoreticians of these two therapies looked for ways to help people distance themselves from intrapsychic processes, validate their painful emotions, re-direct their attention and make it flexible, and this leads to a change through acceptance. Emotion identification and regulation result in effective coping with distressing factors (44).

Conclusion

Consequently, MBCT and ACT effectively promoted subjective well-being and emotion regulation and alleviated their psychological distress in the students. Based on the findings, there seems to be no difference between these two therapies in terms of achieving subjective well-being through psychological distress alleviation. The content of the therapeutic sessions of those therapies emphasizes the reinforcement of mindfulness and acceptance of experiences, thus similarly affecting mood balance and negative emotion regulation. Both forms of therapy concentrate on the current problems and thoughts and recommend the use of behavior exercises that serve the acquisition of new information and behavior modification.

Acknowledgements

This article was extracted from a part of a Ph.D. dissertation submitted by Zohreh Shahsavari Googhari in the Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran (Code: 960005022; date: 2020-11-17). The researchers wish to thank all the individuals who participated in the study.

Authors' Contribution

ZSG: Study concept and design, data acquisition, data analysis and interpretation, and statistical analysis. FH and PA: Administrative, technical, and material support, and study supervision. FH and AH: Critical revision of the manuscript for important intellectual contents.

Conflict of Interests
All the authors declare that they have no conflict of interests.

Ethical Approval
The study was approved by the Ethical Committee of Islamic Azad University-Ahvaz Branch (code: IR.IAU.AHVAZ.REC.1399.037).

Funding/Support
This study received no funding.

References
1. Piwowar-Sulej K. Human resources development as an element of sustainable HRM - with the focus on production engineers. J Clean Prod. 2021;278:124008. doi: 10.1016/j.jclepro.2020.124008.
2. Damari B, Ehsani-Chimeh E. Status of Human resources management in Iran's health sector and the path to development: a qualitative study. Med J Islam Repub Iran. 2019;33:69. doi: 10.34171/mjiri.33.69.
3. Chacón-Cuberos R, Zurita-Ortega F, Olmedo-Moreno EM, Castro-Sánchez M. Relationship between academic stress, physical activity and diet in university students of education. Behav Sci (Basel). 2019;9(6):59. doi: 10.3390/bs9060059.
4. Bedewy D, Gabriel A. Examining perceptions of academic stress and its sources among university students: the Perception of Academic Stress Scale. Health Psychol Open. 2015;2(2):2055102915596714. doi: 10.1177/2055102915596714.
5. Luna P, Guerrero J, Cejudo J. Improving adolescents' subjective well-being, trait emotional intelligence and social anxiety through a programme based on the sport education model. Int J Environ Res Public Health. 2019;16(10):1821. doi: 10.3390/ijerph16101821.
6. Sletta C, Tyssen R, Løvseth LT. Change in subjective well-being over 20 years at two Norwegian medical schools and factors linked to well-being today: a survey. BMC Med Educ. 2019;19(1):45. doi: 10.1186/s12909-019-1476-3.
7. Franzen J, Jermann F, Ghisletta P, Rudaz S, Bondolfi G, Tran NT. Psychological distress and well-being among students of health disciplines: the importance of academic satisfaction. Int J Environ Res Public Health. 2021;18(4):2151. doi: 10.3390/ijerph18042151.
8. Iri H, Makvandi B, Bakhtiarpour S, Hafezi F. The effect of dialectical behavior therapy on divorced women's psychosocial adjustment and cognitive emotion regulation. J Occup Health Epidemiol. 2020;9(2):68-75. doi: 10.29252/johe.9.2.68.
9. Elhai JD, Hall BJ, Erwin MC. Emotion regulation's relationships with depression, anxiety and stress due to imagined smartphone and social media loss. Psychiatry Res. 2018;261:28-34. doi: 10.1016/j.psychres.2017.12.045.
10. Ghazanfari Shabankare M, Heidari A, Makvandi B, Marashian FS. The relationship of mindfulness and difficulties in emotion regulation with emotional divorce through sexual satisfaction among married university students in Ahvaz, Iran. J Shahrekord Univ Med Sci. 2021;23(1):7-13. doi: 10.34172/jsums.2021.02.
11. Salari N, Khazaie H, Hosseinian-Far A, Khaledi-Paveh B, Ghasemi H, Mohammadi M, et al. The effect of acceptance and commitment therapy on insomnia and sleep quality: a systematic review. BMC Neurol. 2020;20(1):300. doi: 10.1186/s12883-020-01883-1.
12. Kashefinishabouri J, Eftekhar Saadi Z, Pasha R, Heidari A, Makvandi B. The effect of mindfulness-based cognitive therapy and emotion-regulation training on rumination and social anxiety in teenagers prone to addiction. J Occup Health Epidemiol. 2021;10(1):1-11. doi: 10.52547/johe.10.1.1.
13. Tickell A, Ball S, Bernard P, Kuyken W, Marx R, Pack S, et al. The effectiveness of mindfulness-based cognitive therapy (MBCT) in real-world healthcare services. Mindfulness (N Y). 2020;11(2):279-90. doi: 10.1007/s12671-018-1087-9.
14. MacKenzie MB, Abbott KA, Kocovski NL. Mindfulness-based cognitive therapy in patients with depression: current perspectives. Neuropsychiatr Dis Treat. 2018;14:1599-605. doi: 10.2147/ndt.s160761.
15. Kuyken W, Warren FC, Taylor RS, Whalley B, Crane C, Bondolfi G, et al. Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: an individual patient data meta-analysis from randomized trials. JAMA Psychiatry. 2016;73(6):565-74. doi: 10.1001/jamapsychiatry.2016.0076.
16. Walsh KM, Saab BJ, Farb NA. Effects of a mindfulness meditation app on subjective well-being: active randomized controlled trial and experience sampling study. JMIR Ment Health. 2019;6(1):e10844. doi: 10.2196/10844.
17. Polle E, Gair J. Mindfulness-based stress reduction for medical students: a narrative review. Can Med Educ J. 2021;12(2):e74-e80. doi: 10.36834/cmej.68406.
18. de Sousa GM, de Lima-Araújo GL, de Araújo DB, de Sousa MBC. Brief mindfulness-based training and mindfulness trait attenuate psychological stress in university students: a randomized controlled trial. BMC Psychol. 2021;9(1):21. doi: 10.1186/s40359-021-00520-x.
19. Zhang CQ, Leeming E, Smith P, Chung PK, Hagger MS, Hayes SC. Acceptance and commitment therapy for health behavior change: a contextually-driven approach. Front Psychol. 2017;8:2350. doi: 10.3389/fpsyg.2017.02350.
20. Ahmadi Ghahnaviyeh L, Bagherian B, Feizi A, Afshari A, Mostafavi Darani F. The effectiveness of acceptance and commitment therapy on quality of life in a patient with myocardial infarction: a randomized control trial. Iran J Psychiatry. 2020;15(1):1-9.
21. Ataie Moghanloo V, Ataie Moghanloo R, Moazezi M. Effectiveness of acceptance and commitment therapy for depression, psychological well-being and feeling of guilt in 7-15 years old diabetic children. Iran J Pediatr. 2015;25(4):e2436. doi: 10.5812/ijp.2436.
22. Maghsoudi Z, Razavi Z, Razavi M, Javadi M. Efficacy of acceptance and commitment therapy for emotional distress in the elderly with type 2 diabetes: a randomized controlled trial. Diabetes Metab Syndr Obes. 2019;12:2137-43. doi: 10.2147/dmso.s221245.
23. Afroundeh R, Saidzanozi R. Comparison of the effect of pilates and traditional corrective exercises on lumbar lordosis in female students. Scientific Journal of Rehabilitation Medicine. 2017;6(3):84-94. doi: 10.22037/jrm.2017.1100348. [Persian].
24. Krueger AB, Schkade DA. The reliability of subjective well-being measures. J Public Econ. 2008;92(8-9):1833-45. doi: 10.1016/j.jpubeco.2007.12.015.
25. Asadi R, Delavar A. Use of partial least square structural equation modeling in explanation of demographic variables effect on spiritual intelligence with the mediating of well-being. Quarterly of Educational Measurement. 2015;6(22):1-39. doi: 10.22054/jem.2017.9044.1274. [Persian].
26. Hashemian K, Pourshahriari M, Bani Jamali S, Golestani Bakht T. Investigating the relationship between demographic characteristics and mental well-being and happiness in the population of Tehran. J Psychol Stud. 2007;3(3):139-63. doi: 10.22051/psy.2007.1706. [Persian].
27. Beaufort IN, de Weert-van Oene GH, Buwalda VAJ, de Leeuw JRJ, Goudriaan AE. The depression, anxiety and stress scale (DASS-21) as a screener for depression in substance use disorder inpatients: a pilot study. Eur Addict Res. 2017;23(5):260-8. doi: 10.1159/000485182.
28. Sahebi A, Asghari MJ, Salari RS. Validation of depression anxiety and stress scale (DASS-21) for an Iranian population. J Iran Psychol. 2005;1(4):36-54. [Persian].

29. Scheffel C, Diers K, Schönfeld S, Brocke B, Strobel A, Dörfel D. Cognitive emotion regulation and personality: an analysis of individual differences in the neural and behavioral correlates of successful reappraisal. Personal Neurosci. 2019;2:e11. doi: 10.1017/pen.2019.11.
30. Toghyani E, Yousefi R. Psychometric properties of Persian version of emotion awareness questionnair. Quarterly of Educational Measurement. 2019;9(35):213-32. doi: 10.22054/jem.2019.13739.1382. [Persian].
31. Williams JM, Russell I, Russell D. Mindfulness-based cognitive therapy: further issues in current evidence and future research. J Consult Clin Psychol. 2008;76(3):524-9. doi: 10.1037/0022-006x.76.3.524.
32. Ducasse D, Fond G. [Acceptance and commitment therapy]. Encephale. 2015;41(1):1-9. doi: 10.1016/j.encep.2013.04.017.
33. Cotton S, Kraemer KM, Sears RW, Strawn JR, Wasson RS, McCune N, et al. Mindfulness-based cognitive therapy for children and adolescents with anxiety disorders at-risk for bipolar disorder: a psychoeducation waitlist controlled pilot trial. Early Interv Psychiatry. 2020;14(2):211-9. doi: 10.1111/eip.12848.
34. Hearn JH, Cross A. Mindfulness for pain, depression, anxiety, and quality of life in people with spinal cord injury: a systematic review. BMC Neurol. 2020;20(1):32. doi: 10.1186/s12883-020-1619-5.
35. Parmentier FBR, García-Toro M, García-Campayo J, Yañez AM, Andrés P, Gili M. Mindfulness and symptoms of depression and anxiety in the general population: the mediating roles of worry, rumination, reappraisal and suppression. Front Psychol. 2019;10:506. doi: 10.3389/fpsyg.2019.00506.
36. Wielgosz J, Goldberg SB, Kral TRA, Dunne JD, Davidson RJ. Mindfulness meditation and psychopathology. Annu Rev Clin Psychol. 2019;15:285-316. doi: 10.1146/annurev-clinpsy-021815-093423.
37. Zhang Q, Wang Z, Wang X, Liu L, Zhang J, Zhou R. The Effects of Different Stages of Mindfulness Meditation Training on Emotion Regulation. Front Hum Neurosci. 2019;13:208. doi: 10.3389/fnhum.2019.00208.
38. Guendelman S, Medeiros S, Rampes H. Mindfulness and emotion regulation: insights from neurobiological, psychological, and clinical studies. Front Psychol. 2017;8:220. doi: 10.3389/fpsyg.2017.00220.
39. Pielech M, Vowles KE, Wicksell R. Acceptance and commitment therapy for pediatric chronic pain: theory and application. Children (Basel). 2017;4(2):10. doi: 10.3390/children4020010.
40. Reilly ED, Ritzert TR, Scoglio AAJ, Mote J, Fukuda SD, Ahern ME, et al. A systematic review of values measures in acceptance and commitment therapy research. J Contextual Behav Sci. 2019;12:290-304. doi: 10.1016/j.jcbs.2018.10.004.
41. Heydari M, Masafi S, Jafari M, Saadat SH, Shahyad S. Effectiveness of acceptance and commitment therapy on anxiety and depression of Razi Psychiatric Center staff. Open Access Maced J Med Sci. 2018;6(2):410-5. doi: 10.3889/oamjms.2018.064.
42. Azadi MM, Manshaee G, Golparvar M. Comparing the effectiveness of mobile social network-based mindfulness intervention with acceptance and commitment therapy and mindfulness therapy on self-management and glycated haemoglobin level among patients with type 2 diabetes. J Shahrekord Univ Med Sci. 2019;21(5):221-8. doi: 10.34172/jsums.2019.39.
43. Wojnarowska A, Kobylinska D, Lewczuk K. Acceptance as an emotion regulation strategy in experimental psychological research: what we know and how we can improve that knowledge. Front Psychol. 2020;11:242. doi: 10.3389/fpsyg.2020.00242.
44. Salimi M, Mahdavi A, Sepehr Yeghaneh S, Abedin M, Hajhosseini M. The effectiveness of group based acceptance and commitment therapy (ACT) on emotion cognitive regulation strategies in mothers of children with autism spectrum. Maedica (Bucur). 2019;14(3):240-6. doi: 10.26574/maedica.2019.14.3.240.