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Comparing the effectiveness of acceptance and commitment therapy and mindfulness on negative perfectionism and mental exhaustion in women with autoimmune disease

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Original Article

Abstract

BACKGROUND: Living with a chronic illness such as an autoimmune disease can also result in higher levels of stress, anxiety, and depression. The main goal of this research was to explore the effects of acceptance and commitment therapy (ACT) and mindfulness therapy on women with autoimmune diseases in terms of reducing negative perfectionism and mental fatigue.

METHODS: The current study utilized a semi-experimental design with a pre-test, post-test, and three-month follow-up. The target population for this research comprised all women with autoimmune disease from August to November 2023, in Tehran, Iran. The sample consisted of 54 women with autoimmune diseases. The ACT group received eleven 90-minute sessions twice a week, and the MBCT group attended eight 90-minute sessions twice a week. The researchers employed the Positive and Negative Perfectionism Scale (PNP) and the Mental Fatigue Inventory (MFI). Statistical analysis of the data was conducted using MANCOVA test in the SPSS software.

RESULTS: There were noteworthy variations in the negative perfectionism and mental fatigue variables among the research groups ($P < 0.001$). Additionally, a substantial distinction was observed in the average mental fatigue levels across the pre-test, post-test, and follow-up stages ($P < 0.001$). Furthermore, there was no significant dissimilarity in the negative perfectionism variable between the ACT and MBCT groups ($P = 0.429$).

CONCLUSION: Based on the results of the present study, both methods were effective in helping women with an autoimmune disease to manage negative perfectionism and decrease mental fatigue.

KEYWORDS: Acceptance and Commitment Therapy; Mindfulness; Cognitive Training; Women; Autoimmune Disease; Perfectionism; Mental Fatigue

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Introduction

Autoimmune disease refers to the immune system's failure to differentiate between self- and non-self-antigens. This condition significantly affects individuals and families afflicted by the disease.[1] Furthermore, the occurrence of such diseases is more prevalent in women than in men, with women constituting 85% or more of multiple autoimmune patients.[2] While women exhibit

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superior infection elimination abilities compared to men, they also possess a higher propensity for developing autoimmune disorders.[3] Perfectionism can heighten negative emotions in patients, as it represents an extreme activation of one aspect of the motivational system of emotion regulation. This excessive striving for flawlessness can potentially result in physical symptoms by placing excessive pressure on the stress response system.[4] Perfectionism is a particular type of personality style characterized by exerting significant effort to achieve flawless actions and utilizing high standards for evaluating behavior. It consists of two dimensions: adaptive perfectionism, which involves goal achievement through logical thinking and effort, and maladaptive perfectionism, which involves illogical thinking.[5] Perfectionists experience a significant amount of pressure to achieve perfection, as they believe they need to meet not only their own high standards but also the expectations of others. Consequently, it is not surprising that perfectionists encounter elevated levels of stress and mental exhaustion.[6] Mental exhaustion is a psychological state that arises from cognitive activities, resulting in various manifestations, including an increased likelihood of making errors and a decrease in reaction time during simple cognitive tasks.[7]

Autoimmune diseases present a complex challenge when it comes to their diagnosis and treatment, and they have a significant impact on healthcare and mental health facilities. Individuals suffering from these diseases face numerous complications that can diminish their quality of life.[8] The third wave of psychological interventions has introduced acceptance and commitment therapy (ACT) as a potential solution for alleviating symptoms associated with autoimmune diseases.[9] ACT stands out as a unique experimental psychological intervention that combines acceptance and mindfulness strategies with commitment and behavior change strategies to enhance psychological flexibility.[10] Studies have demonstrated the positive effects of treatment based on ACT on psychological distress and the fear of disease progression in patients with rheumatoid arthritis (RA).[9] Another study has also provided evidence that treatment based on ACT is effective in reducing emotional avoidance and cognitive fatigue in women with multiple sclerosis (MS).[11]

Mindfulness therapy is another effective treatment for reducing stress and addressing physical and mental symptoms in individuals with autoimmune diseases. Mindfulness meditation stimulates a specific area of the brain that has positive effects on the body's immune function.[12] Mindfulness is defined as being aware and fully attentive to each moment without judgment.[13] A study conducted by Ensan et al. has shown that mindfulness significantly improves fatigue in patients with MS.[14] Similarly, Kim et al.'s research in 2019 demonstrated that mindfulness-based therapy could alleviate anxiety, depression, and stress in individuals with systemic lupus erythematosus (SLE).[15] Considering the high prevalence and detrimental effects of autoimmune diseases, it is crucial to focus on strategies for alleviating symptoms. However, there is currently a lack of research specifically investigating the impact of negative perfectionism and mental exhaustion on women with autoimmune diseases. Consequently, there exists a research gap in this area, and this study stands as one of the initial attempts to compare the efficacy of ACT therapy and mindfulness in addressing negative perfectionism and mental exhaustion among women with autoimmune diseases. The main objective of this study is to determine whether ACT and mindfulness therapy have an impact on negative perfectionism and mental fatigue among women with autoimmune diseases.

Methods

The current study utilized a semi-experimental design with a pre-test, post-test, and three-month follow-up. There were three groups involved, including experimental and control groups. The target population for this research comprised all women with autoimmune disease from August to November 2023 in Tehran City, Iran. The sample consisted of 54 women with autoimmune diseases who were purposefully selected and randomly assigned to two experimental groups [ACT = 18, mindfulness-based cognitive therapy (MBCT) = 19] and one control group.[16] The sample size was determined using G*Power software, with a significance level of 0.05, effect size of 1.11, and power test of 0.90. The inclusion criteria for participants were women aged 20 and over with physical and mental health to participate in the intervention sessions, a medical record for autoimmune conditions, and living in Tehran City. Participants who were taking psychiatric drugs or did not attend more than two treatment sessions were excluded from the study. The necessary approvals were obtained before conducting the research in four hospitals in Tehran City. The study was approved by the Ethics Committee of Islamic Azad University, Amol Branch, Amol, Iran (IR.IAU.AMOL.REC.1402.173). The participants were deliberately chosen and provided with information about the research goals and ethical principles. Written consent was acquired from the participants before proceeding. Afterward, the participants were randomly allocated to either the ACT, MBCT, or control groups. The ACT group attended eleven 90-minute sessions twice a week,[17] while the MBCT group attended eight 90-minute sessions twice a week.[18]

At first, the control group did not receive any intervention but later underwent a course of ACT and MBCT sessions to adhere to research ethics. Post-test questionnaires were administered to the experimental groups at the end of the research sessions. A summary of treatment sessions for the ACT group and the MBCT group can be found in tables 1 and 2. The flow chart outlined in figure 1 showcases the Consolidated Standards of Reporting Trials (CONSORT).

The Positive and Negative Perfectionism Scale (PNP): Terry-Short et al. (1995) developed a self-report questionnaire to assess individuals' levels of perfectionism, specifically in the dimensions of positive and negative perfectionism. The questionnaire consists of 40 items, where respondents select one of five options to indicate the intensity of their perfectionism.[19] Half of the questions pertain to positive perfectionism, while the remaining half address negative perfectionism.

Table 1. A summary of acceptance and commitment therapy (ACT) sessions

Session	Content
First	Briefing and introduction
Second	Introducing the concept of creative helplessness, and hungry tiger metaphor
Third	Continuing creative hopelessness, fighting the monster metaphor
Fourth	Control is the problem, the polygraph metaphor
Fifth	Control is the problem, the two scales metaphor, the key to fight and pure emotions against impure ones
Sixth	Control is the problem, the chocolate cake metaphor, mindfulness with mindful breathing exercises
Seventh	Detachment from unpleasant thoughts and feelings, the numbers metaphor, the passengers on the bus metaphor
Eighth	Detachment, willingness and acceptance, the lion metaphor, the soldiers in the parade exercise, mindfulness exercises
Ninth	Detachment, self as context, the tombstone exercise, relationship between goals and values
Tenth	Evaluation of values, self as context, the chessboard metaphor, clarification of the values and commitment
Eleventh	Review and summing up

Table 2. Summary of mindfulness-based cognitive training (MBCT) sessions

Session	Content
First	Conducting the pre-test, communicating and conceptualizing the problem
Second	Mindfulness training. In this session, after a brief review of the previous session, explanations were given about mindfulness (tension and relaxation of muscles) and how to sit in mindfulness and muscles that should be under mindfulness.
Third	In this session, after a brief review of the previous session, mindfulness for the muscles, but in the group of muscles, was performed as follows: mindfulness for hands and arms (10 minutes), legs and thighs (10 minutes), abdomen and chest (10 minutes), neck and shoulders (10 minutes), jaws and lips (10 minutes), and forehead and eyes (10 minutes).
Fourth	Attention to breathing was taught.
Fifth	After a brief review of the previous session, body scanning technique was taught in the fifth session. In this meeting, each member of the group was given a piece of candy, and at first, they were taught to smell the candy and its olfactory sensations for 5 minutes.
Sixth	Focusing the mind without thinking about anything else, by concentrating on a mental point or a cross on a sheet of A4, for 15 minutes. In the next step, a negative thought about oneself was induced by the trainer (30 minutes).
Seventh	In this session, after a short review of the previous session, the training of sessions 4, 5, and 6 (each for 20-30 minutes) was repeated. The people in the group were asked to do the deep inhalation and exhalation technique before sleeping for 20 minutes and the technique of taste awareness through eating food for 20 minutes as homework.
Eighth	In this session, in order to end the sessions and perform the post-test, the subjects were asked to perform the techniques in mindfulness training in their daily routine and in this way, help to improve their health.

In the Iranian investigation, the Cronbach's alpha coefficient for this scale was determined to be 0.83.[20] In this study, the researcher obtained a Cronbach's alpha coefficient of 0.712 for the negative perfectionism dimension of the scale.

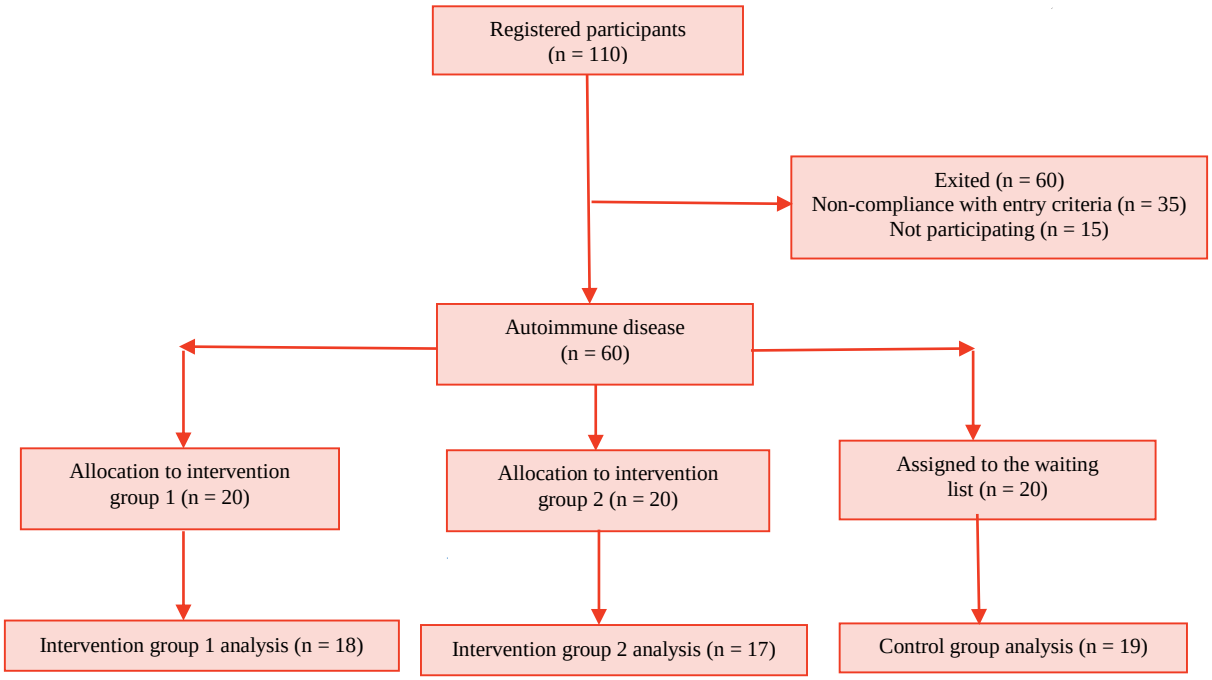

Figure 1. The flow diagram of the study

The Mental Fatigue Inventory (MFI): The MFI was developed by Smets et al. (1996) to assess fatigue and mental exhaustion.[21] This questionnaire consists of 20 items, where respondents select one of five options to indicate the severity of their mental fatigue. Each item is scored on a five-point Likert scale ranging from "not at all" to "severe". Scores range from 1 to 5. Each item has an assigned score, and the scores are then summed up to produce a total score between 20 and 100. A higher score on this scale indicates a greater level of mental fatigue. In the investigation conducted in Iran, the Cronbach's alpha coefficient for this scale was found to be 0.80.[22] In this study, the researcher determined the Cronbach's alpha coefficient for this scale to be 0.871.

Statistical analysis: The descriptive statistics utilized in this research included measures such as mean and standard deviation (SD), while inferential statistics were analyzed using analysis of covariance (ANCOVA). The data collected were subjected to statistical analysis using various methods, including Kruskal-Wallis H, analysis of variance (ANOVA), and multivariate ANCOVA (MANCOVA), with a significance level of 0.05. All statistical analyses were conducted using SPSS software (version 27, IBM Corporation, Armonk, NY, USA). To assess the normal distribution of the data, the Kolmogorov-Smirnov test was employed, and the homogeneity of variances was evaluated using Levene's test. Additionally, means were compared using Bonferroni's post hoc test.

Results

The researcher collected information from the participants at three separate stages of the study: before it started, after it finished, and during the follow-up period. Initially, the researcher examined and described the participants' demographic characteristics. The findings of the Kruskal-Wallis test indicated that there was no notable distinction between the participants in terms of age, level of education, duration of infection, and marital status (P > 0.05) (Table 3).

In table 4, the mean and SD of the research variables in the research groups were also analyzed by the researcher.

Table 3. Demographic characteristics in the experimental and control groups

Variables	Demographic information	ACT [n (%)]	MBCT [n (%)]	Control [n (%)]	Kruskal-Wallis H	P
Age (year)	20 to 30	6 (37.5)	5 (31.3)	5 (31.3)	0.354	0.838
	31 to 40	6 (33.3)	6 (33.3)	6 (33.3)		
	41 and up	6 (30.0)	6 (30.0)	8 (40.0)		
	Total	18 (33.3)	17 (31.5)	19 (35.2)		
Grade	High school	7 (35.0)	7 (35.0)	6 (30.0)	0.737	0.692
	Diploma	2 (33.3)	2 (33.3)	2 (33.3)		
	Associate degree	1 (14.3)	3 (42.9)	3 (42.9)		
	Bachelor degree	2 (28.6)	2 (28.6)	3 (42.9)		
	Master degree	3 (42.9)	2 (28.6)	2 (28.6)		
	PhD	3 (42.9)	1 (14.3)	3 (42.9)		
	Total	18 (33.3)	17 (31.5)	19 (35.2)		
Duration of infection (year)	1 to 2	5 (23.8)	7 (33.3)	9 (42.9)	1.089	0.580
	3 to 4	10 (27.8)	8 (41.2)	7 (47.4)		
	+4	3 (37.5)	2 (25.0)	3 (37.5)		
	Total	18 (33.3)	17 (31.5)	19 (35.2)		
Marital status	Married	6 (66.7)	11 (35.3)	12 (36.8)	4.431	0.109
	Single	12 (48.0)	6 (24.0)	7 (28.0)		
	Total	18 (33.3)	17 ()	19		

ACT: Acceptance and commitment therapy; MBCT: Mindfulness-based cognitive therapy

Table 4. Description of research variables and analysis of covariance (ANCOVA) test

Variables	Groups	Mean ± SD			Tests of between-subjects effects				
		Pre-test	Post-test	Follow-up	Source	Stages	F	P	Eta
Negative perfectionism	ACT	64.94 ± 6.60	42.83 ± 5.10	38.77 ± 9.30	Pre-test	Post-test	0.272	0.604	0.005
	MBCT	63.82 ± 7.80	46.52 ± 5.60	41.52 ± 6.20		Follow-up	1.144	0.290	0.022
	Control	66.78 ± 7.70	64.00 ± 10.10	63.78 ± 10.10	Group	Post-test	40.663	< 0.001	0.619
						Follow-up	42.567	< 0.001	0.630
Mental fatigue	ACT	66.55 ± 5.50	48.44 ± 6.20	39.11 ± 7.40	Pre-test	Post-test	0.199	0.658	0.004
	MBCT	62.47 ± 6.40	52.23 ± 2.10	40.41 ± 6.06		Follow-up	0.068	0.796	0.001
	Control	66.10 ± 3.50	66.68 ± 7.20	65.52 ± 7.60	Group	Post-test	50.592	< 0.001	0.669
						Follow-up	77.765	< 0.001	0.757

ACT: Acceptance and commitment therapy; MBCT: Mindfulness-based cognitive therapy; SD: Standard deviation

Table 4 displays the mean and SD of the participant's scores for negative perfectionism and mental fatigue. Based on this information, there were no notable distinctions in negative perfectionism and mental fatigue variables between the ACT, MBCT, and control groups in the preliminary testing stage. However, both the ACT and MBCT groups showed a decrease in the average score for negative perfectionism during the post-test and follow-up stages. Conversely, there were no changes observed in the control group. In table 4, the within-group test revealed significant variations between the research groups when analyzing negative perfectionism and mental fatigue ($P < 0.001$). The findings indicated a substantial P-value, highlighting notable discrepancies among the groups.

Based on the data provided in table 5, it is clear that there was a significant difference in the scores of the various research variables throughout the three distinct phases: pre-test, post-test, and follow-up. This difference was statistically significant, as indicated by a $P < 0.001$. However, when examining the negative perfectionism variable specifically, there appeared to be no significant difference between the scores attained during the post-test and follow-up phases, denoted by a P-value of 0.107.

Table 5 indicates there was no significant difference between the ACT and MBCT groups regarding negative perfectionism ($P = 0.429$). Nevertheless, a significant difference existed between the ACT and MBCT groups and the control group ($P < 0.001$). In the same way, there was no notable difference found between the ACT and MBCT groups concerning the mental fatigue variable ($P = 0.160$). However, a noteworthy difference was noticed between the ACT and MBCT groups in comparison to the control group, with a P-value less than 0.001.

Table 5. Bonferroni's post hoc test to check the difference between the three phases and between three groups

Variables	(I) Time/group	(J) Time/group	Mean difference	SE	P
Negative perfectionism	Pre-test	Post-test	13.796*	1.771	0.001
		Follow-up	16.796*	2.003	0.001
	Post-test	Follow-up	3.000	1.393	0.107
	ACT	MBCT	-3.779	2.539	0.429
		Control	-21.031*	2.478	< 0.001
	MBCT	Control	-17.252*	2.536	< 0.001
Mental fatigue	Pre-test	Post-test	9.056*	1.469	< 0.001
		Follow-up	16.296*	1.993	< 0.001
	Post-test	Follow-up	7.241*	1.310	< 0.001
	ACT	MBCT	-4.071	2.058	0.160
		Control	-18.271*	1.907	< 0.001
	MBCT	Control	-14.200*	2.014	< 0.001

ACT: Acceptance and commitment therapy; MBCT: Mindfulness-based cognitive therapy; SE: Standard error
Significance at a 95% confidence interval

Considering the decrease in the mean values of the research variables and the significant difference between the experimental and control groups, one can confidently state that ACT and MBCT have successfully impacted the research variables.

Discussion

The main objective of the current study was to compare the effectiveness of ACT therapy and mindfulness on negative perfectionism and mental exhaustion in women with autoimmune disease.

The findings of this investigation revealed that there was no significant difference observed between the two groups undergoing the respective therapies. Additionally, both ACT therapy and mindfulness exhibited an influence on diminishing negative perfectionism and mental fatigue in women with autoimmune diseases. Consequently, these interventions proved effective in reducing such issues in this specific group of women.

The findings of the current study indicated that both ACT therapy and mindfulness could decrease negative perfectionism and mental exhaustion in women with autoimmune diseases, which aligns with the results of previous research studies.[11,14,23,24] Esmaeili et al.'s study demonstrated the effectiveness of ACT therapy in addressing perfectionism in patients.[24] Research has also shown that mindfulness can be a beneficial therapeutic approach for reducing negative perfectionism. Siahpoosh et al.'s research in 2022 found that acceptance and commitment-based treatment could effectively reduce cognitive fatigue in women with MS.[11] Another study highlighted that mindfulness could significantly improve fatigue in patients with MS.[14]

In explaining this discovery, it should be noted that third-generation treatments such as mindfulness and ACT focus on enhancing a person's psychological relationship with their thoughts and emotions rather than altering their cognitions. Both mindfulness and ACT share several elements, including recognizing one's thoughts, emotions, and actions, embracing them, avoiding avoidance, avoiding fusion, and distinguishing between thoughts and reality, which may account for the differences in their effects. Both treatments are equally effective in addressing perfectionism and psychological exhaustion in women with autoimmune diseases.[25] Those with negative perfectionistic tendencies tend to view mistakes as failures and try to avoid making any mistakes. In ACT, clients are encouraged to identify their maladaptive values and confront their rigid thought patterns through experiential exercises and mindfulness, leading to a decreased sense of self-blame and commitment to unrealistic responsibilities.[26] One key aspect of mindfulness is self-acceptance, which involves embracing oneself with all strengths, weaknesses, positive and negative experiences, and emotions, potentially reducing negative perfectionism and promoting self-acceptance.[24] Similarly, ACT helps dispel false beliefs held by autoimmune patients regarding the management of their fatigue, challenging their tendencies to avoid activity, and promoting engagement in activities to reduce physical fatigue, which may also improve mental exhaustion over time.[11] Mindfulness practices, including concentration exercises, can significantly reduce the severity of fatigue in autoimmune patients by enhancing awareness of the mind-body connection and utilizing techniques for body and mind control, leading to increased inner peace and reduced negative emotions related to unpleasant thoughts and feelings in women with autoimmune diseases.[14]

The current study also had its limitations. One of them is the variation in how mind-body interventions are embraced and acknowledged in diverse cultures and healthcare settings. As a result, it is important to exercise caution when applying the findings of this study to

other societies and cultures. Additionally, the research only focused on women with autoimmune diseases in Tehran City, which could hinder the generalization of the results to other groups. Furthermore, another limitation of this study was the possibility of inaccuracy or impatience of certain patients when completing or not completing the questionnaire. It is crucial to note that this study solely focused on women with autoimmune diseases and, therefore, future studies should encompass other populations to ensure the generalizability of the results. Furthermore, future research needs a more extended follow-up period of at least six months. The results of the current study could offer valuable assistance in enhancing perfectionism and reducing burnout in women with autoimmune disorders, with practical implications for therapists.

Conclusion

The findings of the current research indicate that there is no notable distinction between the ACT group and the mindfulness therapy group. Moreover, both ACT and mindfulness therapy exhibit effectiveness in addressing negative perfectionism and mental exhaustion, thereby reducing these issues in women with autoimmune diseases.

Conflict of Interests

Authors have no conflict of interests.

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References

1. Trier NH, Houen G. Antibody cross-reactivity in autoimmune diseases. Int J Mol Sci. 2023; 24(17): 13609.
2. Desai MK, Brinton RD. Autoimmune disease in women: Endocrine transition and risk across the lifespan. Front Endocrinol (Lausanne). 2019; 10: 265.
3. Miquel CH, Faz-Lopez B, Guéry JC. Influence of X chromosome in sex-biased autoimmune diseases. J Autoimmun. 2023; 137: 102992.
4. Ardalani FF, Shahabizadeh F, Hashemi M, Dadkhah P. Mood/anxiety symptoms and emotional schemas in the model of quality of spiritual life of patients with chronic low back pain mediated by role of multidimensional perfectionism cognitions. J Anesthesiol Pain. 2021; 12(3): 115-28. [In Persian].
5. Waleriańczyk W, Hill AP, Stolarski M. A conditional process model of perfectionism, goal-realization, and post-competition mood. Psychol Sport Exerc. 2023; 69: 102511.
6. Abdi R, Shabani N, Javidfar S, Pak R. The relationship between perfectionism and job burnout: Mediating role of workaholism. Ind Organ Psychol Stud. 2018; 4(2): 1-16. [In Persian].
7. Golmohammadi B, Kashani V, Khodaei N. The acute effect of mental fatigue on badminton performance in semi-elite players. Mind, Move Behav. 2023; 2(2): 47-58. [In Persian].
8. Ghalavand A, Azadi M, Mohammadpour Z, Ghalavand N, Ghalavand M, Ghalavand M. Cognitive complications of Type 1 Diabetes: A narrative review study. Jundishapur Sci Med J. 2023; 21(6): 910-22. [In Persian].
9. Khanbabaei N, Zahedi R, Rafiepoor A. The effectiveness of treatment based on acceptance and commitment on the psychological distress and fear of disease progression in patients with rheumatoid arthritis. Health Psychol. 2019; 8(30): 117-32. [In Persian].
10. Malek-Mohammadi-Memar S, Zoghi Paydar MR. The effect of acceptance and commitment therapy on muscle pain in patients with rheumatoid arthritis. J Ilam Univ Med Sci. 2022; 30(2): 51-62. [In Persian].
11. Siahpoosh M, Parandin S, Azizi S. Evaluation of the effectiveness of acceptance and commitment based therapy on stress perception, cognitive flexibility and psychological function in asthmatics. Islami-Iran Fam Stud J. 2022; 2(1): 78-95. [In Persian].
12. Shabani M, Ghari Saadati L. Comparison of the effectiveness of mindfulness-based cognitive therapy and quality of life therapy on perfectionism and rumination in patients with migraine. Avicenna J neuropsychophysiology. 2019; 6(1): 1-10.

13. Sverre KT, Nissen ER, Farver-Vestergaard I, Johannsen M, Zachariae R. Comparing the efficacy of mindfulness-based therapy and cognitive-behavioral therapy for depression in head-to-head randomized controlled trials: A systematic review and meta-analysis of equivalence. Clin Psychol Rev. 2023; 100: 102234.
14. Ensan N, Boogar IR, Talepasand S, Estilaee F. The effectiveness of mindfulness-based stress reduction in fatigue severity among patients with multiple sclerosis. Stud Med Sci. 2020; 31(2): 137-45.
15. Kim HA, Seo L, Jung JY, Kim YW, Lee E, Cho SM, et al. Mindfulness-based cognitive therapy in Korean patients with systemic lupus erythematosus: A pilot study. Complement Ther Clin Pract. 2019; 35: 18-21.
16. Kang H. Sample size determination and power analysis using the G*Power software. J Educ Eval Health Prof. 2021; 18: 17.
17. Hayes SC, Strosahl KD. A practical guide to acceptance and commitment therapy. Berlin, Germany: Springer Science & Business Media; 2004.
18. Baer RA. Mindfulness-based treatment approaches: Clinician's guide to evidence base and applications. Cambridge, MA: Elsevier Academic Press; 2014.
19. Terry-Short LA, Owens G, Slade P, Dewey ME. Positive and negative perfectionism. Pers Individ Dif. 1995; 18(5): 663-8.
20. Bitaraf S, Shaeeri MR, Hakim Javadi M. Social phobia, parenting styles, and perfectionism. Dev Psychol. 2010; 7(25): 75-83. [In Persian].
21. Smets EM, Garssen B, Bonke B, De Haes JC. The multidimensional fatigue inventory (MFI) psychometric qualities of an instrument to assess fatigue. J Psychosom Res. 1995; 39(3): 315-25.
22. Gheysvandi H, Jazani RK, Seyedmehdi SM. Determine the relationship between system engineering initiatives for patient safety models elements with occupational fatigue among nurses. J Health Saf Work. 2022; 12(3): 617-31. [In Persian].
23. Esmaeili N, Asgari P, Khorami NS, Bakhtiarpour S. Effectiveness of acceptance and commitment therapy on perfectionism and resilience in migraine patients. Int Arch Health Sci. 2021; 8(3): 138-42.
24. Asadi Asadabad R, Imani S, Fathabadi J, Noroozi A. Effectiveness of mindfulness-based relapse prevention group therapy and treatment as usual on positive and negative perfectionism in men with opioid use disorder: A comparative investigation. J Appl Psychol Res. 2022; 13(3): 343-59. [In Persian].
25. Abyar Z, Makvandi B, Bakhtyarpour S, Naderi F, Hafezi F. Comparing the effectiveness of acceptance and commitment therapy, mindfulness training, and combined method (Mindfulness-based and acceptance and commitment) on depression. J Child Ment Health. 2019; 5(4): 27-38. [In Persian].
26. Nazari G, Amiri H, Afsharinia K, Kakabraei K. Comparing the effects of mindfulness-based cognitive therapy and acceptance and commitment therapy on irrational beliefs and perfectionism in incompatible couples. Middle East J Disabil Stud. 2021; 11: 55. [In Persian].