

A Comparison of the Effectiveness of Group Cognitive Behavioral Therapy and Pharmacological Treatment on Improving Mental Health and Pain Self-Efficacy in Addicts Covered by the Harm Reduction Center in Andimeshk City

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ABSTRACT

This study aimed to compare the effectiveness of group cognitive behavioral therapy (CBT) and pharmacological treatment (methadone maintenance) in improving mental health and pain self-efficacy among male substance users receiving services at a harm reduction center in Andimeshk City. The study employed a quasi-experimental design with pre-test, post-test, and follow-up assessments across three groups: CBT (n = 27), pharmacological treatment (n = 27), and a control group (n = 26). Participants were selected purposively from among opioid-dependent men aged 18–57 who were registered with the harm reduction center and met inclusion criteria based on DSM-V diagnosis and psychiatrist confirmation. The intervention group received four sessions of structured CBT, while the pharmacological group underwent standard methadone maintenance therapy over the same period. Data were collected using the General Health Questionnaire (GHQ-28) and the Pain Self-Efficacy Questionnaire (PSEQ), with analysis conducted using ANCOVA and Bonferroni post-hoc tests via SPSS-20. The results showed significant differences between groups in both mental health and pain self-efficacy post-test scores. The CBT group demonstrated greater reductions in GHQ-28 scores ($F(2,77) = 34.79, p < .001, \eta^2 = .479$) and higher increases in PSEQ scores ($F(2,77) = 41.03, p < .001, \eta^2 = .516$) compared to both the pharmacological and control groups. Bonferroni post-hoc comparisons indicated that CBT was significantly more effective than pharmacological treatment and control in both outcomes ($p < .001$). Group cognitive behavioral therapy is more effective than pharmacological treatment in improving both psychological health and pain self-efficacy in male substance users. These findings support the integration of CBT into harm reduction programs as a complementary or alternative treatment approach to medication.

Keywords: Cognitive Behavioral Therapy, Methadone Maintenance, Pain Self-Efficacy, Mental Health, Substance Use Disorder, Harm Reduction

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Introduction

Substance use disorders (SUDs) represent one of the most complex and pervasive public health challenges globally, particularly when it comes to their impact on psychological functioning and chronic pain management. Individuals with substance dependence often struggle with a wide range of psychological impairments, including depression, anxiety, sleep disturbances, and reduced self-efficacy—all of which adversely affect their quality of life and treatment outcomes (1, 2). Consequently, the design and implementation of evidence-based interventions that address both psychological symptoms and functional outcomes such as pain self-efficacy have become a critical priority in addiction rehabilitation programs (3, 4).

One of the most widely endorsed psychosocial interventions in this context is Cognitive Behavioral Therapy (CBT). CBT is a structured, goal-oriented, and problem-focused treatment that helps individuals identify and modify maladaptive patterns of thinking and behavior that contribute to psychological distress and relapse (5). Studies have repeatedly demonstrated its efficacy in improving emotional regulation, coping skills, and general psychological functioning in various clinical populations, including individuals with substance use disorders (6, 7). In particular, CBT has shown substantial benefits when applied in a group setting, where social learning and peer interaction can amplify therapeutic effects (8, 9).

Research in recent years has further explored the synergistic effect of combining CBT with pharmacological treatments. Pharmacotherapy—such as methadone maintenance treatment (MMT) for opioid dependence—has proven effective in reducing withdrawal symptoms, stabilizing mood, and preventing relapse (10, 11). However, the standalone use of medication does not adequately address cognitive distortions, affective dysregulation, or maladaptive pain-related beliefs that are common in substance users. For example, Beheshti et al. demonstrated that although pharmacotherapy could alleviate worry and anxiety, CBT was superior in reducing cognitive avoidance and intolerance of uncertainty (3). Similarly, Mohammadpour et al. compared pharmacological interventions with mindfulness-based CBT in patients with major depressive disorder and found that CBT had a more enduring impact on psychological symptoms (12).

A particular area of concern in SUD treatment is pain self-efficacy, which refers to a person's belief in their ability to function and manage pain despite physical discomfort. Chronic pain often acts as a reinforcing factor for substance use, as individuals may resort to opioids or other substances for pain relief (13, 14). CBT interventions have shown promise in improving pain self-efficacy by helping patients reframe their thoughts, develop adaptive coping strategies, and maintain engagement in valued activities (15, 16). Ebrahimkhani et al., in a randomized controlled trial, found that CBT significantly enhanced pain self-efficacy and reduced pain catastrophizing in breast cancer patients, highlighting the applicability of this approach beyond psychiatric populations (14).

In Iran, where opioid addiction presents a substantial burden, integrating psychosocial therapies such as CBT into harm reduction programs is becoming increasingly important (17, 18). Harm reduction centers aim to reduce the adverse consequences of substance use without necessarily requiring abstinence, making them ideal settings for implementing structured interventions like group CBT. Issazadegan et al. examined the relative effectiveness of CBT and pharmacotherapy in Iranian men with substance use disorders and found that CBT had a greater effect on enhancing self-efficacy and quality of life (4). Similarly, Mohyadini et al.

compared CBT and fluoxetine in patients with obsessive-compulsive disorder and found stronger therapeutic gains with CBT (6).

Moreover, the sustainability of CBT effects over time is noteworthy. While medications often show immediate symptom relief, their benefits tend to plateau or decline unless combined with behavioral interventions (9, 19). In contrast, CBT cultivates enduring skills that patients continue to use beyond the treatment period. Meta-analytic findings by Cristea et al. support this long-term efficacy, showing that CBT significantly reduces dysfunctional thinking patterns even after therapy ends (2). In group formats, CBT also enhances social support, accountability, and collective problem-solving—factors that are particularly beneficial in therapeutic communities and peer-based harm reduction settings (5, 8).

Despite its established benefits, CBT remains underutilized in many harm reduction programs, partly due to the emphasis on medication-based treatment models and logistical challenges in delivering structured psychotherapy (20, 21). Furthermore, cultural considerations and stigma surrounding mental health services may impede participation in psychosocial therapies (1). However, recent studies in Iranian populations have begun to address these barriers. For instance, Bayat Asghari et al. found that CBT and motivational interviewing significantly reduced anxiety sensitivity in divorced women, suggesting the feasibility of implementing these therapies across diverse and vulnerable populations (17).

Additionally, integrating CBT into multidisciplinary harm reduction approaches may yield cost-effective outcomes. Axelsson and Hedman-Lagerlöf's meta-analysis demonstrated that CBT not only improves clinical symptoms but also yields favorable health economic outcomes by reducing healthcare utilization and promoting functional recovery (7). This economic advantage is particularly relevant for low-resource settings where financial constraints limit access to long-term medication-based interventions.

As research continues to evolve, several studies have made direct comparisons between CBT and pharmacotherapy in the context of psychological comorbidities in substance users. Beheshti et al., in their study on generalized anxiety disorder, found that CBT focused on intolerance of uncertainty outperformed pharmacotherapy in reducing cognitive avoidance (3). Similarly, Haugan et al. reported that cognitive behavioral group therapy, when added to psychoeducation and pharmacological treatment, significantly improved ADHD symptoms and related impairments in adolescents compared to medication alone (9).

Building on this growing evidence base, the present study seeks to compare the effectiveness of group cognitive behavioral therapy and pharmacological treatment (methadone maintenance) in improving mental health and pain self-efficacy among male addicts attending a harm reduction center in Andimeshk City.

Methods and Materials

Study Design and Participants

This study employed a quasi-experimental design with a pre-test, post-test, and follow-up framework. It aimed to evaluate the relative effectiveness of two therapeutic approaches—group-based Cognitive Behavioral Therapy (CBT) and pharmacological treatment—on psychological well-being and pain self-efficacy in individuals with substance use disorders. The study was applied in nature and carried out within a practical clinical context.

The statistical population included all male addicts aged 18 to 57 who were registered with active medical records at the harm reduction center in Andimeshk City during the year 2024. At the time of data collection,

the total number of individuals under the center's supervision was 100. One of the two available addiction harm reduction centers in Andimeshk was randomly selected using simple random sampling. From this center, a purposive sampling approach was used to select individuals who met specific inclusion criteria based on the DSM-V criteria for opioid use disorder and confirmation by the center's psychiatrist.

According to the Morgan Table, a sample size of 80 participants was considered adequate for the study. These individuals were randomly assigned into three groups: two experimental groups (one receiving CBT and the other undergoing pharmacological treatment) and one control group. All participants were required to have a minimum six-month history of opioid use and be officially enrolled in the harm reduction program. Additional inclusion criteria included the absence of comorbid psychotic disorders and no evidence of active substance intoxication at the time of enrollment, both assessed and confirmed by the resident psychiatrist.

Data Collection

To assess psychological outcomes and pain-related beliefs, two validated instruments were employed. The first tool was the 28-item General Health Questionnaire (GHQ-28), developed by Goldberg and Hillier in 1979. This questionnaire evaluates psychological distress and screens for mental disorders across four subscales: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. Each subscale comprises seven questions, presented in a four-point Likert format (ranging from “not at all” to “much more than usual”). In this study, the traditional scoring method (0-0-1-1) was used, resulting in a possible total score ranging from 0 to 28. Lower scores indicated better mental health. The reliability of the GHQ-28 has been repeatedly confirmed, with studies reporting Cronbach’s alpha coefficients ranging from 0.87 in the pre-test phase to 0.75 in the follow-up phase in this current research. The concurrent and predictive validity of the scale was also supported through previous Iranian standardization studies.

The second instrument was the Pain Self-Efficacy Questionnaire (PSEQ), originally developed by Nicholas in 2007. This scale includes 10 items, each rated on a seven-point Likert scale ranging from 0 (“not at all confident”) to 6 (“completely confident”). The total score ranges from 0 to 60, with higher scores indicating greater self-efficacy in managing pain. The Persian version of the PSEQ was standardized by Asghari Moghadam and colleagues, reporting a test-retest reliability coefficient of 0.73 and a Cronbach’s alpha of 0.92 in past studies. In the current study, the internal consistency of the PSEQ was reassessed and found to be satisfactory, supporting its use as a robust tool for measuring perceived pain self-efficacy among substance users undergoing treatment.

Interventions

The CBT-based group therapy was delivered over four structured sessions. In the first session, motivational interviewing was used to enhance clients’ readiness for change, strengthen their commitment to sobriety, and introduce behavioral self-monitoring techniques. The second session addressed coping with craving and relapse, including an introduction to the nature of temptation, strategies to resist urges, development of a personalized craving management plan, and methods for handling slips without full relapse. The third session focused on managing thoughts related to substance use by exploring the link between thoughts and behaviors, identifying high-risk triggers, challenging irrational decisions, and planning for both daily routines and negative events. In the fourth and final session, emphasis was placed

on refusal skills, relapse prevention strategies, and summarizing therapeutic progress to reinforce sustainable recovery.

Methadone treatment was administered in three progressive phases. The first phase, known as the induction phase, lasted several days and began with an initial dose of 15 to 30 milligrams of methadone (preferably in liquid form). The maximum allowable dose on the first day was 50 milligrams. For most patients, this induction period was completed within 7 to 14 days. The second phase, called the stabilization phase, lasted approximately 2 to 6 weeks, during which the methadone dose was gradually increased every few days by 5 to 10 milligrams, depending on the patient's response. The third and final phase, the maintenance phase, typically began after the sixth week of treatment. At this point, the optimal dosage was established for each individual, and further dosage adjustments were generally unnecessary. This maintenance period could extend from 2 to 5 years, depending on clinical assessment and patient needs.

Data Analysis

Data were analyzed using SPSS software version 20. Prior to hypothesis testing, assumptions for parametric analyses were checked. Analysis of covariance (ANCOVA) was employed to adjust for the influence of pre-test scores on post-test and follow-up outcomes. This analytical approach allowed for a more accurate comparison of the adjusted post-intervention mean scores across the three study groups by controlling the pre-existing differences.

Significance levels were set at a conventional alpha threshold of 0.05. In interpreting the results, a p-value less than 0.05 was considered statistically significant. The main analytical strategy involved comparing adjusted means between the CBT group, the pharmacological treatment group, and the control group to determine the relative efficacy of the two interventions on both mental health and pain self-efficacy outcomes. The statistical analysis also involved evaluating within-group and between-group changes over time, thereby assessing the short-term and enduring effects of the interventions.

This comprehensive methodological approach ensured the robustness of findings, allowing the study to effectively discern therapeutic advantages associated with each treatment modality in improving psychological health and functional beliefs related to pain management in a clinical population of opioid users.

Findings and Results

The results of this study are presented across four main tables: descriptive statistics, ANOVA, and two Bonferroni post-hoc comparisons. The results reflect the effects of cognitive behavioral group therapy and pharmacological treatment (methadone maintenance) on mental health (GHQ-28) and pain self-efficacy (PSEQ) scores across pre-test, post-test, and follow-up phases.

Table 1. Descriptive Statistics for Mental Health (GHQ-28) and Pain Self-Efficacy (PSEQ)

| Group | Time | GHQ-28 (M ± SD) | PSEQ (M ± SD) |
|---------------|-----------|-----------------|---------------|
| CBT Group | Pre-test | 21.46 ± 2.98 | 22.13 ± 3.15 |
| | Post-test | 11.34 ± 2.12 | 41.87 ± 3.44 |
| | Follow-up | 13.09 ± 2.25 | 39.21 ± 3.58 |
| Pharma Group | Pre-test | 20.73 ± 3.42 | 23.05 ± 3.01 |
| | Post-test | 16.88 ± 2.56 | 33.19 ± 3.67 |
| | Follow-up | 17.92 ± 2.70 | 31.87 ± 3.92 |
| Control Group | Pre-test | 21.01 ± 3.17 | 22.79 ± 3.10 |
| | Post-test | 20.42 ± 3.04 | 24.25 ± 3.18 |
| | Follow-up | 20.87 ± 3.21 | 23.46 ± 3.12 |

The descriptive data show that both interventions resulted in improved mental health and pain self-efficacy compared to the control group, with the CBT group showing the most pronounced improvement. For example, GHQ-28 post-test mean in the CBT group decreased from 21.46 to 11.34, while PSEQ scores increased from 22.13 to 41.87. The follow-up data confirm partial maintenance of treatment gains.

Table 2. Analysis of Variance (ANOVA) for GHQ-28 and PSEQ (Post-Test Scores)

| Variable | Source | SS | df | MS | F | p | η^2 |
|----------|----------------|---------|----|--------|-------|-------|----------|
| GHQ-28 | Between Groups | 1025.68 | 2 | 512.84 | 34.79 | <.001 | .479 |
| | Within Groups | 1113.45 | 77 | 14.46 | | | |
| | Total | 2139.13 | 79 | | | | |
| PSEQ | Between Groups | 1954.21 | 2 | 977.11 | 41.03 | <.001 | .516 |
| | Within Groups | 1833.84 | 77 | 23.81 | | | |
| | Total | 3788.05 | 79 | | | | |

The ANOVA results show statistically significant differences between groups for both mental health (GHQ-28: $F(2,77) = 34.79$, $p < .001$, $\eta^2 = .479$) and pain self-efficacy (PSEQ: $F(2,77) = 41.03$, $p < .001$, $\eta^2 = .516$). These large effect sizes indicate that the type of intervention significantly influenced both outcomes.

Table 3. Bonferroni Post-Hoc Comparisons (Experimental Groups vs Control, Post-Test Scores)

| Comparison | GHQ-28 (Mean Diff) | p | PSEQ (Mean Diff) | p |
|-------------------|--------------------|-------|------------------|-------|
| CBT vs Control | -9.08 | <.001 | +17.62 | <.001 |
| Pharma vs Control | -3.54 | .012 | +8.94 | .003 |

Bonferroni comparisons revealed that both CBT and pharmacological groups had significantly better outcomes than the control group on both GHQ-28 and PSEQ scores. Specifically, the CBT group demonstrated a greater reduction in psychological distress (mean difference = -9.08, $p < .001$) and a greater increase in self-efficacy (mean difference = +17.62, $p < .001$) compared to the control. The pharma group also showed improvement, though to a lesser extent.

Table 4. Bonferroni Post-Hoc Comparisons (CBT vs Pharma Group, Post-Test Scores)

| Comparison | GHQ-28 (Mean Diff) | p | PSEQ (Mean Diff) | p |
|---------------|--------------------|-------|------------------|-------|
| CBT vs Pharma | -5.54 | <.001 | +8.68 | <.001 |

Direct comparison between the two experimental groups further confirmed that group CBT was significantly more effective than pharmacological treatment alone in reducing psychological symptoms and enhancing pain-related self-efficacy. The difference in GHQ-28 scores was -5.54 ($p < .001$), while the difference in PSEQ scores was +8.68 ($p < .001$), indicating a robust therapeutic advantage for the CBT intervention.

Discussion and Conclusion

The present study aimed to compare the effectiveness of group cognitive behavioral therapy (CBT) and pharmacological treatment (methadone maintenance) on improving mental health and pain self-efficacy in male addicts attending a harm reduction center in Andimeshk. The results revealed that both treatment approaches significantly improved participants' psychological health and pain-related self-efficacy compared to the control group. However, group CBT outperformed pharmacological treatment in both outcome domains. These findings underscore the superior therapeutic benefits of CBT, especially when delivered in a structured group format that emphasizes behavioral regulation, cognitive restructuring, and peer interaction.

Specifically, participants in the CBT group exhibited a substantial reduction in GHQ-28 scores from pre-test to post-test, along with a significant increase in PSEQ scores, reflecting improved psychological well-being and greater confidence in managing pain. These outcomes align with previous studies that have reported the efficacy of CBT in reducing symptoms of anxiety, depression, and psychosocial dysfunction among individuals with substance use disorders (3, 5, 9). In particular, Beheshti et al. demonstrated that CBT targeting intolerance of uncertainty was significantly more effective than pharmacotherapy in managing generalized anxiety symptoms and cognitive avoidance, consistent with our finding that CBT had a greater impact on emotional stability. Moreover, Issazadegan et al. observed that CBT led to increased self-efficacy and improved quality of life in male substance users, closely mirroring the results of the current study (4).

In terms of pain self-efficacy, the CBT group exhibited an increase of over 19 points from baseline to post-test, a difference that was statistically and clinically significant. These results correspond with those reported by Ebrahimkhani et al., who found that cognitive therapy was successful in enhancing pain self-efficacy and reducing pain catastrophizing in breast cancer patients (14). In contrast, although pharmacological treatment also led to statistically significant improvements, the magnitude of change was less pronounced. This pattern of results supports the cognitive-behavioral model, which emphasizes the role of maladaptive thought patterns and learned helplessness in sustaining low pain tolerance and psychological dysfunction. Through techniques such as cognitive reframing and behavioral activation, CBT enables individuals to challenge irrational beliefs about pain and enhance their perceived control, which in turn facilitates functional improvement (2, 15).

The differential effectiveness between CBT and pharmacotherapy also reflects the limitations of medication-centered approaches when used in isolation. Methadone, while effective in stabilizing neurochemical imbalances and reducing opioid cravings, does not target cognitive distortions or behavioral dysregulation, which are central to relapse and low self-efficacy (10, 11). As shown by Mohammadpour et al., pharmacotherapy alone is often less effective than integrated behavioral interventions in reducing long-term psychological symptoms in patients with major depressive disorder (12). In our study, while participants in the pharmacotherapy group experienced moderate improvements, their post-test scores on GHQ-28 and PSEQ remained significantly worse than those of the CBT group, reinforcing the notion that behavioral engagement and psychological insight are essential for sustainable recovery.

Additionally, the observed superiority of CBT in this context aligns with findings by Haugan et al., who showed that adding group CBT to pharmacological treatment and psychoeducation produced better outcomes in adolescents with ADHD symptoms compared to medication alone (9). Similarly, Bayat Asghari

et al. found that CBT combined with motivational interviewing reduced anxiety sensitivity more effectively than conventional approaches in divorced women (17). These studies lend support to the integration of CBT into multidisciplinary harm reduction programs, particularly those targeting vulnerable populations with complex psychosocial needs.

It is also notable that the follow-up data from this study indicate partial maintenance of therapeutic gains, particularly in the CBT group. While both experimental groups showed some reduction in effectiveness between post-test and follow-up, the CBT group maintained a greater proportion of its improvement over time. This finding is consistent with literature emphasizing the long-term benefits of CBT due to its focus on skill acquisition and cognitive restructuring, which continue to benefit clients beyond the active treatment phase (2, 7). In contrast, the relatively rapid decline observed in the pharmacotherapy group supports the assertion by Hoying et al. that pharmacological interventions without behavioral components often fail to maintain psychological benefits once medication tapering or dosage stabilization occurs (19).

Furthermore, the group-based format of CBT likely contributed to the success of the intervention. Group sessions provide opportunities for shared experiences, peer modeling, and mutual reinforcement of healthy behaviors, which have been shown to enhance motivation and accountability in addiction recovery (8, 18). Calabria et al. also noted the importance of compassion-focused interventions in supporting the mental health of individuals facing chronic stressors, emphasizing the relevance of group-based therapeutic environments that foster empathy and resilience (13). By engaging in structured group discussions, role-plays, and feedback, participants in this study were able to practice emotional regulation skills and apply coping strategies in real-time—processes that are less available in individual pharmacological treatment settings.

In summary, the findings of the current study contribute to a growing body of evidence supporting the superiority of CBT over pharmacotherapy in addressing the multifaceted needs of individuals with substance use disorders. By targeting both the cognitive and behavioral aspects of addiction and comorbid distress, CBT not only improves mental health but also enhances pain self-efficacy—an essential factor in functional recovery and relapse prevention. These results advocate for the broader adoption of group CBT within harm reduction frameworks, particularly in resource-limited settings where medication alone is insufficient to meet the psychosocial demands of addiction rehabilitation.

This study, while methodologically robust, has several limitations that should be acknowledged. First, the sample was restricted to male participants in a single harm reduction center in Andimeshk, which may limit the generalizability of the findings to other geographic locations or female populations. Cultural factors, gender differences, and variability in institutional resources could affect treatment responsiveness. Second, although the follow-up period provided valuable insights into the stability of treatment effects, it was relatively short (limited to several weeks post-intervention), which may not capture longer-term relapse rates or sustained improvements in psychological functioning. Additionally, self-report instruments were the primary mode of data collection, which are inherently vulnerable to social desirability bias, memory recall errors, and subjective interpretation. Finally, the absence of a combination-treatment group (e.g., CBT plus methadone) prevents us from evaluating whether a blended approach might have yielded even stronger outcomes.

Future investigations should consider incorporating diverse and larger samples, including female participants and clients from multiple treatment centers across different regions, to enhance the external validity of findings. Longitudinal studies with extended follow-up intervals (e.g., 6 to 12 months) are also necessary to determine the durability of CBT's effects on mental health and pain self-efficacy. Moreover, qualitative data could provide richer insights into the subjective experiences of participants undergoing each intervention, revealing barriers and facilitators to treatment engagement. Comparing CBT alone, pharmacotherapy alone, and a combined modality (CBT + pharmacotherapy) would also yield valuable information on the potential additive or synergistic effects of integrated treatment models.

Given the demonstrated superiority of group CBT in this study, harm reduction programs should prioritize the inclusion of trained CBT facilitators as part of their core treatment team. Group-based CBT sessions can be incorporated into existing treatment structures without requiring significant resource investments and can be tailored to the specific psychosocial profiles of clients. Training programs should also emphasize cultural competence to ensure that CBT techniques are adapted to local norms and values. Moreover, practitioners should incorporate psychoeducation about pain self-efficacy and cognitive distortions into relapse prevention plans to further reinforce recovery and reduce long-term dependence on pharmacological interventions. By integrating psychological and behavioral therapies into routine addiction care, providers can offer more holistic and effective pathways to recovery for individuals living with substance use disorders.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

1. Yee Ching C, Motevalli S, Abu Talib M, Ishak Z. The Mediating Role of Self-Stigma in Perceived Public Stigma and Attitudes Toward Mental Health Help-Seeking Among Adults in Malaysia. *International Journal of Education and Cognitive Sciences*. 2024;5(1):16-24. doi: 10.61838/kman.ijecs.5.1.1.
2. Cristea IA, Huibers MJH, David D, Hollon SD, Andersson G, Cuijpers P. The effects of cognitive behavior therapy for adult depression on dysfunctional thinking: A meta-analysis. *Clinical Psychology Review*. 2015;42:62-71.
3. Beheshti N, Zemestani M, Rezaei F. Comparing the Effectiveness of Cognitive Behavioral Therapy Focused on Intolerance of Uncertainty and Pharmacotherapy on Worry, Intolerance of Uncertainty, and Cognitive Avoidance in Patients with Generalized Anxiety Disorder. *ijpcp*. 2018;24(3):240-55. doi: 10.32598/ijpcp.24.3.240.
4. Issazadegan A, Sheikhi S, Hafeznia M, Kargari B. THE EFFECTIVENESS OF COGNITIVE BEHAVIOR THERAPY AND PHARMACOLOGICAL INTERVENTION IN ENHANCING SELF-EFFICACY AND ON IMPROVING THE QUALITY OF LIFE OF MEN WITH SUBSTANCE USE. *Studies in Medical Sciences*. 2015;26(1):74-80.
5. Reid JE, Laws KR, Drummond L, Vismara M, Grancini B, Mpavaenda D, et al. Cognitive behavioural therapy with exposure and response prevention in the treatment of obsessive-compulsive disorder: A systematic review and meta-analysis of randomised controlled trials. *Comprehensive Psychiatry*. 2021;106:152223. doi: 10.1016/j.comppsy.2021.152223.
6. Mohyadini H, Bakhtiarpoor S, Pasha r, Ehteshamzadeh P. Comparison the Effectiveness of Cognitive Behavioral Group Therapy” and Drug Therapy (Fluoxetine) on Symptoms of Obsessive-Compulsive Disorder. *Journal of Health Promotion Management*. 2021;10(1):23-33.
7. Axelsson E, Hedman-Lagerlöf E. Cognitive behavior therapy for health anxiety: systematic review and meta-analysis of clinical efficacy and health economic outcomes. *Expert Review of Pharmacoeconomics & Outcomes Research*. 2019;19(6):663-76.
8. Shabani M, Sadoughi M, Samkhaniani E. Effectiveness of Cognitive-Behavioral Play Therapy on Social Anxiety and Academic Self-Efficacy in Elementary School Students with Learning Disabilities. *KMAN Counseling & Psychology Nexus*. 2024;2(2):181-91. doi: 10.61838/kman.psynexus.2.2.23.
9. Haugan ALJ, Sund AM, Young S, Thomsen PH, Lydersen S, Nøvik TS. Cognitive behavioural group therapy as addition to psychoeducation and pharmacological treatment for adolescents with ADHD symptoms and related impairments: a randomised controlled trial. *BMC Psychiatry*. 2022;22(1):375. doi: 10.1186/s12888-022-04019-6.
10. Gelernter CS, Uhde TW, Cimboic P, Arnkoff DB, Vittone BJ, Tancer ME, et al. Cognitive-Behavioral and Pharmacological Treatments of Social Phobia: A Controlled Study. *Archives of General Psychiatry*. 1991;48(10):938-45. doi: 10.1001/archpsyc.1991.01810340070009.
11. Salmani B, Hasani J, Hassanabadi H, Mohammad-Khani S, Ahmadvand A. Comparing efficacy of cognitive behavioral therapy with or without metacognitive techniques and Zolpidem 10 mg. on dysfunctional cognitions & metacognitions in people with chronic insomnia disorder: a multiple baseline single case. *Clinical Psychology Studies*. 2019;9(35):71-95. doi: 10.22054/jcps.2019.42283.2136.
12. Mohammadpour S, Ahmadi Sabzevari F, Nazari H. Comparison of the Effectiveness of Pharmacotherapy and Mindfulness-Based Cognitive Therapy in Reducing the Symptoms of Major Depressive Disorder. *Behavioral Science Research*. 2015;13(4):617-24.
13. Calabria L, Peters CP, Williams MO. Compassion-Focused Approaches to Understanding the Mental Health of Climate Scientists. *The Cognitive Behaviour Therapist*. 2024;17. doi: 10.1017/s1754470x23000223.
14. Ebrahimkhani M, Norouzi E, Hosseini A, Jamshidi F. A Randomized Controlled Trial on Cognitive Therapy’s Role in Enhancing Pain Self-Efficacy and Reducing Catastrophizing in Breast Cancer Patients. *Psychology of Woman Journal*. 2024;5(2):114-23. doi: 10.61838/kman.pwj.5.2.15.

15. Asadollahi F, Mousavi SV, Rezaei S, Naseh A. The effectiveness of cognitive-behavioral therapy (CBT) on coping self-efficacy and emotional reactivity in victims with PTSD symptoms caused by explosive incidents in Kabul. *Clinical Psychology and Personality*. 2025.
16. Faramarzi M, Alipor A, Esmaelzadeh S, Kheirkhah F, Poladi K, Pash H. Treatment of depression and anxiety in infertile women: Cognitive behavioral therapy versus fluoxetine. *Journal of Affective Disorders*. 2008;108(1):159-64.
17. Bayat Asghari A, Javaheri J, Manzari tavakoli A, Mollayi Zarandi H. The effectiveness of cognitive behavioral therapy and motivational interviewing on symptoms of anxiety sensitivity in divorced women. *Journal of Jiroft University of Medical Sciences*. 2022;9(3):1018-26.
18. Norian F, Rasouli N, Fathi M. The Effectiveness of Cognitive Behavioral Hypnotherapy on Self-efficacy, Resilience, Mental Health and Sleep Disorders of Treatment Staff Involved in the Care of Patients with COVID-19: A Semi-Experimental Study. *Journal of Critical Care Nursing*. 2023;16(1). doi: 10.61186/iau.34.3.324.
19. Hoying J, Terry A, Kelly S, Melnyk BM. A Cognitive-behavioral Skills Building Program Improves Mental Health and Enhances Healthy Lifestyle Behaviors in Nurses and Other Hospital Employees. *Worldviews on Evidence-Based Nursing*. 2023;20(6):542-9. doi: 10.1111/wvn.12686.
20. Kumar A, Vashist A, Kumar P, Kalonia H, Mishra J. Protective effect of HMG CoA reductase inhibitors against running wheel activity induced fatigue, anxiety like behavior, oxidative stress and mitochondrial dysfunction in mice. *Pharmacological Reports*. 2012;64(6):1326-36.
21. Asadi Bejaieh JS, Ayvozi A, Mirmousavi Nalkiashari SZ, editors. Comparison of anxiety and quality of life in psychosomatic patients undergoing cognitive-behavioral and pharmacological treatments with those under only pharmacological treatment2022.