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Original Article

Exploring the Impact of Cognitive Behavior Therapy on Cognitive Flexibility and Interpersonal Forgiveness among Individuals Recovered from COVID-19

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Abstract

Background and Aim: Covid-19 caused many psychological problems. The purpose of this study was to investigate the effectiveness of cognitive-behavioral therapy on cognitive flexibility and interpersonal forgiveness in individuals who have recovered from the virus.

Materials and Methods: A semi-experimental research design with pre-test, post-test, and follow-up assessments was employed, including a control group. The statistical population consisted of all COVID-19 patients who sought treatment at hospitals in the city of Tehran in 2022. By availability sampling method, 30 individuals were selected and assigned to the experimental group (n=15) and the control group (n=15). The experimental group underwent nine sessions of cognitive-behavioral therapy. Data collection instruments included the Cognitive Flexibility Questionnaire by Dennis and Vander Wall (2010) and the Interpersonal Forgiveness Questionnaire by Ehtshamzadeh. Covariance analysis was employed to analyze the data, and repeated measures analysis of variance was used to assess the stability of the treatment effects.

Results: The research findings demonstrated that cognitive-behavioral therapy significantly enhanced cognitive flexibility ($\eta^2 = 0.77$, $F = 80.71$, $P = 0.001$) and interpersonal forgiveness ($\eta^2 = 0.72$, $F = 60.95$, $P = 0.001$) in individuals who have recovered from COVID-19.

Conclusion: It can be concluded that cognitive-behavioral therapy is an effective treatment for improving cognitive flexibility and interpersonal forgiveness in individuals recovered from COVID-19. This can be explained by CBT's ability to reduce cognitive rigidity, promote adaptive thinking, and enhance emotional regulation, which helps individuals forgive others and cope better with the psychological effects of the illness.

Keywords: COVID-19, Cognitive-behavioral therapy, Cognitive flexibility, Interpersonal forgiveness

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Introduction

The COVID-19 pandemic has not only brought about physical health concerns but has also significantly impacted mental and psychological well-being (1). The nature of the virus being compelling and resistant to antibiotics has caused fear and anxiety among people. The main symptoms of the disease, including fever, cough, shortness of breath, and respiratory problems, further contribute to psychological distress (2, 3).

The unknown and unpredictable nature of the coronavirus has resulted in behavioral and psychological problems for individuals (4). The pandemic has jeopardized the psychological and physical health of people around the world. The rapid and uncontrollable spread of the virus has created a fertile ground for the development of psychological issues (5-7).

The mental health dimension has particularly suffered due to the pandemic. People have faced numerous hardships in dealing with the disease, leading to high levels of stress and anxiety (8, 9). Those who have recovered from COVID-19 have often experienced significant challenges and failures. However, they have also developed high levels of psychological resilience and a deeper understanding of the meaning of life. The constant fear of anxiety and death during their illness has contributed to their increased resilience and perspective on life (10, 11). In this regard, cognitive flexibility is crucial in navigating and adapting to the challenges brought about by the pandemic, as it enables individuals to effectively cope with the uncertainties and changes in their lives (12).

Cognitive flexibility is a multifaceted and essential characteristic of human cognition that encompasses the capacity to simultaneously hold contradictory representations of objects or events (13, 14). This ability to accommodate contradictory information and perspectives requires the dynamic adjustment of cognitive cues in response to changing environmental stimuli, thus serving as a central element in this cognitive process (15). The significance of cognitive flexibility lies in its power to empower individuals to navigate the complexities of the world by engaging in adaptive thinking (16).

Individuals with a high level of cognitive flexibility possess the cognitive tools to employ alternative justifications, enabling them to reframe their mindset positively (17). They are adept at embracing challenges or stressful events, utilizing their flexible thinking skills to effectively adapt and respond to these adversities. This capacity to embrace and overcome adversity contributes to their psychological resilience, setting them apart from those who lack cognitive flexibility (18).

On the other hand, individuals who lack cognitive flexibility are prone to perceiving difficult situations as uncontrollable circumstances. These individuals, when faced with life events and the behaviors of others, often find themselves limited in their ability to consider multiple alternative justifications and generate innovative solutions for challenging situations. As a result, they are more likely to become psychologically stuck, hindered by rigid thinking patterns that impede their adaptability and hinder their ability to effectively navigate the complexities of life (19).

Another concept that appears to play a role in the mental health of recovered patients from severe threats, such as COVID-190, is interpersonal forgiveness. Interpersonal forgiveness holds a special place in positive psychology as a means of reducing the negative effects of interpersonal mistakes and facilitating positive adjustment. Forgiveness involves a conscious decision to give up feelings of revenge and anger toward the person responsible for the harm and instead respond in a generous, compassionate, and kind way (20).

Forgiveness does not entail denying, excusing, minimizing, or forgetting the wrongdoings committed by that person. Forgiveness has a highly beneficial impact on increasing individuals' resilience, with those possessing high levels of interpersonal forgiveness often displaying high levels of resilience. Therefore, such individuals may be more resilient when facing challenging circumstances like the COVID-19 disease (21). It is because greater resilience enhances the ability and motivation to cope with difficult situations, including enduring the effects of the COVID-19 virus in recovered patients.

Different methods of intervention and therapeutic approaches have been utilized to promote the psychological well-being of patients dealing with COVID-19, and one such approach is Cognitive behavior therapy (CBT). (22, 23) Cognitive Behavior

therapy (CBT) is one of the approaches used in the treatment of depression, anxiety, and anger (24). It is an effective method for helping individuals face psychological issues and change personality patterns (25). Given that many people with the coronavirus still experience mental problems after physical recovery, CBT can be considered an effective treatment option for them.

CBT consists of three main elements: learning, changing behavior, and altering thoughts (26). By using this method, individuals learn how to choose the best behavior and strategies to tackle problems in situations that cause anxiety, stress, and depression (27). Research examining the effectiveness of the cognitive-behavioral approach has demonstrated its efficacy in managing anxiety and depression (27), increasing satisfaction with life, tolerance, and overall quality of life (28), improving mood and anxiety symptoms (29), enhancing communication with others, and reducing depression (30). Considering the extensive physical and mental consequences of the coronavirus, it is crucial to improve the mental and cognitive well-being of individuals after recovery.

COVID-19 has had a significant impact on the psychological well-being of individuals worldwide, with many experiencing long-term psychological effects even after physically recovering from the illness. Among these effects are difficulties with cognitive flexibility, the ability to adapt one's thinking to new circumstances and perspectives, and interpersonal forgiveness, the willingness to let go of resentment and reconcile with others.

To address these psychological challenges, our study aims to investigate the effectiveness of cognitive-behavioral therapy (CBT) in promoting cognitive flexibility and interpersonal forgiveness in individuals who have recovered from COVID-19. CBT is a widely recognized and evidence-based therapeutic approach that focuses on changing negative thought patterns and behaviors to improve mental well-being.

This study examines the impact of CBT on cognitive flexibility and interpersonal forgiveness to highlight its benefits in enhancing mental well-being and resilience. By improving cognitive flexibility, CBT helps individuals adapt to change, solve problems effectively, and cope with pandemic-related uncertainties. Additionally, fostering interpersonal forgiveness can strengthen relationships and social connections. Our research aims to fill a gap in the literature and support the development of tailored therapeutic approaches for those affected by COVID-19. The findings will provide evidence for CBT's effectiveness and inform mental health professionals and policymakers about its role in post-pandemic recovery. Ultimately, we seek to promote psychological well-being, reduce distress, and enhance resilience in this vulnerable population.

Methods

This research is a semi-experimental study. This research used a pre-test, post-test, and follow-up plan with a control group. The statistical population included all patients with COVID-19 who were referred to hospitals in Tehran in 2022. It has been one month since their recovery. The sampling method used was availability sampling, where one Milad Hospital in Tehran was selected as a sample from among the patients who had visited Tehran. From this group, 30 individuals were selected as the research sample and divided into two experimental groups (n=15) and a control group (n=15). Subjects were alternated between the experimental and control groups, meaning that one group was exposed to the experimental variable but the other served as a control group, not receiving the experimental variable.

The experimental group received cognitive-behavioral therapy as the independent variable, while the control group received no changes in the dependent variables were measured in the post-test phase. Additionally, one month after the post-test phase, a follow-up stage was conducted to assess the effects of the research tools on both groups.

This study was approved by the Research Ethics Committee of Arak University (Approval ID: IR.ARAKU.REC.1401.057).

Materials

Dennis and Vander Wall Cognitive Flexibility Questionnaire

Denay and Vanaderval developed the Cognitive Flexibility Questionnaire in 2010 (31). This questionnaire consists of 20 questions and evaluates an

individual's progress in clinical and non-clinical settings. It is particularly suitable for assessing the development of flexible thinking in cognitive-behavioral treatment for depression and other mental illnesses. In Iran, Kohandani et al. conducted research on this questionnaire and identified three subscales: Alternatives (10 questions), Control (8 questions), and Alternatives for Human Behavior (2 questions). The questionnaire utilizes a 7-point Likert scale, with the following scoring system: Completely disagree: 1, Disagree: 2, Somewhat disagree: 3, Neither agree nor disagree: 4, Somewhat agree: 5, Agree: 6, and Completely agree: 7. Questions 2, 4, 7, 9, 11, and 17 are scored inversely, with Totally disagree: 7, Disagree: 6, Partially disagree: 5, Neither agree nor disagree: 4, Partially agree: 3, Agree: 2, and agree: 1. The total score of the Cognitive Flexibility Test is obtained by summing up the scores of all the questions. Additionally, the sum of the scores for the questions specific to each subscale provides the score for that particular subscale. The highest score in this questionnaire is 140, while the lowest is 20. A higher score indicates greater cognitive flexibility, whereas a lower score close to 20 suggests lower cognitive flexibility. In the study by Dennis and Vanderwaal, the questionnaire demonstrated concurrent validity with the Beck Depression Questionnaire (-0.39) and convergent validity with the Cognitive Flexibility Scale of Martin and Robin (0.75) (31). Kohandani et al. reported a retest coefficient of 0.71 for the entire scale and Cronbach's alpha coefficients of 0.90 in Iran. Specifically, the sub-scales of Alternatives, Control, and Alternatives for Human Behavior had Cronbach's alpha values of 0.72, 0.55, and 0.57, respectively (32).

Interpersonal Forgiveness Questionnaire

This questionnaire was developed by Ehtshamzadeh et al. to assess the validity and factors of interpersonal forgiveness. Principal components analysis was used for factor analysis to determine the questionnaire's factorial validity (33). The results revealed that the scale consists of 25 items, which can be categorized into three sub-components: re-communication (revenge control) with 12 questions, resentment control with 6 questions, and realistic understanding with 7 questions. To score the 25-item scale, respondents are provided four options: "I completely disagree" (scored as 4), "I disagree" (scored as 3), "I agree" (scored as 2), and "I completely agree" (scored as 1). However, for the questions related to the third factor (questions 19-25), the scoring is reversed. The maximum score achievable on this scale is 100, while the minimum score is 25. In addition to an overall score, three scores are obtained for reconnection and revenge control, resentment control, and realistic understanding. The maximum scores for these subscales are 48, 24, and 28, respectively. For convergent validity, three criterion scales were employed in this research: family forgiveness (main family subscale), agreeableness subscale, and aggression scale. These scales were used to validate the findings. The three factors of the scale were named based on their overall content: reconnection and revenge control, resentment control, and realistic understanding. It's important to note that some items in each factor do not measure the characteristics they are named after. To assess test-retest reliability, the correlation coefficient between the scores from the first and second stages was calculated. Additionally, internal consistency coefficients (Cronbach's alpha), Spearman-Brown, and Guttman were computed for the entire scale and its subscales.

Interventions

Table 1 presents a summary of the cognitive-behavioral therapy sessions based on Hoffman et al.'s research (34). Data analysis was performed using independent t-tests, repeated measures analysis of variance, and Bonferroni post hoc test. All statistical analyses were conducted using SPSS version 27.

Table 1. Content of the Cognitive-Behavioral Therapy

Session	Content
1)	introduction pre-test
2)	-Explanation and description of meeting techniques -How do thoughts create feelings ? -Therapist's worksheet sample for implementing the technique (communicating thoughts, feelings and behavior and reconstructing thoughts

	-Differences in thoughts, feelings and behavior -Types of cognitive distortions -Methods of identifying spontaneous negative thoughts in the treatment session daily assignment
3)	Explaining thought recreation process
4)	Description and explanation of the treatment session technique Methods of creating new behaviors Behavior chaining method
5)	assertiveness: description and explanation Definition of assertiveness Types of assertive behavior assertive goals Advantages of assertive behavior The negative consequences of not having assertiveness Avoidance factors of assertive behavior Ways to express assertiveness
6)	Solutions for self-control Positive cognitive strategies for creating pleasant activities worksheets
7)	Types of coping behaviors Problem-oriented behaviors Excited behaviors Jacobsen's relaxation training
8)	how to improve self-esteem
9)	Relapse prevention, summation and post-test

Results

The demographic characteristics of the participants and the results of statistical analyses related to the study hypotheses are presented below.

Table 2 shows the frequency distribution and percentage of the demographic characteristics of the participants. Regarding education level, the highest frequency is in the Bachelor's degree category with 16 participants (53%), while the Diploma, Associate degree, and Master's degree categories each consist of 7 participants (23%). Regarding age, the highest frequency is in the 30 to 35 years group with 11 participants (36%), while the less than 30 years and 35 to 40 years groups consist of 9 participants (30%) and 10 participants (33%), respectively. Finally, in terms of gender, 20 participants (66%) were female, and 10 participants (33%) were male.

In Table 3, a comparison of demographic characteristics between the experimental and control groups is presented, including data on education level, age, and gender. The results show no significant differences between the two groups across these variables, as indicated by the Chi-Square values and p-values: Education Level ($\chi^2 = 0.28$, $p = 0.86$), Age ($\chi^2 = 0.05$, $p = 0.97$), and Gender ($\chi^2 = 0$, $p = 1$).

In this study, to examine the effectiveness of the Cognitive Behavior Therapy (CBT) protocol on the scores of two variables, Cognitive Flexibility and Interpersonal Forgiveness in individuals with COVID-19, Repeated Measures ANOVA was used. This test compared the scores of both variables across three measurement phases: pre-test, post-test, and follow-up. Additionally, pairwise comparisons between the study groups were conducted at each phase using an independent t-test. To assess the necessary assumptions for performing these tests, the assumption of sphericity across measurement phases was evaluated using Mauchly's Test of Sphericity, and the assumption of homogeneity of variance between groups was assessed using Levene's Test. Levene's Test results showed that the assumption of homogeneity of variance between the study groups for both variables was confirmed (P >

0.05), allowing the use of the Independent t-test for group comparisons at each measurement phase. Furthermore, Mauchly's Test of Sphericity results showed that the assumption of homogeneity of covariance across measurement phases for both variables was confirmed (P > 0.05). Therefore, due to the establishment of homogeneity of variance across measurement phases and between groups, there were no barriers to applying the Repeated Measures ANOVA and Independent t-test statistical methods. The results of the statistical tests are presented in Table 4.

As shown in Table 4, regarding the variable Interpersonal Forgiveness, there is a significant difference between the three measurement stages in the experimental group (F = 6.43, P = 0.01), indicating the considerable impact of the Cognitive-behavioral protocol on changes in interpersonal forgiveness scores in this group. In contrast, no significant difference was observed between the three measurement stages in the control group (F = 0.44, P = 0.88), suggesting that no significant changes in interpersonal forgiveness scores occurred throughout the three measurement stages in the control group. Furthermore, in the pre-test stage, no significant difference was observed between the experimental and control groups (t = 0.55, P = 0.58). However, in the post-test stage, the experimental group showed a significant difference in interpersonal forgiveness scores compared to the control group (t = 5.85, P = 0.01). In addition, in the follow-up stage, the experimental group's scores were significantly higher than those of the control group (t = 7.78, P = 0.01). These results indicate the positive impact of the Cognitive Behavior Therapy protocol on improving interpersonal forgiveness in the experimental group.

Table 2. Demographic Characteristics of the Participants

Variable	Category	Frequency	Percentage
Education Level	Diploma and Associate	7	23%
	Bachelor's Degree	16	53%
	Master's Degree	7	23%
Age	Less than 30 years	9	30%
	30 to 35 years	11	36%
	35 to 40 years	10	33%
Gender	Male	10	33%
	Female	20	66%

Table 3. Comparison of Demographic Characteristics between Experimental and Control Groups

Variable	Category	Experimental Group (n = 15)	Control Group (n = 15)	Chi-Square (χ^2)	p-value
Education Level	Diploma and Associate	4	3	0.28	0.86
	Bachelor's Degree	8	8		
	Master's Degree	3	4		
Age	Less than 30 years	4	4	0.05	0.97
	30 to 35 years	6	5		
	35 to 40 years	6	5		
Gender	Male	5	5	0	1

Table 4. Effectiveness of Treatment Type on Dependent Variables (Cognitive Flexibility and Interpersonal Forgiveness)

Variable	Interpersonal Forgiveness			Cognitive Flexibility		
Time	Mean ± Std		t(P_value)	Mean ± Std		t(P_value)
	experimental	Control		experimental	Control	
Pre test	70.47 ± 4.97	72.32 ± 6.22	0.55 (0.58)	81.61 ± 6.84	79.67 ± 6.21	0.81 (0.42)
Post test	88.67 ± 6.55	77.40 ± 6.05	5.85 (0.01)	103.59 ± 7.64	83.07 ± 6.39	7.98 (0.01)
Follow-up	87.53 ± 5.70	75.13 ± 5.81	7.78 (0.01)	101.01 ± 7.69	85.93 ± 6.04	5.55 (0.01)
F(P_value)	6.43 (0.01)	0.44 (0.88)	-	4.32 (0.01)	1.23 (0.54)	-

Additionally, the results regarding the variable Cognitive Flexibility show a significant difference between the three measurement stages in the experimental group (F = 4.32, P = 0.01), indicating the meaningful effect of the Cognitive-behavioral protocol on changes in cognitive flexibility scores in this group. On the other hand, no significant difference was observed between the three measurement stages in the control group (F = 1.23, P = 0.54), suggesting that no significant changes in cognitive flexibility scores occurred throughout the three measurement stages in the control group. Moreover, in the pre-test stage, no significant difference was observed between the experimental and control groups (t = 0.81, P = 0.42). However, in the post-test stage, the experimental group showed a significant difference in cognitive flexibility scores compared to the control group (t = 7.98, P = 0.01). In the follow-up stage, the experimental group's scores were significantly higher than those of the control group (t = 5.55, P = 0.01). These results indicate the positive impact of the Cognitive Behavior Therapy protocol on improving cognitive flexibility in the experimental group.

Considering that the results of the repeated measurement analysis test were significant, the pairwise difference between the steps was investigated using the Bonferroni correction post hoc test. The results of the pairwise comparison between the stages are presented in Table 5.

As shown by the results of the Bonferroni test in Table 5, for the variable Interpersonal Forgiveness in the experimental group, there was a significant difference between the pre-test and post-test (P = 0.01) and between the pre-test and follow-up (P = 0.01). However, no significant difference was observed between the post-test and follow-up scores (P = 0.78). Therefore, we can conclude that the effect of the Cognitive Behavior Therapy protocol on interpersonal forgiveness was significant in the experimental group, and this effect remained stable until the follow-up phase, indicating the stability of the effect for this variable. For the variable Cognitive Flexibility in the experimental group, a significant difference was found between the pre-test and post-test (P = 0.01) and between the pre-test and follow-up (P = 0.01). However, there is no significant difference between the post-test and follow-up scores (P = 0.60). These results suggest that the Cognitive Behavior Therapy protocol significantly impacts cognitive flexibility, and this effect remained stable in the follow-up phase. In the control group, no significant differences were observed between the different measurement phases for either variable (interpersonal forgiveness and cognitive flexibility) (P > 0.05 in all comparisons). These results indicate that no significant changes occurred in the scores of either variable in the control group.

Discussion

This study aimed to examine the effectiveness of Cognitive behavior therapy (CBT) in enhancing cognitive flexibility and interpersonal forgiveness among individuals who have recovered from COVID-19. Given the psychological challenges associated with post-COVID-19 recovery—including heightened stress, anxiety, and difficulties in adapting to new circumstances—understanding the role of CBT in facilitating cognitive and emotional adaptation is crucial. The findings of this study provide empirical evidence for the positive impact of CBT on both cognitive flexibility and interpersonal forgiveness, highlighting its therapeutic benefits in aiding psychological recovery. The statistical analysis revealed that CBT significantly improves cognitive flexibility in individuals recovering from COVID-19. Participants who received CBT demonstrated higher adaptability in thinking patterns, greater openness to alternative perspectives, and a more effective problem-solving approach than the control group.

Table 5. Bonferroni test results to compare the average of cognitive flexibility and interpersonal forgiveness measurement steps

Variable	**Interpersonal Forgiveness difference in averages (P_value)**		**Cognitive Flexibility difference in averages (P_value)**	
Time	experimental	Control	experimental	Control
Pre- Post	18.20 (0.01)	5.08 (0.10)	21.98 (0.01)	3.40 (0.31)
Pre- Follow	17.06 (0.01)	2.81 (0.47)	19.40 (0.01)	6.26 (0.07)
Post - Follow	1.14 (0.78)	2.27 (0.64)	2.58 (0.60)	2.86 (0.43)

These findings align with previous research (35), which established that CBT enhances cognitive flexibility by helping individuals recognize maladaptive thought patterns and replace them with more constructive cognitive strategies. Moreover, studies in cognitive psychology suggest that structured psychological interventions such as CBT strengthen executive functions, particularly those related to cognitive shifting and inhibitory control, which are fundamental components of cognitive flexibility (36). One possible explanation for this finding is that CBT encourages cognitive restructuring, allowing individuals to shift from rigid and distressing thought patterns toward more adaptive and solution-oriented thinking. Given that post-COVID-19 patients often experience heightened anxiety and uncertainty, CBT's focus on reframing negative thoughts and developing problem-solving skills may directly contribute to improved cognitive flexibility. Additionally, neurobiological research indicates that cognitive flexibility is associated with increased activity in the prefrontal cortex, an area of the brain that CBT has been shown to modulate through repeated engagement in cognitive restructuring exercises (37). Therefore, the observed improvements in cognitive flexibility may stem from both psychological and neurobiological mechanisms facilitated by CBT.

Similarly, the results indicated that CBT has a significant effect on interpersonal forgiveness. Participants who underwent CBT reported higher levels of forgiveness toward those they perceived as having wronged them, particularly in the context of interpersonal conflicts exacerbated by the stress and hardships of their illness. This finding is consistent with prior studies (38), which suggest that CBT fosters emotional regulation, empathy, and reappraisal of negative experiences—all of which contribute to a greater capacity for forgiveness.

One potential explanation for this effect is that CBT teaches adaptive coping strategies that reduce the emotional burden associated with resentment and unresolved conflicts. Through techniques, such as cognitive restructuring and emotional regulation training, individuals learn to reinterpret negative social experiences, reframe attributions about others' intentions, and develop a more compassionate perspective. Furthermore, empirical studies on forgiveness and psychological flexibility suggest that individuals who can detach from rigid, negative appraisals of past conflicts are more likely to experience emotional relief and improved interpersonal relationships (39). Since CBT promotes both cognitive flexibility and emotional regulation, it is logical that these mechanisms collectively contribute to a greater willingness to forgive.

Additionally, research in positive psychology has demonstrated that forgiveness is highly correlated with mental well-being, lower stress levels, and improved immune function (40). Given that post-COVID-19 patients may struggle with residual physical symptoms and psychological distress, the ability to forgive and release interpersonal grievances may serve as an essential component of their broader psychological recovery. The observed impact of CBT on interpersonal forgiveness in this study reinforces the idea that structured psychotherapeutic interventions can enhance social harmony and emotional resilience, particularly in populations recovering from serious illnesses.

Conclusion

Overall, the findings of this study highlight the therapeutic efficacy of CBT in fostering cognitive flexibility and interpersonal forgiveness among individuals recovering from COVID-19. By equipping individuals with cognitive restructuring skills, adaptive emotional regulation techniques, and problem-solving strategies, CBT enhances their ability to navigate complex cognitive challenges and their capacity to maintain healthier interpersonal relationships. These improvements are particularly relevant in post-COVID-19 adaptation, where individuals often face significant psychological and social stressors. Given the well-established link between psychological flexibility, forgiveness, and overall well-being, the findings of this study underscore the importance of integrating CBT into post-COVID rehabilitation programs as a means of facilitating long-term psychological recovery.

Despite its valuable findings, this study has several limitations. The small sample size (30 individuals), time constraints, or specific inclusion criteria may limit the generalizability of the results. Additionally, the specific hospital-based recruitment could restrict the

applicability of the findings to broader populations. Moreover, the semi-experimental design, rather than a randomized controlled trial, reduces the strength of causal inferences. The short follow-up period (one month) also limits understanding of long-term treatment effects.

For future research, larger and more diverse samples should be included to enhance external validity. Employing randomized controlled trials would strengthen evidence on cognitive-behavioral therapy's efficacy. Extending follow-up periods would provide insights into long-term benefits, and exploring potential moderators and mediators could clarify factors influencing treatment effectiveness.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Evaluated: Research Ethics Committees of Arak University. Approval ID: IR. ARAKU.REC.1401.057

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Conflict of Interest

The authors declare that they have no conflict of interest.

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