

# Effectiveness of Mindfulness-Based Psychotherapy on Functional Flexibility and Health Hardiness in Patients with Coronavirus Anxiety during the Epidemic

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### Article Info

#### Article type:

Original Research

#### How to cite this article:

Bakhshandeh Amnieh, T., Raeisi, Z., Ranjbarkohan, Z., & Khoshakhlagh, H. (2024). Effectiveness of Mindfulness-Based Psychotherapy on Functional Flexibility and Health Hardiness in Patients with Coronavirus Anxiety during the Epidemic. *Applied Family Therapy Journal*, 5(1), 238-246.

<http://dx.doi.org/10.61838/kman.aftj.5.1.26>



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### ABSTRACT

**Objective:** This study aimed to examine the effectiveness of mindfulness-based psychotherapy on functional flexibility and health hardiness in patients with coronavirus anxiety during the epidemic.

**Methods:** This research utilized a quasi-experimental method with a pre-test, post-test design, including a control group and a three-month follow-up period. The statistical population comprised individuals with coronavirus anxiety who contacted counseling centers in Isfahan for telephone consultations during the summer of 2021. From this population, 33 individuals were selected through purposive sampling and randomly assigned to experimental and control groups. Participants in the experimental group received mindfulness-based psychotherapy (8 sessions) based on Kabat-Zinn's protocol (2003) over two months. The questionnaires used in this study included the Functional Flexibility Questionnaire (Dennis & Vander Wal, 2010), the Health Hardiness Questionnaire (Gibbhardt, VanderDerf, & Powell, 2001), and the Coronavirus Anxiety Questionnaire (Alipour et al., 2019). Data were analyzed using mixed ANOVA with SPSS23 statistical software.

**Findings:** The results indicated that mindfulness-based psychotherapy significantly impacted functional flexibility ( $P < 0.0001$ ;  $\eta^2 = 0.62$ ;  $F = 52.32$ ) and health hardiness ( $P < 0.0001$ ;  $\eta^2 = 0.65$ ;  $F = 55.09$ ) in patients with coronavirus anxiety.

**Conclusion:** Based on the findings of the present study, mindfulness-based psychotherapy, utilizing techniques such as mindful attitude, mindful activities, addressing problematic emotions, and breathing exercises, can be effectively used to improve functional flexibility and health hardiness in patients with coronavirus anxiety.

**Keywords:** Coronavirus Anxiety, Functional Flexibility, Mindfulness-Based Psychotherapy, Health Hardiness.

## 1. Introduction

COVID-19 is a widely spread disease caused by the coronavirus. The symptoms of this virus include fever, cough, shortness of breath, and severe pulmonary issues, which in critical cases can lead to pneumonia, acute respiratory problems, kidney failure, and in some instances, even death (Repullo, 2021). Due to its high transmission rate without adhering to health protocols, it can easily spread from a COVID-19 patient to others (Servidio et al., 2021). The unknown source of this virus and the lack of adequate medical information led to a global increase in infection rates and mortality (Asli Azad, Farhadi, & Khaki, 2021; Asli Azad, Khaki, & Farhadi, 2021; Asli Azad et al., 2019). Additionally, research has shown that many healthcare personnel, due to repeated and close contact with patients, experienced burnout and in some cases even death, exacerbating public fear (Lau, Leung, & Zhou, 2020). This pandemic is a significant social event that affects not only a region but the entire world, and its psychological consequences on society need to be considered.

During the COVID-19 outbreak, a range of symptoms from mild to severe clinical disorders, including fear, worry, and clinical anxiety, were observed among people (Ngamije & Yadufashije, 2020). People reported high levels of anxiety due to fear of infection and its dangerous complications (Mahmud et al., 2021). The widespread anxiety symptoms among people are largely due to the ambiguous nature of the virus and the resulting cognitive ambiguity (Asli Azad, Farhadi, & Khaki, 2021; Asli Azad, Khaki, & Farhadi, 2021; Asli Azad et al., 2019). The fear of the unknown affects individuals' sense of security, increasing their anxiety (L. Chen et al., 2021; Y. Chen et al., 2021).

Moreover, the COVID-19 virus has extensive effects on the physiological functioning of the body, and its high transmission rate has caused stress in patients, recovered individuals, and healthy people (Ye et al., 2020). Reports of reinfection among recovered individuals, the virus's various mutations, and the long-term complications such as pulmonary and respiratory issues contribute to stress (Swami et al., 2021). Stress beyond individuals' psychological tolerance can reduce their functional flexibility. Studies by Yu et al. (2021) and Mallet et al. (2021) indicate that stress and anxiety due to the coronavirus decrease individuals' functional and psychological flexibility, hindering their ability to make rational decisions in stressful situations. Functional flexibility comprises behaviors aligned with one's values, thus a lack of such behaviors can make

individuals feel their life lacks meaning and purpose or is full of suffering (Miller & Brooker, 2017; Yu et al., 2020). Functional flexibility also entails behaving with commitment to one's values (Fazeli et al., 2015). Hence, functional flexibility is the ability to choose practical responses creatively among available options, adapting thoughts and behaviors to environmental changes (Asli Azad et al., 2019).

Health hardiness helps cope with stressors related to coronavirus anxiety (Sepahmansour & Katebi, 2019). Health hardiness is a personality trait that acts as a resistance resource against stressful events. It refers to how committed individuals are to health-related actions, perceiving their health as controllable and viewing health-related stressors as opportunities for personal growth. Health hardiness includes dimensions of control, challenge, and commitment, aiding individuals in adapting to serious and chronic health issues (Mohsenzadeh et al., 2018). People with health hardiness evaluate events positively, adopt effective coping strategies for diseases, utilize their resources fully, and reappraise health stressors, contributing to their growth and learning (Kahaki, 2024). These individuals are more committed to their behaviors, feel more in control of their lives, and see limitations and challenges as opportunities for growth (Sepahmansour & Katebi, 2019). Psychologists believe that health hardiness negatively correlates with physical symptoms, anxiety, depression, and social dysfunction in chronic patients (Lotfihaiqat et al., 2021; Seyed Ali Tabar & Zadhan, 2023).

No numerous intervention methods have been designed to improve the psychological dimensions of individuals with coronavirus anxiety. However, mindfulness-based psychotherapy has shown positive feedback in improving psychological, emotional, relational, and physiological components in various individuals. For instance, Talebi (2021) in his study on the effectiveness of mindfulness-based cognitive therapy on anxiety, happiness, and mindfulness among nurses (Talebi, 2021); and Mazaheri et al. (2020) in their study on the effectiveness of mindfulness-based cognitive therapy on perceived stress in ulcerative colitis patients (Mazaheri et al., 2020). Similarly, researchers (Musella et al., 2021; Roychowdhury, 2021; Simonsson et al., 2021; Yu et al., 2020; Yuan, 2021) also confirmed that mindfulness therapy effectively improves psychological, emotional, and social dimensions during the COVID-19 pandemic.

Mindfulness-based psychotherapy is a well-known therapeutic approach globally, applicable for individuals

with psychiatric disorders such as chronic or generalized anxiety and depression, suicidal ideation, pain, sleep disorders, obsessive-compulsive disorder, and aggression (Barnhofer, 2019; Marusak et al., 2018). Mindfulness is defined as conscious attention and awareness of what is happening in the present moment, a purposeful attention combined with non-judgmental acceptance of ongoing experiences (Mathur et al., 2021). Kabat-Zinn, based on Beck's cognitive therapy school, developed mindfulness-based psychotherapy (Barnhofer, 2019). According to Kabat-Zinn (2003), in meditation and continuous, calm sitting exercises, individuals focus on painful body points and merely observe the related emotional reactions (Asli Azad, Farhadi, & Khaki, 2021; Asli Azad, Khaki, & Farhadi, 2021; Asli Azad et al., 2019). In this non-judgmental observation, individuals reduce thoughts and emotions arising from pain, enhancing their ability to tolerate negative emotional states and employ practical coping strategies (Kocovski et al., 2019).

Regarding the necessity of the above research, it must be acknowledged that the COVID-19 outbreak has caused anxiety in the entire society (especially vulnerable individuals and those with underlying conditions). This process has affected their psychological health, leading to coronavirus anxiety. Hence, adopting effective therapeutic strategies is crucial to manage and moderate their anxiety and stress levels. COVID-19, due to its rapid spread and destructive physiological outcomes, is a profound and painful catastrophe in the lives of 21st-century humans, bringing extensive consequences due to its unknown nature and lack of medical preparedness. Therefore, reducing or at least managing negative emotions in dealing with this significant stress requires psychological therapeutic strategies to increase acceptance and positive perception among patients, recovered individuals, and the general public exposed to various psychological, emotional, and cognitive harms, ultimately enhancing their physical and mental health. The main issue of the present study was to investigate the effectiveness of mindfulness-based psychotherapy on functional flexibility and health hardiness in patients with coronavirus anxiety during the epidemic. The study aimed to answer the following questions:

Was mindfulness-based psychotherapy effective on functional flexibility and health hardiness in patients with coronavirus anxiety during the epidemic at the post-test stage?

Was the effectiveness of mindfulness-based psychotherapy on functional flexibility and health hardiness

in patients with coronavirus anxiety during the epidemic stable at the follow-up stage?

## 2. Methods

### 2.1. Study design and Participant

This research utilized a quasi-experimental method with a pre-test, post-test design, including a control group and a three-month follow-up period. The statistical population comprised individuals with coronavirus anxiety who contacted counseling centers in Isfahan for telephone consultations during the summer of 2021. This study used purposive sampling. Ten counseling and psychological service centers in Isfahan were approached. Individuals who contacted these centers due to coronavirus anxiety and requested counseling were identified. Initially, 73 individuals were identified. In the next step, these individuals were contacted to check for voluntary participation in the present study. Sixty-eight individuals volunteered. The Coronavirus Anxiety Questionnaire was then sent to them virtually. After collecting and scoring the questionnaire, those with scores above the average (scores above 27) were identified. The researcher was aware of the diagnostic criteria for anxiety disorders to accurately differentiate coronavirus anxiety from other anxiety disorders. Finally, 53 individuals were diagnosed with coronavirus anxiety. Forty eligible individuals were then randomly assigned to experimental and control groups (20 in the experimental group and 20 in the control group). The experimental group received mindfulness-based psychotherapy online for eight sessions over two months. After the intervention process began, three individuals in the experimental group and four in the control group withdrew. The inclusion criteria were not having contracted COVID-19 since the virus's outbreak, scoring above 27 on the Coronavirus Anxiety Questionnaire, willingness to participate in the study, having at least a high school diploma, and not receiving simultaneous psychiatric or psychological treatment. The exclusion criteria included missing more than two sessions, non-cooperation, failing to complete assignments, and unwillingness to continue participation. Ethical considerations were observed by obtaining participants' consent for the intervention program and informing them about all intervention stages. After the study, the control group was invited to receive the intervention, and eight individuals accepted, while the rest declined.

To conduct the study, necessary coordination with counseling centers' officials was made. Individuals with coronavirus anxiety who contacted these centers were identified and randomly assigned to experimental and control groups. The experimental group received mindfulness-based psychotherapy online for eight 75-minute sessions once a week based on Kabat-Zinn's (2003) protocol, while the control group received no interventions. The intervention program was scheduled weekly, and after each online session, participants could ask questions and receive responses like in-person interventions. After the intervention process began, three individuals in the experimental group and four in the control group withdrew, resulting in a final sample of 33 participants (17 in the experimental group and 16 in the control group). The mindfulness-based cognitive therapy package was adapted from Kabat-Zinn's (2003) protocol.

## 2.2. Measures

### 2.2.1. Corona Disease Anxiety

The Corona Disease Anxiety Scale was developed and validated by Alipour et al. (2020) in Iran to measure anxiety due to the coronavirus outbreak. The final version of this tool has 18 items and two factors. Items 1-9 measure psychological symptoms, and items 10-18 measure physical symptoms. This tool is scored on a four-point Likert scale from never (0) to always (3), with total scores ranging from 0 to 54. Higher scores indicate higher anxiety levels. The cut-off score is 27. The scale's reliability using Cronbach's alpha for the first factor was 0.879, the second factor was 0.861, and the total scale was 0.919. Guttman's lambda-2 values for the first factor were 0.882, the second factor 0.864, and the total scale 0.922. Concurrent validity was assessed by correlating this tool with the General Health Questionnaire, yielding significant correlations ( $p < .01$ ) between the Corona Disease Anxiety Scale and the total score and subscales of anxiety, somatic symptoms, social dysfunction, and depression (Alipour et al., 2020). The reliability of this scale in the present study was calculated using Cronbach's alpha, which was 0.83.

### 2.2.2. Psychological Flexibility

Developed by Dennis and Vander Wal in 2010, this questionnaire consists of 20 items assessing individual progress in clinical and non-clinical settings and flexible thinking in cognitive-behavioral therapy for depression and

other mental disorders. In Iran, Sharah, Farmani, and Soltani (2014) identified three subscales: alternatives, control, and substitutes for human behavior. The questionnaire uses a seven-point Likert scale from strongly disagree (1) to strongly agree (7), with scores ranging from 20 to 140. Higher scores indicate greater psychological flexibility. Concurrent validity with the Beck Depression Inventory was  $-0.39$ , and convergent validity with the Masnini and Robin Flexibility Scale was 0.75. In Iran, Soltani, Sharah, Bahrinian, and Farmani (2013) reported a test-retest reliability coefficient of 0.81 and Cronbach's alpha of 0.90 for the total scale. Fazeli, Ehteshamzadeh, and Hashemi (2015) reported a Cronbach's alpha of 0.75, with subscales alternatives, control, and substitutes for human behavior scoring 0.72, 0.75, and 0.67, respectively (Fazeli et al., 2015). In the present study, the reliability of the questionnaire was calculated using Cronbach's alpha, which was 0.76.

### 2.2.3. Health Hardiness

Developed by Gebhardt, Vander Deouf, and Paul (2001), this revised questionnaire contains 24 items scored on a five-point Likert scale from completely disagree (1) to completely agree (5), with total scores ranging from 24 to 100. Higher scores indicate greater health hardiness. Gebhardt et al. (2001) confirmed the tool's validity with internal and external health locus of control scales and reported Cronbach's alpha reliability of 0.79 in a normal sample and 0.78 in students. In Iran, Tarshabi and Bahrami normed the questionnaire for healthy individuals and chronic patients, with Cronbach's alpha reliability of 0.71 for healthy individuals and 0.79 and 0.82 for diabetic and cardiovascular patients, respectively. Subscales in chronic patients had reliability coefficients ranging from 0.70 to 0.85 (Sepahmansour & Katebi, 2019). The reliability of this questionnaire in the present study was calculated using Cronbach's alpha, which was 0.80.

## 2.3. Intervention

### 2.3.1. Mindfulness Therapy

The experimental group received mindfulness-based psychotherapy online for eight sessions over two months based on Kabat-Zinn's (2003) protocol (Kabat-Zinn, 2003).

#### Session 1: Introduction and Trust Building

The first session focuses on building rapport and establishing trust with participants. It introduces

mindfulness as a way of living and includes mindful eating exercises. Participants engage in mindful eating, followed by feedback and discussion about their experiences. The session ends with a review and discussion of the first session's exercises, fostering a supportive environment.

**Session 2: Mindful Activities and Attitude**

This session explores the interaction between mindful activities and daily life. Participants are introduced to homework exercises to practice at home. The session covers key mindful attitudes such as non-striving and beginner's mind. An introduction to seated meditation is provided, followed by feedback and discussion to deepen understanding.

**Session 3: Seeing, Hearing, and Non-Judgment**

Participants practice seated meditation, focusing on seeing and hearing exercises. The session delves into mindful attitudes like non-judgment and patience. A mindful dialogue exercise is introduced, allowing participants to practice mindful communication. The session concludes with feedback and discussion on their experiences.

**Session 4: Awareness and Acceptance**

Seated meditation continues, emphasizing awareness of breath, body, sounds, and thoughts. The session discusses mindful attitudes of acceptance and letting go. Participants explore handling difficult emotions and thoughts through mindfulness. Feedback and discussion focus on applying acceptance and letting go in daily life.

**Session 5: Problematic Thoughts and Breathing**

Seated meditation is practiced with an emphasis on awareness of breath, body, sounds, and thoughts. The session introduces the concept of problematic thoughts and memories. Participants engage in breathing exercises to manage these thoughts. Feedback and discussion center on managing challenging thoughts through mindfulness.

**Session 6: Anger Management and Communication**

Participants practice seated meditation with a focus on mindful awareness of thoughts. The session introduces breathing exercises specifically for anger management. The relationship between mindfulness and communication is

explored. The session ends with feedback and discussion on managing anger and improving communication skills through mindfulness.

**Session 7: Compassion and Meditation**

Seated meditation continues, focusing on breath, body, sounds, and thoughts. The session introduces the concept of mindfulness and compassion. Participants practice meditation with a focus on developing self-compassion. Feedback and discussion aim to integrate compassion into participants' mindfulness practice.

**Session 8: Integration and Conclusion**

The final session includes seated meditation, summarizing the course. Participants discuss how to integrate mindfulness practices into their daily lives. The session emphasizes the importance of maintaining a mindful lifestyle. Participants share their experiences, and the session concludes with feedback and a final discussion on sustaining mindfulness practice.

**2.4. Data Analysis**

Data analysis employed descriptive and inferential statistics, using the Shapiro-Wilk test for normality (optimal value > 0.05), Levene's test for equality of variances (optimal value > 0.05), Mauchly's test for sphericity (optimal value > 0.05), and mixed ANOVA to test the research hypothesis.

**3. Findings and Results**

Demographic data indicated that the age range of the study sample was 30 to 55 years. The mean and standard deviation of age in the experimental group were  $48.12 \pm 5.12$  years and in the control group were  $49.34 \pm 4.69$  years. The educational level of participants ranged from middle school to bachelor's degree, with the highest frequency being high school diploma in both the experimental (9 individuals, 52.94%) and control groups (8 individuals, 50%). Additionally, out of the final 33 participants, 19 were women (57.58%) and 14 were men (42.42%).

**Table 1**

*Means and Standard Deviations of Functional Flexibility and Health Hardiness in Patients with Coronavirus Anxiety*

Variable	Group	Pre-test Mean (SD)	Post-test Mean (SD)	Follow-up Mean (SD)
Functional Flexibility	Experimental	58.88 (9.87)	67.58 (13.33)	67.35 (13.47)
	Control	56.43 (6.86)	55.43 (7.16)	56.00 (7.05)
Health Hardiness	Experimental	47.58 (8.38)	55.94 (10.85)	54.94 (10.43)
	Control	48.06 (7.44)	47.37 (7.85)	47.56 (7.65)

The mean and standard deviation of functional flexibility and health hardiness in the pre-test, post-test, and follow-up stages for both groups are presented in [Table 1](#).

Before presenting the results of the mixed ANOVA, the assumptions of parametric tests were assessed. The results of the Shapiro-Wilk test indicated that the assumption of normality was met for functional flexibility ( $P = 0.20$ ,  $F = 0.14$ ) and health hardiness ( $P = 0.20$ ,  $F = 0.12$ ). Additionally, the homogeneity of variances was evaluated using Levene’s test, which was not significant, indicating that the assumption of homogeneity of variances was met for both functional flexibility ( $P = 0.71$ ,  $F = 0.13$ ) and health hardiness ( $P = 0.39$ ,  $F = 0.44$ ). The t-test results showed no significant differences in pre-test scores between the experimental and control groups for the dependent variables

( $p > .05$ ). Mauchly’s test of sphericity indicated that the sphericity assumption was met for both functional flexibility ( $P = 0.49$ ,  $W = 0.92$ ) and health hardiness ( $P = 0.35$ ,  $W = 0.91$ ).

According to Kline (2016), the evaluation of skewness and kurtosis indices indicates that the distribution of single-variable data in this study is normal, as none of the research variables’ indices are outside the  $\pm 2$  range. Also, given the variance inflation factor less than 10 and a tolerance higher than 0.10, multicollinearity did not occur in the research variables. The Durbin-Watson test (1.62) was used to check for the independence of observations (the independence of residuals or errors), which indicates adherence to the independence assumption.

**Table 2**

*Mixed ANOVA for Within-Group and Between-Group Effects on Functional Flexibility and Health Hardiness*

Variable	Source	Sum of Squares	df	Mean Square	F	p	Effect Size ( $\eta^2$ )
Functional Flexibility	Time	340.73	2	170.36	37.25	.001	.54
	Group	1849.94	1	1849.94	17.55	.001	.43
	Time*Group	478.59	2	239.29	52.32	.001	.62
Health Hardiness	Time	292.28	2	146.14	40.47	.001	.56
	Group	657.57	1	657.57	20.12	.001	.46
	Time*Group	397.85	2	198.93	55.09	.001	.64

According to [Table 2](#), the group membership effect (mindfulness-based psychotherapy) on the scores of functional flexibility and health hardiness in patients with coronavirus anxiety is significant ( $p < .001$ ). The effect size shows that group membership (mindfulness-based psychotherapy) explains 43% and 46% of the variance in functional flexibility and health hardiness scores, respectively. The interaction effect of treatment type and time is also significant for both variables ( $p < .001$ ),

indicating that the type of treatment significantly influenced functional flexibility and health hardiness across different assessment stages, with 62% and 64% of the variance explained by the interaction effect, respectively. The high statistical power indicates the adequacy of the sample size. [Table 3](#) presents the Bonferroni post-hoc test results for pairwise comparisons of mean scores of functional flexibility and health hardiness across the three stages.

**Table 3**

*Bonferroni Post-Hoc Test for Pairwise Comparisons of Functional Flexibility and Health Hardiness Scores Across Three Stages*

Variable	Baseline Stage (Mean)	Comparison Stage (Mean)	Mean Difference	SE	Significance (p)
Functional Flexibility	Pre-test	Post-test	-3.85	0.60	.001
		Follow-up	-4.01	0.60	.001
	Post-test	Pre-test	3.85	0.60	.001
		Follow-up	-0.16	0.31	.83
Health Hardiness	Pre-test	Post-test	-3.83	0.59	.001
		Follow-up	-3.42	0.53	.001
	Post-test	Pre-test	3.83	0.59	.001
		Follow-up	0.40	0.14	.26

As [Table 3](#) shows, there is a significant difference in the mean scores between the pre-test and post-test and follow-

up stages for functional flexibility and health hardiness. This indicates that mindfulness-based psychotherapy

significantly changed the post-test and follow-up scores of functional flexibility and health hardiness in patients with coronavirus anxiety compared to the pre-test stage. [Table 3](#) also shows no significant difference between the post-test and follow-up mean scores, suggesting that the changes in functional flexibility and health hardiness scores observed in the post-test were maintained during the follow-up period.

#### 4. Discussion and Conclusion

This study aimed to investigate the effectiveness of mindfulness-based psychotherapy on functional flexibility and health hardiness in patients with coronavirus anxiety during the epidemic. The results showed that mindfulness-based psychotherapy positively affects functional flexibility and health hardiness in patients with coronavirus anxiety. The first finding indicated that mindfulness-based psychotherapy led to increased functional flexibility in patients with coronavirus anxiety. This finding aligns with [Ranjbaran et al. \(2020\)](#) on the effectiveness of mindfulness training on happiness, psychological well-being, and blood pressure in women with cardiovascular diseases ([Ranjbaran et al., 2020](#)); [Aghababaei and Taghavi \(2020\)](#) on the effectiveness of mindfulness-based cognitive therapy on the psychological well-being of mothers of children with autism ([Aghababaei & Taghavi, 2020](#)); [Musella and colleagues \(2021\)](#) on the impact of mindfulness on the mental health of individuals during the coronavirus era ([Musella et al., 2021](#)); and [Yu et al. \(2021\)](#) on the impact of mindfulness training on the psychological distress of students during the coronavirus period ([Yu et al., 2020](#)).

In explaining this finding, it can be stated that mindfulness in the context of coronavirus anxiety helps individuals understand that they should live in the present, focused on the goal and without judgment ([Yuan, 2021](#)). Consequently, patients with coronavirus anxiety learn that worrying about the future and trying to control situations is futile. As a result, by focusing on the present, they reduce their anxiety and perceive less stress. Reduced stress allows individuals to experience higher mental and cognitive focus, ultimately reporting greater functional flexibility. Additionally, mindfulness-based therapy changes individuals' awareness of their thoughts, feelings, and bodily sensations, creating a new perspective to deal with them differently: viewing thoughts and feelings as transient events in the mind rather than accepting them as reality. This approach also develops skills to detach from dysfunctional cognitive patterns that disrupt activities ([Simonsson et al.,](#)

[2021](#)). Mindfulness teaches specific cognitive, metacognitive, and behavioral strategies that focus on positive aspects, reducing negative emotions and thoughts, and a tendency toward worrying responses. It also fosters new perspectives and thoughts. Therefore, this intervention helps individuals with coronavirus anxiety change their perspective on evaluating, interpreting, and finding meaning in events, reducing cognitive errors such as catastrophizing and overgeneralization, and better managing stressors. By reducing and increasing the ability to cope with the symptoms and signs of coronavirus anxiety, they better manage stressors and experience greater functional flexibility.

The second finding indicated that mindfulness-based psychotherapy improved the health hardiness of patients with coronavirus anxiety. This finding is consistent with [Talebi \(2021\)](#) on the effectiveness of mindfulness-based cognitive therapy on anxiety, happiness, and mindfulness of nurses ([Talebi, 2021](#)); [Ghorashi and colleagues \(2020\)](#) on the effectiveness of mindfulness on perceived stress in type 2 diabetic patients ([Ghorashi et al., 2020](#)); [Mazaheri and colleagues \(2020\)](#) on the effectiveness of mindfulness-based cognitive therapy on perceived stress in ulcerative colitis patients ([Mazaheri et al., 2020](#)); [Simonsson and colleagues \(2021\)](#) on the effectiveness of online mindfulness training on anxiety and depression in students during the coronavirus pandemic ([Simonsson et al., 2021](#)); and [Yuan \(2021\)](#) on the effectiveness of mindfulness training on the psychological resilience of young people during the coronavirus period ([Yuan, 2021](#)).

In explaining this finding, it can be stated that mindfulness-based psychotherapy techniques help patients with coronavirus anxiety use learned cognitive and behavioral skills to manage stress and anxiety symptoms ([Yu et al., 2020](#)). These skills enable individuals to rid themselves of fear, stress, and anxiety and continue engaging in healthy activities despite the prevailing conditions influenced by coronavirus, gradually reducing anxiety symptoms and increasing health hardiness. Additionally, mindfulness-based psychotherapy can reduce cognitive and emotional avoidance in patients with coronavirus anxiety through practical mechanisms (e.g., physical awareness and cognitive and physical reappraisal). Patients with coronavirus anxiety learn to accept their symptoms and signs, reducing exaggerated anxiety symptoms and complications of coronavirus, and understand that they can still experience a rich life despite the circumstances. This

process also improves health hardiness by increasing health-related behaviors and feelings.

## 5. Suggestions and Limitations

This study's limitations included being restricted to individuals with coronavirus anxiety referred to counseling centers in Isfahan, not controlling social, promotional, and personal variables affecting anxiety, the lack of random sampling, and the absence of in-person interventions. To increase the generalizability of the results, future research should be conducted in other provinces and areas, and among other coronavirus-related groups (e.g., hospitalized patients, patients with acute lung damage), using random sampling methods and in-person interventions. Practically, it is recommended that, in addition to physiological and medical treatments for coronavirus patients, sufficient attention be given to the psychological and emotional aspects of those with coronavirus anxiety so that therapists can use mindfulness-based psychotherapy to reduce anxiety and increase functional flexibility and health hardiness, helping these individuals better resume their normal lives.

## Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

## Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

## Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

## Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project. This article is derived from a doctoral dissertation. The authors express their gratitude to all participants, their families, and the officials of the counseling centers for their full cooperation in conducting this study.

## Declaration of Interest

The authors report no conflict of interest.

## Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

## Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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