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The Effectiveness of Mindfulness-Based Stress Reduction Therapy on Anxiety, Perceived Stress, And Life Orientation of Nurses During Coronavirus Outbreak in Iranshahr City

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Abstract

Purpose: This study aimed to investigate the effectiveness of mindfulness-based stress reduction therapy on anxiety, perceived stress, and life orientation of nurses during the coronavirus outbreak in Iranshahr city.
Methods: The research method was semi-experimental and pre-test, post-test with a control group. The statistical population of this study included all nurses in the government hospital during the coronavirus outbreak in Iranshahr city (300 people). The sampling method was simple relative random sampling. 40 people were selected from the statistical population and randomly assigned to two control and experimental groups. (14 people were selected from Iran Hospital and 26 from Khatam Al-Anbia Hospital). The experimental group participated in eight sessions of mindfulness-based stress reduction therapy. The control group did not receive training. Before and after training, subjects answered Cohen's (1983) perceived stress questionnaire, Scheier and Carver's (1985) life orientation questionnaire, and Beck's (1988) anxiety questionnaire. Data were analyzed using the covariance method.
Results: The results showed that mindfulness-based stress reduction therapy reduced anxiety and perceived stress and increased life orientation (optimism).
Conclusion: Through mindfulness, the patient becomes aware of the feelings of anxiety and stress in his body and their causes, and discovers and isolates the confusing thoughts associated with these feelings. He also learns how to cope with these problems through self-talk.

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Introduction

COVID-19 emerged in Wuhan, Hubei Province, China, at the end of 2019. The rapid spread of the virus led the World Health Organization (WHO) to declare it a global health emergency on January 30, 2020, and shortly thereafter, a pandemic on March 11, 2020 (1). Meanwhile, healthcare workers, especially nurses, on the front lines of this jihad have been affected more than anyone else by this natural disaster. Nursing is a stressful job, and employees in this profession, especially in certain circumstances, face high levels of physical and mental workload. Therefore, nurses are highly exposed to stress caused by COVID-19 (2). They are more likely than other segments of society to show psychological problems and symptoms. Nurses experience high levels of stress (3), and stress is one of the factors that contributes to inefficiency, increased sick leave, and reduced quantity and quality of care in nurses. Stress also affects health costs and reduces job satisfaction, and nurses exposed to work environments

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with high job demands and low resources experience higher job stress and more physical and psychological stress symptoms, which may negatively affect their health and well-being (4). Therefore, it can be said that COVID-19 poses a greater psychological risk to nurses who are exposed to patients infected with this virus and deal with various patients than the general population, and they suffer more from the stress caused by this disease (5).

Research before the coronavirus outbreak showed that the anxiety and stress levels of nurses and doctors ranged from 25 to 43 percent, and that nurses and doctors had a higher suicide rate than the general population, which is very concerning. For this reason, the existence of psychological distress, including anxiety and stress, in nurses has been confirmed (7). Psychological distress is an unpleasant mental state, including depression, anxiety, and stress, all of which have emotional and physiological symptoms. According to recent research, people with high psychological distress complain more often of symptoms of physical illness, and the frequency of physical illness is a strong predictor of impairment in physical, psychological, and social functioning (8). One of the third wave treatments is mindfulness-based stress reduction therapy, which has been developed for specific medical conditions in patients with chronic pain and related stress, and is used for specific conditions such as cancer patients, heart patients, rheumatism, people with digestive disorders, swallowing, eating, and digestion problems (9). Through mindfulness, the patient becomes aware of the feelings of anxiety and stress in his body and their causes, discovers and isolates the confusing thoughts associated with these feelings, and learns how to cope with these problems through self-talk (10).

Today, mindfulness is one of the most popular treatments in the world, used in various conditions and for both healthy and sick people. Mindfulness is paying attention to specific and purposeful ways in the present moment without judgment or prejudice (11). Kaviani et al. (2015) found in a study that mindfulness can reduce negative self-talk and anxiety, and in the case of chronic diseases, it is also a suitable method to accelerate the treatment process, adaptation, and prevent recurrence of these diseases (12). Taghi Lu et al. (2020), in a study titled "Investigating the Effectiveness of Mindfulness-Based Cognitive Therapy in Reducing Perceived Stress in Patients with MS," reached this conclusion; the results of data analysis showed that mindfulness-based cognitive therapy significantly reduced perceived stress scores in the group of patients with MS in the post-test (13).

One of the most important cognitive factors affecting the reduction of anxiety and stress in nurses is life orientation. Life orientation refers to the general perspective and attitude of an individual towards life and the events that happen to him or her or will happen in the future. Life orientation actually reflects the differences between individuals in optimism or pessimism (14).

In this regard, it can be said that optimistic and pessimistic perceptions are two spectrums of life orientation, both positively and negatively, which are considered basic personality qualities and affect how people adapt to life events, their mental expectations when facing problems, and their behavior when overcoming problems (14). On the other hand, life orientation also guides the clinical course of the disease. In other words, it is able to explain the relationship between an individual's beliefs about success in recovery and engagement and persistence in performing a task and treatment (15). Moran (2022), in a study investigating the effect of mindfulness-based stress reduction therapy on symptoms of anxiety and stress, quality of life, and increased optimism, concluded that mindfulness reduced symptoms of anxiety and stress, and participants in mindfulness-based stress reduction program sessions experienced significant improvements in components of quality of life and increased optimism (16). Therefore, considering the above, the present study examined the effectiveness of mindfulness-based stress reduction therapy on life orientation and perceived anxiety and stress in nurses during the coronavirus outbreak in Iranshahr city.

Methods

The present study was an applied study in terms of purpose and in terms of method, the present study was a pre-test, post-test with a control group. All female nurses who served in government hospitals and clinics in Iranshahr city from September 2020 to January 2021 were 300. Of which 130 were in Iran Hospital and 170 were in Khatam Al- Anbia Hospital. The sampling method of the study was relative random sampling, in that initially, 300 nurses from Iranshahr, 130 of whom were from Iran Hospital, of whom 14 were nurses, and 170 nurses from Khatam Al-Anbia Hospital, of whom 26 nurses (20 for the control group and 20 for the experimental group), were selected through relative random sampling. The inclusion criteria in the present study are; (1- Age range 30 to 60 years 2- Obtaining a score higher than 20 on the Beck Anxiety Inventory and an average score on the Cohen Perceived Stress Questionnaire). Research instruments include:

- Perceived Stress Questionnaire: The Perceived Stress Questionnaire was developed by Cohen et al. in 1983 and has 3 versions of 4, 10 and 14 items that are used to measure general perceived stress in the past month. The questionnaire is scored on a 5-point Likert scale,

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with scores of 0, 1, 2, 3 and 4 for the options “never”, “very little”, “sometimes”, “a lot” and “very much” respectively. A higher score indicates greater perceived stress. Cohen et al. reported Cronbach's alpha coefficients for the 14-item, 10-item, and 4-item versions of the PSS as 0.75, 0.78, and 0.60, respectively, on a sample of 2,387 people in the United States. In Iran, in the study by Safai and Shokri (2014), Cronbach's alpha coefficients for the factors of perceived self-efficacy, perceived helplessness, and the total score of perceived stress were 0.80, 0.60, and 0.76, respectively (17).

- Life Orientation Questionnaire: In 1985, Scheer and Carver developed the Life Orientation Test to assess natural optimism and later revised it. The type of optimism assessed by this test is a desirable personality trait characterized by desirable personal expectations for the future. This questionnaire has 10 items, of which 3 items indicate optimistic perceptions, 3 items indicate pessimistic perceptions, and 4 items are deviant and no score is assigned for them. The scoring in this test is as follows: in items 10, 4, and 1, the options "I completely agree" are given a score of 4, "I agree" is given a score of 3, "I have no opinion" is given a score of 2, "I disagree" is given a score of 1, and "I completely disagree" is given a score of 0. In items 9, 7, and 3, the scoring is reversed. That is, I completely agree, score 0, ..., to I completely disagree, score 4. The higher the score, the higher the optimism. Carver and colleagues reported a Cronbach's alpha coefficient of 0.76 and a test-retest reliability coefficient of 0.79 with a four-week interval for a group of students. In a study by Mousavi Nasab (2005), the test-retest reliability of this questionnaire on 27 pre-university students with an interval of 10 days was reported to be 0.70 and its Cronbach's alpha coefficient was 0.54 (18).
- Beck Anxiety Inventory (BAI): This scale is designed to measure anxiety and consists of 21 items, each with four response options. The scoring method is as follows: none at all, mild at one, moderate at two, and severe at three. Therefore, the range of anxiety scores will be from 0 to 63. If the score obtained is in the range of 0 to 7, the person under study has no anxiety, if it is between 15-8, it indicates mild anxiety, if it is between 16-25, it indicates moderate anxiety, and if it is between 26-63, it indicates severe anxiety (19). Studies have shown that this questionnaire has high reliability, its internal consistency coefficient (Cronbach's alpha) is 0.92, its test-retest reliability after a one-week interval is 0.75, and the correlation of its questions varies from 0.3 to 0.76 (20, 21).
- Content of mindfulness training sessions based on the model of Gallant et al. (2016).

After explaining the purpose of the study, the relevant questionnaires were provided to both groups to answer, and then the experimental group underwent mindfulness-based stress reduction therapy for eight sessions (the control group did not receive any training), and the questionnaires were provided to both groups again.

Descriptive statistics (mean and standard deviation) and inferential statistics (MANCOVA) were used for statistical analysis, and the data were analyzed using SPSS24 software.

Results

Sub-hypothesis 1: Mindfulness-based stress reduction therapy has an effect on anxiety.

Table 1. Pre-test and post-test anxiety scores of the experimental and control groups

	Pre-test		Post-test	
Index Group	Mean	Standard deviation	Mean	Standard deviation
Experimental	31.36	4.29	22.87	4.07
Control	31.43	4.13	30.28	4.19

Table 1 shows the mean pre-test and post-test scores in the two groups, the post-test scores of the two groups show a significant difference. First, Levine's test was used to examine the covariance assumption, the results of which are shown in Table 2.

Table 2. Levine's test for equality of variances (anxiety)

Significance level	Degree of freedom 2	Degree of freedom 1	F
0.85	38	1	2.98

Table 2 shows the results of Levine's test for equality of variances. Since the calculated F is 2.98 with a significance level of 0.85, which is greater than the value of 0.05, the assumption of equality of variances is confirmed. In order to examine the difference, analysis of covariance was used, the results of which can be seen in Table 3.

As can be seen in the table above, the calculated significance level between groups (0.003) is less than 0.05, thus confirming the research hypothesis that mindfulness-based stress reduction therapy has an effect on anxiety. The eta (η) square shows that the effect size of the training is 0.40.

Sub-hypothesis 2: Mindfulness-based stress reduction therapy has an effect on perceived stress.

Table 4 shows the mean pre-test and post-test scores in the two groups, the post-test scores of the two groups are significantly different. First, Levine's test was used to check the covariance assumption, the results of which are shown in Table 5.

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Table 3. Results of analysis of covariance of anxiety test scores

RESOURCES	SUM OF SQUARES	DEGREE OF FREEDOM	MEAN SQUARES	F	SIGNIFICANCE LEVEL	H SQUARED
PRE-TEST	209.67	1	209.67	7.7	0.09	0.11
BETWEEN GROUPS	388.34	1	388.34	21.33	0.003	0.40
ERROR	20.01	38	0.52	-	-	

Table 4. Pre-test and post-test scores of perceived stress in the experimental and control groups

	PRE-TEST		POST-TEST	
INDEX GROUP	Mean	Standard deviation	Mean	Standard deviation
EXPERIMENTAL	29.11	5.21	20.14	5.73
CONTROL	29.02	5.09	29.24	5.64

Table 5. Levine's test to check the equality of variances error (perceived stress)

Significance level	Degree of freedom 2	Degree of freedom 1	F
0.16	38	1	2.87

Table 5 shows the results of Levine's test for equality of variances, since the calculated f is equal to 2.87 with a significance level of 16.0, which is greater than the value of 0.05, the assumption of equality of variances is confirmed. In order to examine the difference, analysis of covariance was used, the results of which can be seen in Table 6.

As can be seen in the table above, the calculated significance level between groups (0.005) is less than 0.05, thus confirming the research hypothesis that mindfulness-based stress reduction therapy has an effect on perceived stress. The eta square shows that the effect size is 0.41.

Table 6. Results of analysis of covariance of perceived stress test scores

RESOURCES	SUM OF SQUARES	DEGREE OF FREEDOM	MEAN SQUARES	F	SIGNIFICANCE LEVEL	H SQUARED
PRE-TEST	220.58	1	220.58	8.04	0.13	0.09
BETWEEN GROUPS	364.87	1	364.87	29.16	0.005	0.41
ERROR	7.04	38	0.19	-	-	

Sub-hypothesis 3: Mindfulness-based stress reduction therapy has an effect on optimism.

Table 7. Pre-test and post-test optimism scores of the experimental and control groups

	Pre-test		Post-test	
Index Group	**Mean**	**Standard deviation**	**Mean**	**Standard deviation**
Experimental	12.29	2.78	18.68	2.55
Control	12.27	2.94	11.29	2.63

Table 7 shows the mean of the pre-test and post-test scores in the two groups, the post-test scores of the two groups show a significant difference. First, Levine's test was used to examine the covariance assumption, the results of which are shown in Table 8.

Table 8. Levine's test for equality of variances (optimism)

Significance level	Degree of freedom 2	Degree of freedom 1	F
0.074	38	1	2.32

Table 8 shows the results of Levine's test for equality of variances, since the calculated f is equal to 2.32 with a significance level of 0.74, which is greater than the value of 0.05, the assumption of equality of variances is confirmed. In order to examine the difference, analysis of covariance was used, the results of which can be seen in Table 9.

As can be seen in the table above, the calculated significance level between groups (0.008) is greater than 0.05, thus confirming the research hypothesis that mindfulness-based stress reduction therapy has an effect on optimism. The effect size of training is 0.38.

Main hypothesis: Mindfulness-based stress reduction therapy has an effect on anxiety, perceived stress, and life orientation of nurses during the coronavirus outbreak in Iranshahr city.

Table 10 shows that there is a significant difference between the intervention and comparison groups in terms of dependent variables. In other words, it can be said that based on the results of the above table, mindfulness-based stress reduction therapy has an effect on the anxiety and perceived stress and life orientation of nurses during the coronavirus outbreak in Iranshahr city, therefore the main hypothesis is confirmed.

Discussion

The present study examined the impact of mindfulness-based stress reduction (MBSR) therapy on anxiety, perceived stress, and life orientation among nurses in Iranshahr during the coronavirus pandemic. The results of the statistical analyses indicate that MBSR produced significant improvements in all three measured domains when compared to the control group. These findings suggest that MBSR is an effective

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psychological intervention in healthcare settings, particularly during public health crises, and align with the outcomes reported in previous studies (13, 16, 22-24).

The confirmation of the main hypothesis—that MBSR influences anxiety, perceived stress, and life orientation—reflects the therapeutic potential of mindfulness practices in high-stress occupational environments such as nursing during the COVID-19 outbreak. Nurses were confronted with unprecedented workloads, uncertainty, and elevated exposure risk, all of which likely exacerbated stress levels and impaired psychological well-being. By fostering present-moment awareness and nonjudgmental observation of thoughts and feelings, MBSR may help reduce the cognitive and emotional reactivity that sustains psychological distress.

Table 9. Results of analysis of covariance of optimism test scores

RESOURCES	SUM OF SQUARES	DEGREE OF FREEDOM	MEAN SQUARES	F	SIGNIFICANCE LEVEL	H SQUARED
PRE-TEST	167.04	1	167.04	9.43	0.13	0.12
BETWEEN GROUPS	237.22	1	237.32	26.32	0.008	0.38
ERROR	16.99	38	0.45	-	-	

Table 10. Summary of results of multivariate analysis of covariance for comparing the mean of post-tests of anxiety, perceived stress, and life orientation compared to pre-tests

EFFECT	-	AMOUNT	F-STATISTIC	SIGNIFICANCE LEVEL
GROUPS AND PRE-TEST OF VARIABLES	Pillai effect test	0.861	1.262	0.344
	Wilkes lambda test	0.139	1.262	0.344
	Hotelling effect	6.205	1.262	0.344
	Roy's Largest Root test	6.205	1.262	0.344

With regard to Sub-Hypothesis 1, the data revealed a statistically significant effect of MBSR on anxiety, with a p-value of 0.003 and an effect size (eta squared) of 0.40. This indicates a strong practical impact, consistent with prior research demonstrating the anxiety-reducing benefits of mindfulness training (16, 23). Anxiety, often characterized by intrusive thoughts, physiological arousal, and heightened vigilance (14), may be mitigated by mindfulness through mechanisms such as attentional regulation, acceptance, and decentering from distressing mental content.

For Sub-Hypothesis 2, the intervention significantly reduced perceived stress, with a p-value of 0.005 and an effect size of 0.41. These results are in agreement with earlier findings (24-26) and support the premise that MBSR helps individuals reframe stressful events. Perceived stress arises when environmental demands are appraised as exceeding coping resources. Mindfulness practices—characterized by focused, flexible, and moment-to-moment awareness (10)—may interrupt maladaptive cognitive appraisals and replace them with more balanced, nonjudgmental evaluations. This shift can reduce the emotional intensity of stress and foster adaptive coping.

Regarding Sub-Hypothesis 3, the study found a significant positive impact of MBSR on optimism, with a p-value of 0.008 and an effect size of 0.38. Optimism, defined as a general expectation of favorable outcomes, encompasses cognitive, emotional, physical, and behavioral components (16). This finding aligns with earlier work (22) indicating that mindfulness can promote a positive life orientation by reducing rumination, enhancing emotional regulation, and fostering a sense of psychological resilience. Since optimism influences motivation, persistence, and engagement with health-promoting behaviors, its improvement through MBSR could have broader implications for both mental and physical health outcomes.

Taken together, the findings of this study contribute to a growing body of evidence supporting MBSR as a versatile, non-pharmacological approach to improving psychological well-being. The consistency of these results with prior research suggests that mindfulness interventions can be effectively adapted to the unique stressors faced by nurses, even in the context of an unprecedented global health crisis. Furthermore, given the relatively brief and structured nature of MBSR programs, their integration into healthcare settings may be both feasible and cost-effective.

Conclusion

This study demonstrated that mindfulness-based stress reduction therapy significantly improves anxiety,

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perceived stress, and optimism among nurses working during the COVID-19 pandemic in Iranshahr. Given the established link between psychological distress and impaired functioning (7, 8) and the role of life orientation in influencing clinical outcomes, MBSR appears to be a promising intervention for enhancing mental resilience in high-pressure healthcare environments. By fostering present-moment awareness and nonjudgmental acceptance, MBSR helps individuals identify, understand, and regulate distressing thoughts and emotions, leading to reductions in anxiety and stress, as well as promoting a more optimistic outlook. These results affirm the value of incorporating structured mindfulness programs into occupational health strategies for nurses and other frontline professionals.

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Authors Contributions

The author contributed to the data analysis. Drafting, revising and approving the article, responsible for all aspects of this work.

Ethical Consideration

The research data and literature have not been copied from any worksauthor upon reasonable request.

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