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The Impact of Mindfulness Training on Occupational Stress and Quality of Life among Operating Room Personnel

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Abstract

Background: This research demonstrates that the practice of mindfulness training led to a notable decrease in occupational stress and an improvement in the overall quality of life for professionals working in operating rooms.

Methods: The method of the present research was practical in nature and semi-experimental in the form of pretest-posttest with a control group. The statistical population of this research included all operating room experts in Tehran hospitals. 50 people from this community were selected by available sampling method and were randomly divided into two experimental (25 people) and control (25 people) groups. Data was collected using standard questionnaires. T tests and ANCOVA were used to analyze data.

Results: The results showed that there is no significant difference in both occupational stress and quality of life in the pretest (both P>0.05). However, it was observed that experimental group had significantly lower occupational stress and higher quality of life compared to control group in the posttest (both P=0.001). Finally, the results of ANCOVA showed significant differences between experimental and control groups in both occupational stress and quality of life (both P=0.001).

Conclusions: These findings indicate that mindfulness can play a crucial role in managing work-related stress among operating room experts. Consequently, by actively participating in mindfulness activities, it is plausible to create more favorable circumstances for professionals working in operating rooms in terms of their quality of life.

Keywords: Mindfulness, Occupational stress, Quality of life, Healthcare, Training

Introduction

During the past few decades, human societies have faced a fundamental issue that has become increasingly prevalent as societies transition towards a more modern lifestyle. This issue is none other than stress. With the advent of industrialization, stress has gained significant importance and has had a profound impact on the well-being of workers. The significance of stress in people's lives stems from its physical, mental, and social effects (Chaharbaghi, et al. 2022; Afsanepurak, et al. 2012; Dana & Shams, 2019; Dana, et al. 2021). Moreover, stress affects all societies at various times and under different circumstances. Stress can be defined as any physical or psychological stimulus that disrupts an individual's ability to adapt and triggers counter reactions. Among the numerous sources of stress in an individual's life, their occupation stands out as one of the most significant. In fact, occupational stress has become a widespread and costly problem in the workplace, to the extent that the United Nations has labeled it as the disease of the 20th century. In essence, occupational stress arises as a response to the pressures emanating from the work environment, occurring when an individual's expectations surpass their capabilities and capacities.

Professions related to human health are particularly susceptible to high levels of stress, with medical centers being one of the most stressful work environments. According to a report by the American National Institute of Health, operating room specialists rank 27th out of 130 professions in seeking medical help for mental health issues. The stress factors in this line of work include personal reactions, personal concerns, work concerns, role fulfillment, and work concerns (Letvak, Ruhm, & Mccoy, 2012; Mikkelsen, et al. 2017; Newhan, et al. 2014; Ohler, et al. 2010). It is evident that the combination of these factors contributes to the high levels of stress experienced by operating room specialists. The impact of stress on doctors, nurses, and medical staff can lead to decreased performance and potential harm to both themselves and their patients. As well, it can directly affect their quality of life. Recent years have seen an increase in clinical trials focusing on cognitive-behavioral interventions to reduce stress, with mindfulness-based interventions being considered as part of the third wave of cognitive-behavioral therapies (Farsi et al. 2016; Ghorbani & Bund, 2014, 2017; Ghorbani, et al. 2020; Khosravi et al. 2023; Moradi, et al. 2020; Sadeghipor & Aghdam, 2021).

Mindfulness is a type of meditation rooted in Eastern religious teachings and practices, particularly those of Buddha. Mindfulness involves focusing on specific, intentional ways in the present moment without judgment. The conscious mind must cultivate three qualities: non-judgment, intentional awareness, and present moment focus. By concentrating on the present moment, individuals can process various aspects of their immediate experiences, including cognitive, physiological, and behavioral activities. Through mindfulness exercises and techniques, individuals can become more aware of their daily activities, recognize the automatic functioning of their minds in the past and future, and gain control over their thoughts, feelings, and physical states by being present in the moment (Sadeghipor, Aghdam, & Kabiri, 2021; Sadeghipor, Kabiri & Aghdam, 2021; Seyedi-Asl, et al. 2021; Seyedi-Asl, et al. 2016; Taghva, et al. 2020).

In the practice of mindfulness, individuals develop an awareness of their mental state in each moment. By recognizing the two modes of mind - doing and being - one can learn to transition between them, a process that involves training in behavioral strategies. Cognitive and metacognitive processes play a crucial role in focusing attention. As mindfulness increases, so does psychological well-being, openness, agreement, and a decrease in symptoms of pain (Faircloth, 2017; American Psychological Association, 2014; Davidson, 2003; Jolivet, et al. 2010). Research indicates that individuals with higher intelligence are better equipped to recognize, manage, and solve everyday challenges. Mindfulness training, a method rooted in stress reduction and psychotherapy, teaches individuals to observe objects in life beyond their immediate control through breathing and contemplation (Ellis, et al. 2013). This approach combines relaxation techniques with mindfulness practices. Studies have demonstrated that mindfulness aids in adjusting negative behavior patterns, controlling spontaneous thoughts, and promoting positive health-related behaviors. Stress reduction-based mindfulness training is considered one of the most effective methods, leading to reductions in stress, anxiety, and depression. Participants in this training are taught to observe their thoughts and emotions without judgment, reaction, or resistance (Sadeghpour & Sangchini, 2020; Taso, et al. 2014; Bandura, 1997; Conner & Davidson, 2003; Hartfiel, et al. 2011; Herrick, et al. 2020; Chris, et al. 2010).

Based on the provided information, it appears that professionals in the operating room face significant stress in their work, which undoubtedly has an impact on the quality of their performance and life. Given that this profession is known to be highly stressful, it is crucial to identify the factors that can alleviate occupational stress among operating room experts, which can consequently affect their quality of life. In this particular research, the focus was on whether mindfulness training for occupational stress could effectively reduce stress levels and quality of life in operating room experts. Consequently, the objective of this study was to investigate the effectiveness of mindfulness training on occupational stress and quality of life among operating room experts.

Methods

The method of the present research was practical in nature and semi-experimental in the form of pretest-posttest with a control group. The statistical population of this research included all operating room experts in Tehran hospitals. 50 people from this community were selected by available sampling method and were randomly divided into two experimental (25 people) and control (25 people) groups. The inclusion criteria for the study include: operating room experts who are not engaged in managerial work, not suffering from a severe psychiatric disease based on the individual’s statements, not using psychiatric drugs based on the individual's statements, age above 22 years, not receiving any previous training programs and during the intervention of mindfulness, consent to participate in the research and the ability to attend weekly classes were in the intervention group.

In this research, the revised occupational stress scale was used to measure occupational stress. The Revised Nursing Stress Scale is a revised version of the Occupational Stress Scale (Letvak, Ruhm, & Mccoy, 2012). Occupational stress scale is the first tool that was created to measure the stress of nurses and operating room experts instead of general occupational stress. The thirty-four statements of this questionnaire measure the frequency and main sources of stress in the patient care situation. The scoring method of this questionnaire is in the form of a five-point Likert scale, and the subject must choose one of the following options according to the frequency of experience in the desired position. The answers are: 1=I am not stressed at all. 2= Sometimes I am stressed. 3= I am often stressed. 4= I am very stressed. 5= This position does not include my duties. In this research, Cronbach's alpha coefficient was 0.88 for this questionnaire.

Reeves and colleagues developed the Quality-of-Life Scale (Connor & Davidson, 2003), which comprises 16 items categorized into five components: physical well-being (2 items), relationships (4 items), social activities (3 items), personal development and fulfillment (4 items), and recreational activities (3 items). These items are evaluated using a 7-point Likert scale, with a possible total score ranging from 16 to 112. A higher score indicates a higher quality of life. The scale's reliability was established through a Cronbach's alpha coefficient of 0.95.

After the members were selected and grouped, the questionnaire was administered as a pre-test in two groups. Mindfulness group training sessions were organized for the experimental group. Finally, after the training for the second time, the questionnaire was administered by two experimental and control groups as a post-test. The training was conducted in 8 sessions of 90 minutes, twice a week and during a period of 4 weeks (Table 1).

Table 1: Summary of mindfulness training sessions

First session	The process involves familiarizing oneself with the group members, administering a preliminary assessment, establishing a comprehensive policy that respects the privacy and personal lives of individuals. Additionally, participants are encouraged to introduce themselves, engage in mindful eating exercises with raisins, complete assigned tasks such as undergoing a physical check-up, dedicating 45 minutes to a thorough physical examination, and mindfully performing routine daily activities like washing, eating, and brushing teeth. Furthermore, there are additional activities that will be disclosed later.
Second session	Examining the assignments from the last class, engaging with thoughts and emotions, and completing homework tasks (such as documenting positive experiences).
Third session	Reviewing homework from the previous session, engaging in a 30 to 40-minute sitting meditation, practicing mindful walking as part of the assigned homework, completing the three-minute breathing space exercise three times daily, and registering unpleasant events as additional homework.
Forth session	Reviewing the homework from the last session, engaging in a meditation involving both seeing and hearing, practicing sitting meditation, completing the assigned sitting meditation practice, and finishing the 3-minute breathing space exercise.

Firth session	Instructing individuals on the importance of logically assessing life occurrences while highlighting the significance of personal accountability, acknowledging one's role in each situation. Engaging in seated meditation, completing assigned meditation exercises.
Sixth session	Visualization sitting meditation, homework (shorter guided meditations of at least 40 minutes), practice ambiguous scenarios, homework (three-minute breathing 3 times per day).
Seventh session	Engaging in meditation while seated, completing assigned tasks independently, identifying the correlation between mood and actions, practicing deep breathing exercises for three minutes thrice daily, and during moments of stress or intense emotions. Conversations regarding symptoms of relapse and creating a plan for managing potential setbacks.
Eighth session	Physical examination, homework, reflection, feedback, end of meetings and post-examination, summation and conclusion with the help of members.

Descriptive statistics including frequency, mean and standard deviation were used to analyze the data, and inferential statistics tests (Kolmogorov-Smirnov test, paired-sample t test, independent t test and univariate analysis of covariance test) were used to analyze the data. P value was set at $P < 0.05$.

Results

Table 2 displays the average and standard deviation of the personal attributes of the participants, such as age, height, weight, and body mass index (BMI).

Table 2. Demographic features of the participants

Indicator	Group	No.	mean±SD	P
Age (year)	Control	25	29.11±3.94	0.64
	Training	25	28.97±5.27	
Height (M)	Control	25	1.65±0.05	0.72
	Training	25	1.66±0.04	
Weight (Kg)	Control	25	70.90±4.07	0.69
	Training	25	69.84±6.31	
Body mass index (Kg/M^2)	Control	25	24.07±1.09	0.59
	Training	25	24.33±1.26	

The results of the paired-sample t-test (Table 3) revealed a notable influence of the aerobic training regimen on occupational stress (P=0.001) and quality of life (P=0.001) among the individuals in the training group from the initial assessment to the final assessment. Conversely, there were no significant differences in the impact observed between the pre- and post-tests in the control group for both occupational stress and quality of life.

Table 3. Paired-Sample t test results for intra-group comparison of occupational stress and quality of life

	Control Group				Training Group			
	Pretest	Posttest	t	P	Pretest	Posttest	t	P
Occupational stress	139.84±14.27	138.46±12.09	0.109	0.84	141.28±15.33	115.07±9.21	10.11	0.001

Quality of life	59.17±12.35	60.34±11.64	0.137	0.58	61.40±19.64	79.84±16.54	15.94	0.001

Table 4 presents the findings of the covariance test analysis conducted to compare the two groups. According to Table 4 and the level of significance is 0.0001, which is less than 0.05, there is a significant difference between the estimated mean occupational stress scores of experimental and control subjects, and the amount of difference indicates that 68.21% of the variance of the post-test scores is due to the effect of mindfulness training on occupational stress. Therefore, mindfulness training is effective on the occupational stress of the operating room experts, and according to the averages, it has reduced the amount of occupational stress.

Table 4. Analysis of covariance test outcomes for inter-group evaluation of occupational stress

	Sum of squares	**df**	**Mean of squares**	**F**	**P**	**Eta squared**
Pretest	3028.115	1	3028.115	30.151	0.001	50.61
Group	28471.039	1	28471.039	250.614	0.001	68.61
Error	2754.239	47	102.964			

Table 5 presents the findings of the covariance test analysis conducted to compare the two groups. According to Table 5 and the level of significance is 0.0001, which is less than 0.05, there is a significant difference between the estimated mean quality of life scores of experimental and control subjects, and the amount of difference indicates that 73.08% of the variance of the post-test scores is due to the effect of mindfulness training on quality of life. Therefore, mindfulness training is effective on the quality of life of the operating room experts, and according to the averages, it has increased the amount of quality of life.

Table 5. Analysis of covariance test outcomes for inter-group evaluation of quality of life

	Sum of squares	**df**	**Mean of squares**	**F**	**P**	**Eta squared**
Pretest	2934.614	1	2934.614	30.151	0.001	50.61
Group	27115.151	1	27115.151	250.614	0.001	68.61
Error	2471.006	47	97.394			

The Independent t test results indicated a notable difference in the post-test results between the control and training groups (P=0.001). More precisely, the training group exhibited a significant improvement in occupational stress and quality of life in comparison to the control group.

Table 4. Results of Independent t test to investigate the difference inter-groups in occupational stress and quality of life

	Test stage	**t**	**P**
Occupational stress	Posttest	10.84	0.001
Quality of life	Posttest	12.05	0.001

Discussion

The current investigation aimed to assess the impact of mindfulness training on the occupational stress and quality of life of operating room professionals. The research intervention involved mindfulness training, and the findings indicated a significant reduction in occupational stress among operating room experts. These results are consistent with previous research outcomes in this area. In this study's findings, it is evident that occupational stress poses a significant health risk within organizations, diminishing the potential of human resources and subsequently impacting the organization's efficiency, effectiveness, and overall performance (Khosravi et al. 2023; Moradi, et al. 2020; Sadeghipor & Aghdam, 2021; Sadeghipor, Aghdam, & Kabiri, 2021). The statistical population of this research, being one of the key sectors, faces a critical situation due to exposure to occupational stress, resulting in a decline in organizational performance. Healthy and skilled human resources are crucial for the success of any organization. Prolonged stress and frustration, particularly among employees lacking emotional support, can lead to chronic occupational stress. Psychologists are now focusing on enhancing job adaptability by recognizing job-related stress and evaluating employees' psychological traits. As mentioned, job stress can have detrimental effects on biological functions, affecting employees both psychologically and socially. These complications can disrupt various aspects of professional, personal, and social life, impacting interpersonal relationships (Sadeghipor, Kabiri & Aghdam, 2021; Seyedi-Asl, et al. 2021; Seyedi-Asl, et al. 2016; Taghva, et al. 2020). Therefore, it is essential to identify and address occupational stress in industrial and medical settings, providing psychological interventions to enhance mental well-being and satisfaction, ultimately fostering a conducive environment for workforce productivity.

On the contrary, it is crucial to prioritize enhancing the efficiency of occupational and organizational factors, while also taking measures to identify and prevent the detrimental effects of occupational stress. To effectively manage the mind, it is essential to have a correct understanding of the principles governing the mind and utilize its full potential through proper management. Mindfulness serves as a powerful tool for unlocking the mind's maximum potential and effectively managing it (Bandura, 1997; Conner & Davidson, 2003; Hartfiel, et al. 2011; Herrick, et al. 2020). By arousing physiological responses and enabling the observation of internal and external stimuli without judgment or bias, mindfulness promotes heightened awareness of the present moment. Consequently, individuals become less fixated on the past or future, as they develop a greater sense of presence. Many psychological issues often stem from past events or future concerns. Therefore, by enhancing the capacity and capabilities of the information processing system, mindfulness can serve as an effective strategy in reducing tendencies towards worrisome responses and unpleasant emotions (Dana, et al. 2021; Ghorbani & Bund, 2014).

In addition, the study's findings indicated that individuals in the operating room who were experiencing work pressure and stress saw a decrease in their occupational stress levels after undergoing 8 sessions of mindfulness training, compared to the control group. Employees may also experience a decline in personal success if they feel that their emotional expressions are

ineffective; however, mindfulness training can help individuals understand their personalities and develop effective strategies (Masten, 2001; Sadeghipor & Aghdam, 2021). By doing so, they can move away from feelings of inefficiency and towards more optimistic conditions. Achieving mindfulness is not a simple task, as it involves metacognitive learning and adopting new behavioral strategies to enhance focus, prevent rumination, and reduce worrisome responses. Ultimately, mindfulness training leads to the generation of new thoughts and the alleviation of negative emotions (Davidson, 2003; Jolivet, et al. 2010).

Furthermore, the findings indicate that mindfulness training has a significant impact on enhancing the overall quality of life. These research results align with previous studies conducted in this field. Based on these findings, it can be concluded that self-care training centered around mindfulness enhances the psychological aspect of one's quality of life. By practicing mindfulness, individuals are better equipped to handle life's challenges in a rational and optimistic manner, fostering a positive mindset towards various life events. Ultimately, this positive outlook has a beneficial influence on individuals' mental state.

Conclusion

This research demonstrates that the practice of mindfulness training led to a notable decrease in occupational stress and an improvement in the overall quality of life for professionals working in operating rooms. These findings indicate that mindfulness can play a crucial role in managing work-related stress among operating room experts. Consequently, by actively participating in mindfulness activities, it is plausible to create more favorable circumstances for professionals working in operating rooms in terms of their quality of life. The practical implications of our findings are relevant to healthcare institutions, as it is recommended that they promote and support the involvement of operating room experts in mindfulness practices to enhance their well-being.

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