journal of
Adolescent and Youth Psychological Studies
www.jayps.iranmehr.ac.ir

Fall (December) 2023, Volume 4, Issue 9, 142-154

The Effectiveness of Mindfulness Based Stress Reduction Training on Increasing of Emotional Intelligence, Job Satisfaction and Mental Health of a Petroleum Employees

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ARTICLE INFORMATION

Article type
Original research
Pages: 142-154

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Email:
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Article history:
Received: 2022/07/21
Revised: 2023/08/20
Accepted: 2023/08/25
Published online: 2023/12/01

Keywords:
Emotional Intelligence, Mental Health, Mindfulness-Based Stress Reduction, Shazand Arak Petroleum Company

ABSTRACT

Background and Aim: One of the major challenges of managers at different levels of the organization is how to create a suitable platform for employees so that they can perform their duties properly with responsibility and a sense of commitment, have the ability to adapt and adapt to the environment and enjoy their work and life. The main goal of this study was to investigate the Effectiveness of Mindfulness Based Stress Reduction training on increasing of emotional intelligence, job satisfaction and mental health of a petroleum employees. **Methods:** The research method of this study was a quasi-experimental pre-test-post-test type with a control group, and the statistical population of this research was consisted off all employees who referred to the occupational health center of this Petroleum company in June 2022. Among a statistical sample of 200 male volunteers who referred to this center, those their GHQ-28 score were one standard deviation above the cutoff point, 40 individuals were selected by purposive sampling method and randomly divided them to two experimental and control groups. The experimental group underwent eight sessions of 90-minute mindfulness-based stress reduction training (Kabat Zain, 2003), but the control group did not receive any training. The research instruments were the emotional intelligence questionnaire (Bradbury & Greaves, 2005), the general health questionnaire (Goldberg & Hillier, 1978) and the Minnesota job satisfaction questionnaire (Weiss, Davis, England, and Lafquist, 1977). SPSS-24 was used for statistical analysis of data. **Results:** The results of multivariate covariance analysis showed that mindfulness-based stress reduction training is effective on emotional intelligence, mental health, and job satisfaction. Also, the results indicated that mindfulness-based stress reduction training was also effective on the subscales of emotional intelligence and mental health. **Conclusion:** Therefore, it can be concluded that stress reduction training based on mindfulness can be used to increase emotional intelligence, mental health and job satisfaction of employees in industrial companies.

How to Cite This Article:
Hematin, F., & Moraveji, M. (2023). The Effectiveness of Mindfulness Based Stress Reduction Training on Increasing of Emotional Intelligence, Job Satisfaction and Mental Health of a Petroleum Employees. *Jayps, 4*(9), 142-154.

Introduction

The concern in the field of adolescent mental health and its impact on psychological and behavioral development and functions has increased significantly with the increase in the prevalence of mental disorders among adolescents in recent years (Abdollahi Bagharabadi, 2018). One of the disorders that has a negative impact on the mental health of adolescents is oppositional defiant disorder (Liu, Chang, and Lee, 2021), which is one of the most common causes of referral of adolescents to psychotherapy and counseling clinics. (Faramarzi, Abedi, and Ghanbari, 2012). This disorder may start at the age of 3, but it usually starts at the age of 8. In fact, the age of onset is usually between 8 and 12 years, and its prevalence before puberty is higher in boys (Sadock, 2015). Barclay (2013) states that "oppositional defiant disorder is a stable pattern of negativity, disobedience, stubbornness, hostility and defiance towards authority figures" (Barclay, 2013). Signs and symptoms of oppositional defiant behavior can be a gateway to other psychiatric disorders in adulthood (Sentivanay & Balazs, 2018). Also, the prognosis of oppositional defiant disorder is unfavorable. It is associated with an increased risk of conduct disorders, substance abuse, antisocial personality disorders, and anxiety disorders (Folino, 2011), eating disorders, schizophrenia, and mania (Kim-Cohen et al., 2003) in the future (Pazhunia et al., 2019). This disorder is characterized by a pattern of anger/irritability, stubborn/disobedient behavior, or revenge-seeking behavior that is displayed during interactions with at least one person other than a sibling. (Arias, Aguayo, and Navas, 2021).

Therefore, one of the major problems of adolescents who are involved in oppositional defiant disorder is anxiety. Anxiety, with a prevalence of about 2-5%, means severe and extreme fear of situations where there is a possibility of analyzing a person's behavior and fear of negative evaluation in social situations (American Psychiatric Association, 2016). Anxiety is the third most common psychological disorder and a debilitating disorder that has a chronic and continuous process and often begins in childhood or early adolescence due to the experience of mistreatment and adversity and spreads in youth and adulthood (Sadock, 2015). However, estimates of the prevalence of anxiety disorders in children and adolescents vary widely, but it is estimated that the lifetime prevalence of anxiety disorders in children and adolescents is around 15 to 20 percent (Zu et al., 2019). An important point that can double the importance of paying attention to anxiety during adolescence is that many of them may have suffered from anxiety for years (Amiralsadat Hefshanjani et al., 2022) but have not been identified and, therefore, have not been treated. Perhaps the reason for this is that adolescents with anxiety do not show problems as openly as adolescents with conduct disorders. Therefore, teachers and parents cannot recognize these problems and only when these problems are severe and have more external symbols, they can be recognized by teachers and parents (Ahlen, Vigerland, and Qadri, 2018).

One of the treatments whose effectiveness has been proven in different situations is emotional therapy (Omrani et al., 2022). This treatment, which is a combination of experimental and systemic treatment, is closely related to the reduction of psychological problems in people (Minai, 2022). This therapy includes methods based on activating certain emotions that are established in an empathic communication context. This approach assumes that helping clients change the way they abuse their emotions and access them in a purely caring and empathic relationship leads to changes in emotional schemas (Dehnavi, Sadeghi, & Sepahvand, 2020). The process of emotion-centered therapy, which is implemented in an individual way, is determined by three stages of attachment and awareness, recall and discovery, and emotional reconstruction in eight steps. These three stages overlap, and throughout the treatment, the client is viewed as an expert on his experience and the therapist as a guide and facilitator for the client's goals (Zwack & Greenberg, 2020). In emotion-centered therapy, it is believed that the way people organize and process emotional experiences and the interaction patterns they create and strengthen themselves have led to their helplessness (Greenman & Johnson, 2013).

According to the mentioned materials, adolescence is a period in which dealing with all kinds of problems and mental disorders is very important. Also, oppositional disobedience disorder is one of the disorders that appeared in this period and if it is not addressed at a young

age, it will cause many problems and abnormalities in the future. Emotion-oriented therapy is one of the therapeutic methods whose effectiveness has been proven in numerous studies, but its effect has not been studied in relation to the symptoms of oppositional defiant disorder and anxiety in adolescents with oppositional defiant disorder. Therefore, this study was conducted with the aim of investigating the effectiveness of emotion-oriented therapy on the symptoms of oppositional defiant disorder and anxiety symptoms of adolescent boys with oppositional defiant disorder.

Ensuring the well-being of the human workforce in any organization or industrial complex is one of the fundamental responsibilities of managers and planners in socio-economic development and human resources. A major challenge for managers at various organizational levels is creating an appropriate environment for employees to fulfill their duties responsibly and with commitment, adapt and integrate into the environment, and be satisfied with their work and life (Fattal, Moutabi, Shakiba, & Barouti, 2008).

Emotional intelligence represents the latest development in understanding the relationship between reason and emotion, with its historical roots traceable to the 19th century when individual success was attributed to high intellectual quotient. However, emotional intelligence gained significant popularity with the publication of Daniel Goleman's book in 1995. It was introduced as a type of intrapersonal intelligence with an acquisitive aspect and a primary factor in individuals' success, efficiency, and performance in society and organizations (Hui-Hua & Schatz, 2015). According to Ouyang and colleagues (2015), individuals with emotional intelligence have greater ability in controlling and managing their emotions, communicating with others, organizing their lives, and demonstrating more adaptability, thus possessing better social awareness. Goleman identified the components of emotional intelligence as self-awareness, self-management, social awareness, and relationship management, playing a key role in behavioral stability and mental health. Goleman considers emotional intelligence a skill allowing individuals to control their moods through self-awareness, improve them through self-management, understand their impact through empathy, and enhance their own and others' morale through relationship management (Bradberry & Greaves, 2005). Bar-On (2007) regards emotional intelligence as a factor in enhancing mental health, significantly contributing to individuals' flourishing abilities in work and life. He believes that appropriate emotional intelligence helps individuals consolidate their thinking and facilitate the processing of emotional information. Therefore, those who strive to have a proper understanding of their emotions and reconstruct their mood states can effectively deal with life's stressors, resulting in better physical and mental health (Bar-On, 2007).

Another factor significantly influencing individuals' performance is mental health. Researchers define mental health as the psychological ability to work effectively, adapt to challenging situations, and regain balance. A lack of mental health can affect job success and efficiency in life (BP, Brooks H., Fraser S., Lovell, 2015). Freud considered mental health as the balance and harmony between the id, ego, superego, and levels of consciousness and unconsciousness. An individual is considered mentally healthy if they have successfully navigated developmental stages without fixation. Adler believed that an individual with mental health realistically plans their life without leading to an irreparable feeling of inferiority. Ellis saw a mentally healthy individual as one who replaces irrational beliefs with logical thinking and correct beliefs. Jung considered a healthy person as one who has achieved individuality and possesses characteristics like self-awareness, self-acceptance, integrity, self-expression, and patience. Maslow defined a mentally healthy person as self-actualized, reaching this stage when their physiological, safety, love, belonging, and esteem needs are met. Therefore, according to these views, employees who enjoy mental health experience less stress and greater job satisfaction (Ganji, 2022).

Another factor contributing to the development and progress of organizations and improving individual job performance in an organization is job satisfaction (Parsakia et al., 2022). Job satisfaction is defined as a kind of pleasure and positive feeling towards work and is a function of the relationship between what an individual

expects from their job and what the job provides (Esmaili & Sayedzadeh, 2018). In any organization, job satisfaction should be considered from both human and behavioral perspectives. Job satisfaction includes internal and external dimensions. The source of internal satisfaction relates to personal traits such as the ability to take initiative and communicate with others, and external satisfaction depends on work environment conditions like promotions and job security (Oshagbemi, 1997). Although job satisfaction is a mental aspect, its consequences show that job satisfaction leads to better job performance and contributes to organizational productivity (Mayer, Salovey, Caruso, 2000).

Among the educational-therapeutic approaches that play an effective role in enhancing physical, mental, and social health is mindfulness-based stress reduction (MBSR). Mindfulness is a method based on behavioral shaping techniques and procedures for stress reduction and changing maladaptive beliefs. It is a form of meditation rooted in Eastern religious teachings, particularly Buddhism, and introduced by Kabat-Zinn (2003). MBSR, as one of the third-wave cognitive-behavioral therapies, emphasizes developing three components: refraining from judgment, intentional awareness, and focusing on the present moment and current state (McGarigle & Walsh, 2011). Mindfulness pays attention to the underlying cognitive and emotional stimuli and exposes the hidden themes of life, showing that emotions are composed of thoughts, bodily sensations, raw feelings, and impulses, without judgment or blame (Williams & Penman, 2012). With these definitions, it can be said that by using the approach of MBSR and employing behavioral shaping techniques and changing irrational beliefs, steps can be taken towards ensuring individuals' mental health (Montazeri, Nasrollah, Nasrabadi, & Khoramirad, 2011).

Researchers, in a systematic review and meta-analysis, concluded that any action capable of enhancing physical, mental, and social health and improving individuals' performance is prioritized by organizations and industrial and production centers. Galle, Stephan, and Kristy (2021), Johnson et al. (2018), Byron et al. (2015), and Nikogoftar, Sangani, and Jangi (2019) confirmed the impact of MBSR on mental health and its components. Aringa, Valenuz, and Sanchez (2020), Nadler, Karsool, and Amanda (2020), Rezaii (2021), Golshokuoh, and Narimisa (2017), and Sadaqat, Mohammadi, Alizadeh, and Imani (2011) affirmed its effectiveness on emotional intelligence and its components. Rastgoo, Harefaat, and Kheirjoo (2017), and Holscher, Albertz, Finhold, and Lang (2013) demonstrated its impact on job satisfaction, and Shapiro, Austin, Bishop, and Cordova (2012) and Cohen Katz et al. (2005) verified its effectiveness on job stress and burnout.

One of the petroleum organizations in Iran, playing a significant role in meeting the domestic needs for oil and gas products and exporting them to other countries, is Shazand Arak Petroleum. The high workload, job stress, intense work pressure, and the variety and sensitivity of tasks in this organization have endangered the mental health of its employees. Therefore, considering the importance of the human workforce and acknowledging that employee performance is a determinant of overall organizational efficiency, it is incumbent upon managers and planners to identify factors that enhance employee performance and mitigate negative impacts on their performance. This research, with the main goal of examining the effectiveness of MBSR training on increasing emotional intelligence, job satisfaction, and mental health among employees of Shazand Arak Petroleum Complex, was conducted in 2023.

The primary hypothesis of the research: MBSR training is effective on the emotional intelligence, job satisfaction, and mental health of employees at Shazand Arak Petroleum.

The subsidiary hypotheses of this research are as follows:

1- MBSR training is effective on the components of emotional intelligence (self-awareness, self-management, social awareness, and relationship management) of employees at Shazand Arak Petroleum.

2- MBSR training is effective on job satisfaction of employees at Shazand Arak Petroleum.

3- MBSR training is effective on the components of mental health (somatic symptoms, anxiety, social functioning, and depression) of employees at Shazand Arak Petroleum.

Method

The current research is a quasi-experimental study, utilizing a pre-test and post-test design

with a control group. The statistical population of this study consisted of all employees attending the health center of Shazand Arak Petroleum Complex in June 2023. The sampling method was purposive convenience sampling, meaning that out of all male employees visiting the health center in June 2023, 200 volunteers were selected and completed the research-designed questionnaire. Subsequently, 40 volunteers who scored one standard deviation above the cutoff on the GHQ-28 and met the study's inclusion criteria were randomly assigned to either the experimental or control groups. Inclusion criteria for participation in the research were absence of physical and mental illness, no history of substance abuse, no recent bereavement or significant loss in the past six months, and informed voluntary consent to participate in the study. Exclusion criteria were missing more than one session during the interventions and unwillingness to continue cooperation.

Materials

1. General Health Questionnaire-28 (GHQ-28): To assess the mental health of the participants, the GHQ-28 questionnaire by Goldberg and Hillier (1979) was used. This questionnaire encompasses four scales: somatization, anxiety and sleep disorders, social dysfunction, and depression. Questions 1-7 relate to the somatization scale, 8-14 to the anxiety scale, 15-21 to social dysfunction, and 22-28 to depression. Questions are rated on a Likert scale from "not at all" (0 points) to "very much so" (3 points), and the overall mental health score is derived from the sum of all questionnaire items, with individual scale scores summed up from their respective items. Thus, total scores range from 0 to 84. According to the Likert scoring method, a total score of 22 or less indicates mental health, while a score of 23 or higher suggests a potential mental disorder. Previous studies on the questionnaire's validity and reliability in various countries, including Iran, have shown its appropriateness and satisfactory validity. In this questionnaire, a lower score indicates health, while a higher score suggests lack of health (Norbala, Bagheri Yazdi, & Mohammad, 2004). Cronbach's alpha was used to determine the reliability and validity of the GHQ-28 in this study. Cronbach's alpha for the overall mental health variable was 0.952, with component scores of 0.892 for somatization, 0.863 for anxiety, 0.794 for social functioning, and 0.842 for depression. The range of bivariate correlation coefficients among the components of the mental health questionnaire was from 0.722 to 0.924, with all calculated coefficients being statistically significant at the 0.01 error level, indicating that this questionnaire is a reliable and valid predictor of mental health.

2. Bradberry and Greaves Emotional Intelligence Questionnaire: Based on Goleman's model (2001), this questionnaire contains 28 items measuring the sub-scales of self-awareness, self-management, social awareness, and relationship management. Questions are rated on a 6-option Likert scale from "never" to "always". Questions 1-7 relate to self-awareness, 8-14 to self-management, 15-21 to social awareness, and 22-28 to relationship management. The total emotional intelligence score is obtained by summing the sub-scale scores (Bradberry & Greaves, 2005). A score above 80 indicates high emotional intelligence, while a score below 60 suggests low emotional intelligence. The reliability of this test, as determined by Bradberry and Greaves, was 0.73 for self-awareness, 0.87 for self-management, 0.78 for social awareness, 0.76 for relationship management, and 0.90 for overall emotional intelligence, all statistically significant at the 99% level. Cronbach's alpha for overall emotional intelligence was 0.932, with component scores of 0.798 for self-awareness, 0.764 for self-management, 0.684 for social awareness, and 0.826 for relationship management. The range of bivariate correlation coefficients among the components of the Bradberry and Greaves Emotional Intelligence Questionnaire was from 0.443 to 0.882, all statistically significant at the 0.01 error level, indicating that this questionnaire is a suitable predictor of emotional intelligence for the study population.

3. Minnesota Satisfaction Questionnaire: The Minnesota Satisfaction Questionnaire, developed by Weiss, Dawis, England, and Lofquist (1977), has both a long 100-item form and a short 19-item form. In this study, the short 19-item form was used, comprising six sub-scales: payment system (3 questions, items 1-3), job nature (4 questions, items 4-7), advancement opportunities (3 questions, items 8-10), organizational climate (2 questions, items

11-12), leadership style (4 questions, items 13-16), and physical conditions (3 questions, items 17-19). Questions are rated on a Likert scale from "strongly disagree" to "strongly agree," scored 1 to 5 respectively. The overall score of the Minnesota Satisfaction Questionnaire is obtained by summing the scores of all items. A score between 19 and 38 indicates weak job satisfaction, 38 to 57 moderate satisfaction, and above 57 high satisfaction (Azadi & Eidizadeh, 2015). The reliability of the Minnesota Satisfaction Questionnaire, as determined by Bakhtiar Nasrabadi et al. (2009) using Cronbach's alpha, was 0.92, indicating satisfactory reliability and validity. In this research, Cronbach's alpha was used to determine the reliability and validity of the job satisfaction questionnaire. Cronbach's alpha for overall job satisfaction was 0.932, with component scores of 0.701 for the payment system, 0.848 for job nature, 0.582 for advancement opportunities, 0.620 for organizational climate, 0.790 for leadership style, and 0.714 for physical conditions. The range of bivariate correlation coefficients among the components of the Minnesota Satisfaction Questionnaire in this study was from 0.275 to 0.827, all statistically significant at the 0.01 error level, indicating that each of the measured components is a suitable predictor of job satisfaction.

4. Mindfulness-Based Stress Reduction Training: This educational intervention consists of eight 90-minute sessions introducing and guiding self-awareness, confronting obstacles, mindfulness breathing, stress management, staying in the present moment, accepting circumstances, dealing with irrational thoughts, self-care strategies, and applying these teachings in future decision-making. The training was provided in a group setting to the experimental group participants. The content of each session is briefly described below:

Table 1. The content Mindfulness therapy sessions

Session	Content
1	Administering the pre-test, setting general policies considering confidentiality and personal lives of participants; inviting participants to introduce themselves, practicing mindful raisin eating. Homework: Perform mindfulness on a regular daily activity every day (washing, eating, and brushing teeth).
2	Reviewing previous session's homework, practicing thoughts and feelings exercise. Homework: Record pleasant events.
3	Reviewing previous session's homework, practicing 30 to 40 minutes of seated meditation. Homework: Practice 3-minute breathing in mindful walking. Homework: Record unpleasant events.
4	Reviewing previous session's homework, practicing seeing/hearing meditation. Homework: 3-minute seated meditation exercise.
5	Stress management. Homework: Applying stress reduction principles.
6	Seated imaginative meditation, practicing ambiguous scenarios. Homework: 3-minute breathing, 3 times a day.
7	Seated meditation, homework (self-direction practice, pointing out the connection between mood and activity). Homework: 3-minute breathing 3 times a day and during moments of stress and difficult emotions.
8	Body scan, homework, reflection, feedback, concluding the sessions, and administering the post-test.

Implementation

In this research, various descriptive statistics, such as frequency tables, percentage frequencies, mean, standard deviation, skewness, and kurtosis, were used to describe the collected data. Pearson correlation coefficients and Cronbach's alpha were used to determine reliability and validity, and the Shapiro-Wilk test was employed to ensure data normality. To determine the effectiveness of the intervention methods, one-way and multivariate analysis of covariance (ANCOVA) was utilized. Data analysis was conducted using SPSS-24 software.

Results

The mean and standard deviation of the age of male participants in the experimental group were 42.10 and 9.32 years, respectively, and 40.08 and 12.64 years, respectively, in the control group. A t-test revealed no significant difference in mean age between the two groups ($p > 0.05$). Regarding work experience, the mean and standard deviation for the experimental group were 18.40 and 9.48 years,

respectively, and 17.05 and 11.87 years, respectively, for the control group. The t-test indicated no significant difference in the mean work experience between the two groups ($p > 0.05$).

Findings related to the mean and standard deviation of participants' scores in the study variables for both the experimental and control groups before (pre-test) and after (post-test) the interventions are presented in Table 2. The results indicate that before the mindfulness intervention, there was no significant difference in the mean scores of emotional intelligence, mental health, and job satisfaction between the two groups. However, after the educational interventions, the experimental group showed increased mean scores in emotional intelligence and job satisfaction but decreased mean scores in mental health and its components. In the control group, there was no significant change in scores between the pre-test and post-test.

Table 2. Descriptive findings (Mean and standard deviation)

Variable			Pre-test		Post-test	
			Mean	SD	Mean	SD
Emotional intelligence		Exp.	104.35	11.12	116.55	7.48
		Control	102.05	8.35	104.40	7.82
Emotional intelligence components	Self-awareness	Exp.	25.00	1.03	27.90	3/92
		Control	24.20	0.86	24.80	3/22
	Self-management	Exp.	28.10	4.30	30.95	2/98
		Control	28.35	3.59	28.50	3/80
	Social awareness	Exp.	20.20	3.04	27.65	2/13
		Control	19.60	2.09	21.40	2/98
	Communication management	Exp.	26.50	4.25	30.50	3/87
		Control	28.35	4.56	27.40	4/17
Mental health		Exp.	40.50	5.59	33.15	3.50
		Control	40.75	5.52	40.55	4.97
Mental health components	Somatization	Exp.	10.75	3.31	8.85	1/95
		Control	11.70	3.67	11.65	2/94
	Anxiety	Exp.	12.30	1.03	9.85	1/31
		Control	12.15	1.14	11.60	1/10
	Social performance	Exp.	10.80	1.28	8.86	1/39
		Control	10.20	1.54	10.10	1/55
	Depression	Exp.	7.00	2.55	5.55	1/23
		Control	6.95	2.06	7.35	1/63
Job satisfaction		Exp.	71.00	8.89	76.30	7.75
		Control	70.15	8.21	69.85	7.62

To test hypotheses and perform covariance analysis, it is first necessary to verify the assumptions of data normality and homogeneity of variances between the two groups. The significance level obtained from the Shapiro-Wilk test on the study variables in both experimental and control groups indicated that the statistics for all variables, except for social awareness, were more than 0.05. Since the significance level of the Levene's test in all study variables was more than 0.05, it can be concluded that the variances of the groups are homogenous, and given the normal distribution of data and homogeneity of variances, covariance analysis and hypothesis testing are feasible. Box's M test results indicate that the equality of covariances related to the dependent variables of emotional intelligence, job satisfaction, and mental health is maintained ($P<0.05$).

Table 3. The results of multivariate analysis of covariance for all variables

Variable	Source	SS	Df	MS	F	p	Effect size	Power
Emotional intelligence	Group	1126.96	1	1126.96	59.82	0.000	0.631	0.802
	Error	659.37	35	18.839				
	Total	491891.00	40					
Job satisfaction	Group	317.01	1	317.01	66.17	0.000	0.654	0.930
	Error	167.69	35	4.791				

	Total	216261.00	40					
Mental health	Group	504.48	1	504.48	61.14	0.000	0.640	0.747
	Error	284.14	35	8.118				
	Total	55566.00	40					

Results in Table 3 show that based on the multivariate ANCOVA analysis in the MANCOVA context on the scores of the dependent variables of emotional intelligence, job satisfaction, and mental health, there is a significant difference between the experimental and control groups (P<0.05). Therefore, it can be concluded that mindfulness-based stress reduction training significantly affects emotional intelligence, job satisfaction, and mental health. Consequently, the main hypothesis of the research is confirmed. Information related to the first sub-hypothesis, concerning the components of the emotional intelligence questionnaire, is presented in Table 4.

Table 4. The results of multivariate analysis of covariance for emotional intelligence components

Variable	Source	SS	Df	MS	F	p	Effect size	Power
Self-awareness	Group	48.096	1	48.096	8.473	0.006	0.200	0.622
	Error	192.988	34	5.676				
	Total	28358.000	40					
Self-management	Group	101.920	1	101.920	18.839	0.000	0.357	.581
	Error	183.945	34	5.410				0
	Total	35847.000	40					
Social awareness	Group	161.551	1	161.551	22.821	0.000	0.402	0.367
	Error	240.685	34	7.079				
	Total	26497.000	40					
Communication management	Group	170.854	1	170.854	31.136	0.000	0.478	0.698
	Error	186.569	34	5.487				
	Total	34291.000	40					

The results in Table 4 indicate that, based on the multivariate ANCOVA analysis in the MANCOVA context on the scores of self-awareness, self-management, social awareness, and relationship management components, there is a significant difference between the experimental and control groups (P<0.05). Therefore, it can be said that mindfulness-based stress reduction training is effective on all components of emotional intelligence. Hence, the first sub-hypothesis of the research is confirmed. Information related to the second sub-hypothesis of the research, concerning the job satisfaction variable, is presented in Table 5.

Table 5. The results of multivariate analysis of covariance for mental health components

Source	SS	df	MS	F	p	Effect size
Pre-test	2077.727	1	2077.727	454.823	0.000	0.941
Group	325.823	1	325.823	71.324	0.000	0.658
Error	169.023	37				
Total	216261.000	40				

The results in Table 5 show that, based on the one-way ANCOVA analysis on the scores of the study participants in the job satisfaction variable, there is a significant difference between the experimental and control groups (P<0.05). Therefore, mindfulness-based stress reduction training is effective in improving job satisfaction among the studied employees. Thus, the second sub-hypothesis of the research is also confirmed. Information related to the third sub-hypothesis of the research, concerning the components of mental health, is presented in Table 6.

Table 6. The results of multivariate analysis of covariance for mental health components

Variable	Source	SS	Df	MS	F	p	Effect size	Power
Somatization	Group	43.141	1	43.141	25.262	0.000	0.426	0.789
	Error	58.063	34	1.708				
	Total	4518.000	40					

Anxiety	Group	29.441	1	29.441	35.174	0.000	0.508	0.620
	Error	28.458	34	0.837				
	Total	4687.000	40					
Social performance	Group	27.613	1	27.613	30.679	0.000	0.474	0.642
	Error	30.603	34	0.900				
	Total	3689.000	40					
Anxiety	Group	30.718	1	30.718	34.083	0.000	0.501	0.686
	Error	30.664	34	0.901				
	Total	1776.000	40					

The results in Table 6 indicate that, based on the multivariate ANCOVA analysis in the MANCOVA context on the scores of the mental health components, namely somatization, anxiety, social functioning, and depression, there is a significant difference between the experimental and control groups ($P<0.05$). Therefore, mindfulness-based stress reduction training is effective on all components of mental health. Consequently, the third sub-hypothesis of the research is confirmed.

Conclusion

This study aimed to elucidate the effectiveness of mindfulness-based stress reduction training on enhancing emotional intelligence, job satisfaction, and mental health among employees of a petroleum complex.

Main Hypothesis: Mindfulness-based stress reduction training is effective in improving emotional intelligence, job satisfaction, and mental health of employees at Shazand Arak Petroleum. Box's M results indicate the equality of covariances related to the dependent variables of emotional intelligence, job satisfaction, and mental health ($P<0.05$). The results showed that based on multivariate analysis of covariance (MANCOVA) on the scores of the dependent variable of emotional intelligence ($p = 0.000$, $F = 59.82$), job satisfaction variable ($p = 0.000$, $F = 66.17$), and mental health ($p = 0.000$, $F = 61.14$) significant differences exist between the experimental and control groups. Therefore, it can be said that mindfulness-based stress reduction training has significantly affected emotional intelligence, job satisfaction, and mental health. Thus, the main hypothesis of the study is confirmed.

Numerous studies, such as those by Johnson et al. (2018); Byron et al. (2015); Rezaei (2021), and Nikogoftar, Sangani, and Jangi (2019), have affirmed the effectiveness of mindfulness-based stress reduction on mental health; Arenga, Valennoez, and Sanchez (2020) and Nadler, Karsol, and Aminada (2020) on its impact on emotional intelligence; Rastgoo, Hafezdost, and Kheirjoo (2017), and Hulshger et al. (2013) on its effectiveness in job satisfaction, which aligns with the findings of this research. Kabat-Zinn (2003) believes that mindfulness-based stress reduction training, a third-wave approach in cognitive-behavioral therapy, teaches individuals to examine their cognitions and emotions mindfully, without judgment, focusing on the present. Any intervention that leads to relaxation, effective management of stressors, and effective interpersonal communications will be effective. This intervention approach emphasizes the importance of being conscious of the mind's flow and surrounding events, understanding that consciousness permeates all aspects of life and brings significance to previously overlooked matters. According to Napoli, Krech, and Holley (2005), mindfulness is a deliberate method through which individuals connect moment-to-moment with themselves, their environment, and even their deity. Mindfulness-based stress reduction, focusing on the present and effectively confronting stressors, will increase emotional intelligence, resilience, mental health, and job satisfaction. The core of mindfulness is learning to be an impartial observer, thus making conscious living and awareness crucial aspects of mindfulness. Activities that lead to adaptation and adjustment to the environment improve mental health, in line with findings by Ahmadi, Noroozi, and Hamedi (2016). Nadler, Karsol, and Aminada (2020) believed that the impact of mindfulness on stress comes from awareness of thoughts, ideas, and moods that create stressful situations; hence, responding to stress is a crucial method for reducing it. Mindfulness, by making individuals aware of their physical and mental states and those of others, enables control of situations and prevents exacerbating stress with involuntary reactions. Hulshger et al. (2013) found that one of the benefits of mindfulness training in the

workplace, in addition to reducing physical and emotional fatigue and regulating emotions, is job satisfaction, which can significantly improve performance and efficiency. Beshti and Noorian (2021) confirmed Hulshger et al.'s findings, noting that job satisfaction balances work and personal life. Job dissatisfaction, besides psychological effects, significantly impacts physical illness symptoms and can lead to fatigue, energy loss, headaches, loss of appetite, indigestion, and diseases like hypertension and heart attacks. It can also lead to anger over minor issues, annoying sensitivities, indecision, lack of focus, anxiety, depression, and interpersonal relationship issues. These findings are in line with research by Pargaonkar et al. (2015) and Hashmati and Ghorbani (2016), showing that mindfulness-based stress reduction programs effectively reduce pain, physical limitations of diseases, improve functioning in stressful conditions, anxiety, and enhance the physical and mental health of individuals (Pargaonkar et al., 2015). Most systematic reviews and meta-analyses of such studies indicate that group mindfulness-based stress reduction training positively affects mental health, emotional intelligence, job satisfaction, and improves the quality of personal and professional life (Khouri et al., 2015; Johnson, Herkens, Hedgen, and Engels, 2018; Jamison and Tuckey, 2017), which is consistent with the main hypothesis findings of this study, despite differences in study populations and research methods.

First Sub-Hypothesis: Mindfulness-based stress reduction training effectively impacts the emotional intelligence components (self-awareness, self-management, social awareness, and relationship management) of employees at Shazand Arak Petroleum. Multivariate analysis of covariance results indicated that this training effectively increased the mean scores of all emotional intelligence components in the experimental group compared to the control group. Thus, the first sub-hypothesis of the study is confirmed, supporting findings by Golshoku and Narimisa (2016), Sadaqat, Mohammadi, Alizadeh, and Imani (2011), Arenga, Valennoez, and Sanchez (2019), and Kong, Wang, and Zhao (2014). Emotional intelligence plays a key role in explaining mental health and determining behavioral stability, enabling the individual to recognize their emotions and feelings through self-awareness, manage negative emotions through self-management, understand the impact of these emotions through empathy and increased social awareness, and behave in a way that uplifts their and others' spirits through relationship management. Adequate emotional intelligence helps individuals facilitate emotional information processing, reconstruct their mood states, and effectively cope with stressors in their professional and personal lives (Bradberry and Greaves, 2005; Bar-On, 2007). According to Mayer, Salovey, and Caruso, individuals with emotional intelligence have the potential to logically solve problems and confront stressful situations, environmental demands, and desires, leading to optimism, happiness, social competence, self-confidence, self-actualization, and self-esteem (Mayer et al., 2000). Therefore, the mindfulness-based stress reduction approach, using relaxation techniques such as seated meditation, watchful seeing and hearing, and mindful walking, will prove its effectiveness in the components of emotional intelligence.

Second Sub-Hypothesis: Mindfulness-based stress reduction training is effective in improving job satisfaction among employees of Shazand Arak Petroleum. The results of univariate covariance analysis showed that mindfulness-based stress reduction training effectively increased job satisfaction, raising the average scores of participants in the experimental group compared to the control group. Consequently, the second sub-hypothesis of the research was confirmed, aligning with findings by Vanderlin, Bierman, Lohaus, and Lisenco (2020), Wingtonkam, Kriovokapic-Asokuko, Duncan, and Blue (2017), and Montazeri, Nasrollah, Nasrabadi, and Farokhirad (2022). Esmaeili and Saeedzadeh (2017) studied the role of job satisfaction in an organization. They concluded that job satisfaction significantly influences employees' individual behavior and their organizational performance, thus being a crucial focus for managers in organizations. The key to strengthening and increasing self-confidence is job satisfaction. Awareness of the nature of work, the presence of motivation, personality traits, and the spirit of the job executor can create a satisfying environment. Job satisfaction leads to increased individual productivity, commitment to the organization, enhanced physical and mental health, and rapid

acquisition of new job skills. Conversely, job dissatisfaction can affect the physical, psychological, and social health of employees, reducing efficiency and morale (Esmaeili & Saeedzadeh, 2017).

Third Sub-Hypothesis: Mindfulness-based stress reduction training is effective in improving the mental health components of employees at Shazand Arak Petroleum. Multivariate covariance analysis results indicated that the training effectively impacted mental health components (somatization, anxiety, social functioning, and depression), leading to a reduction in average scores compared to the control group. Thus, the third sub-hypothesis was also confirmed, consistent with findings by Krayakos, Elliott, Lammers, and Owen (2021), Gall, Stephan, and Christie (2021), Darn and colleagues (2018), and Johnson, Herkens, Hedgen, and Engels (2018). Goldberg and Hiller (1979) believe that considering the current century's conditions of stress, anxiety, and depression, it is essential to focus on the physical, psychological, social, and cultural health of society and create the necessary conditions for a dynamic and healthy life. They view mental health as the ability to interact harmoniously with others, modify and change personal and social environments, and balance personal interests and conflicts appropriately. Human societies cannot survive and continue without maintaining health and observing hygiene. According to Goldberg, mental health is a determinant of general health that can bring a sense of well-being, efficiency, self-reliance, competitive capacity, and self-actualization. All humans seek peace and harmony in life, increasingly felt due to current societal conditions. Everyone experiences anxiety, turmoil, hurt, disharmony, and suffering in life, which may also affect others. This way of living is not suitable, and individuals must empower themselves against these disturbances. Therefore, to become empowered, humans must acquire the necessary skills to manage stress, anxiety, cope with depression, and strengthen social functioning. Given the various daily responsibilities, constant rumination, and stressful conditions surrounding most of us, the importance of mindfulness and its management becomes increasingly apparent. Properly understanding the rules of the mind and managing it effectively maximizes its capabilities. Thus, mindfulness is an effective approach for maximizing mental capacity and management and achieving mental health (Aranga et al., 2020).

Limitations of this research include its sample, composed entirely of male employees at Shazand Arak Petroleum, thus caution should be exercised in generalizing these results to other populations. Another limitation was the participants' time constraints in attending training sessions due to their employment and work responsibilities, which was resolved with the support of the administrative and support deputy of the complex, and the protocol was implemented over two weeks.

Given the results obtained, the following are proposed for future research: Implement mindfulness-based stress reduction training on various statistical populations and variables. Utilize other standard tools to explain the effectiveness of the studied variables. The effectiveness of this approach over time and the duration of its effect in the follow-up phase are suggested for study.

Practical suggestions include:

Considering the current research's findings on the effectiveness of mindfulness-based stress reduction on mental health, emotional intelligence, and job satisfaction, it is recommended to incorporate this workshop training into the formal educational program of the complex and other centers to enhance employees' physical, psychological, and social health. Since mindfulness-based stress reduction significantly improved mental health, emotional intelligence, and job satisfaction, future students are suggested to study the effectiveness of this approach on managers, supervisors, and other variables affecting employees' mental health, such as efficiency and quality of life.

Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

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