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Effect of an Emotional Intelligence Educational Program on Perceived and Occupational Stress of Health Workers: A Pragmatic Cluster Randomized Controlled Trial

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Abstract

Background: Coping with occupational stress is vital for health workers to communicate better with patients and ultimately the interactions between patients and providers impact the quality of care. This study aimed to explore the effect of an emotional intelligence training program on occupational and perceived stress in health workers.

Materials and Methods: A pragmatic cluster randomized controlled trial was conducted in Andimeshk Health Centers between January and March 2019. The absolute changes from baseline to final emotional intelligence, occupational stress, and perceived stress were measured. Standard questionnaires including the Brad-Berry & Graves Emotional Intelligence Questionnaire, the HSE Standard Occupational Stress Questionnaire, and Cohen's perceived stress, were used. The in-person training program included two workshops (duration= 6 hours) and a 30-day follow-up.

Results: Of 80 health workers, 75 fulfilled the study requirements (n=37 allocated to the experiment vs. n= 38 allocated to the control). Baseline emotional intelligence in the experimental group improved by about 1.16 units versus a non-significant change in the control group (=-1.21). At baseline, there was no significant difference between the experimental and control groups in terms of the mean scores for occupational stress and perceived stress ($p> 0.05$). We observed a non-significant improvement in occupational stress and perceived stress in the experimental group. However, the score changes in the experimental group were significantly higher than those in the control group ($P<0.05$).

Conclusions: We found that emotional intelligence improvement could significantly impact stress management and perceived stress; therefore, it is recommended that emotional intelligence training be included in annual training programs.

Keywords: Emotional Intelligence, Occupational Stress, Health Workers, Randomized Controlled Trial**.**

Introduction

Stress is a common disease of the 21st century affecting people in different conditions [1, 2], which is responsible for 30% of illnesses and costs $ 300- $ 400 million annually. Perceived stress indicates how threatening or challenging people find stressful events [3]. According to cognitive approaches, a person experiences stress when the assessed stress exceeds his or her potential and endangers health [3]. Lazarus et al. emphasized that people who believe they have auxiliary resources to deal with stress are less vulnerable to stress [4]. Work is a major cause of stress in life [1]. In 1992, the United Nations recognized occupational stress as a disease of the 20th century, and the WHO declared it a

worldwide problem shortly afterward. Currently, all businesses and workers in both developed and developing countries need to deal with this problem [5]. One of the health problems in the environment is occupational stress and its health consequences, with the International Labor Organization (ILO) calling the 2016 slogan "workplace stress: a social challenge." Based on research and experience, NIOSH agrees that working conditions play a fundamental role in causing job stress in addition to ignoring individual factors [6, 7].

Effective coping strategies reduce people's responses to severe stress, thus moderating the detrimental effects of stress [8]. Emotional intelligence is currently one way to cope with stress. It can facilitate the mechanism of coping with stress and provide individuals with an effective self-regulation system for handling stress [9]. The ability to evaluate and express one's emotions, regulate one's own and others' emotions, and exploit emotions" is called emotional intelligence, which was first proposed by Mayer and Salovey [10]. Over the past 20 years, many organizations have adopted the use of emotional intelligence as an essential function [11, 12]. Emotional intelligence has been proven to be an organizing factor for thinking and planning in human-assisted traumatic situations and prevents injury as well as downfall under heavy pressure [13]. Emotional intelligence, by managing the emotions and feelings of employees together with facilitating the exchange of positive emotions between them, reduces the negative effects of job pressures, thereby making them resistant to premature burnout, which has a two-way relationship with mental health. [14]. According to studies conducted in Asia and Europe, promoting emotional intelligence is not limited to a particular culture. Researchers have suggested that emotional intelligence through stress management has a positive relationship with performance [12]. A review of the literature on emotional intelligence in the field of health care has shown that there is a high correlation between the promotion of emotional intelligence in different medical domains; therefore, it is recommended that emotional intelligence be added to the medical field education [12]. Healthcare personnel should focus on empathy to communicate better with patients [15].

Human resources are an essential pillar of an organization's efficiency [5, 16]. As human resources, healthcare providers are the primary providers of primary healthcare in every community. Technological changes in the healthcare field can cause occupational stress among healthcare providers. The process of care as well as the interactions between patients and providers influence access to healthcare, the quality and cost of health care, and ultimately, public health [17]. The purpose of this study was to conduct an educational intervention based on the training of emotional intelligence components on occupational stress and perceived stress in healthcare providers in Andimeshk urban health centers.

Materials and Methods

This was a pragmatic controlled trial incorporating multi-stage cluster sampling. The trial has been officially registered with RCT registration number IRCT20160418027449N4. This study was conducted in the city of Andimeshk, (Khuzestan, Iran) with a population of approximately 175,000 residents. Within this city, there are six comprehensive urban health centers.

In order to allocate these centers to either the intervention group, which received the Emotional Intelligence Educational Program (EIEP), or to the control group without any intervention, an online random sequence generator (RANDOM.ORG) was utilized. Thus, each comprehensive urban health center, along with all associated bases, was assigned to one of the two clusters. Cluster A comprised of comprehensive centers numbered 1, 4, and 5, while cluster B included comprehensive centers numbered 2, 3, and 6.

To prevent any potential bias and dissemination of educational material between the intervention and control groups, randomization was performed at the health center level rather than individually among staff members.

Participants/inclusion and exclusion criteria and recruitment: The participants were employees of the Andimeshk health network. The study was conducted after receiving the code of ethics from the ethics committee of the Shiraz University of Medical Sciences (IR.SUMS.REC.1397.935). All methods were performed according to the relevant guidelines and regulations. Inclusion criteria included: Officials or contractors of Andimeshk health workers of comprehensive urban health centers with at least one year of work experience, no chronic illness (diabetes and hypertension or mental disorders), and consent to participate in the study. On the other hand, exclusion criteria included those who discontinued participation for any reason (personal reluctance, treatment was more than two weeks), and chronic disease (diabetes and hypertension or mental disorders) at any time of the study. The characteristics of the health workers have been reported in our previous manuscript [18]. In brief, subjects with at least one year of work experience, with no chronic illness (diabetes, hypertension, or mental disorders), and consent to participate in the study were included in the study.

The sample size was calculated based on a previous study's reported effect size [10] to calculate the effectiveness of emotional intelligence training intervention on occupational stress.

Formula 1.

$$S_{Dpooled} = \sqrt{\frac{S_{D_1}^{\ 2} + S_Z^{\ 2}}{2}} = 5.7$$

$$ES\ or\ cohend = \frac{(\mu_2 - \mu_1)}{S_{Dpooled}} = 1.5$$

S(Δ)=2.55(0.9=Considering the correlation between the two groups)
α=0.05
β=0.2
A=1
$B=(Z_\alpha+Z_\beta)^2$
$C=(E/S\Delta)^2$
AB/C=38.06
N=38

Of the 92 qualified health workers working in Andimeshk urban comprehensive health centers (apart from health center staff and rural comprehensive health centers), 12 people were excluded from the study for various reasons (flowchart of participants). To prevent bias and dissemination of educational material between the intervention and control groups, the city was geographically divided into two sites (clusters), which were randomly allocated to intervention (n = 40) and control (n = 40).

Intervention: The intervention consisted of two parts: two workshops of six hours each (Supplementary Tables 1 and 2) plus weekly intervention task reminders for all participants. These tasks were designed to reinforce the workshop content and encourage the participants to apply the skills and knowledge gained during the sessions. There were two measurement points (Fig. 1) in both groups: baseline (before the intervention) and end-of-treatment (after the intervention).

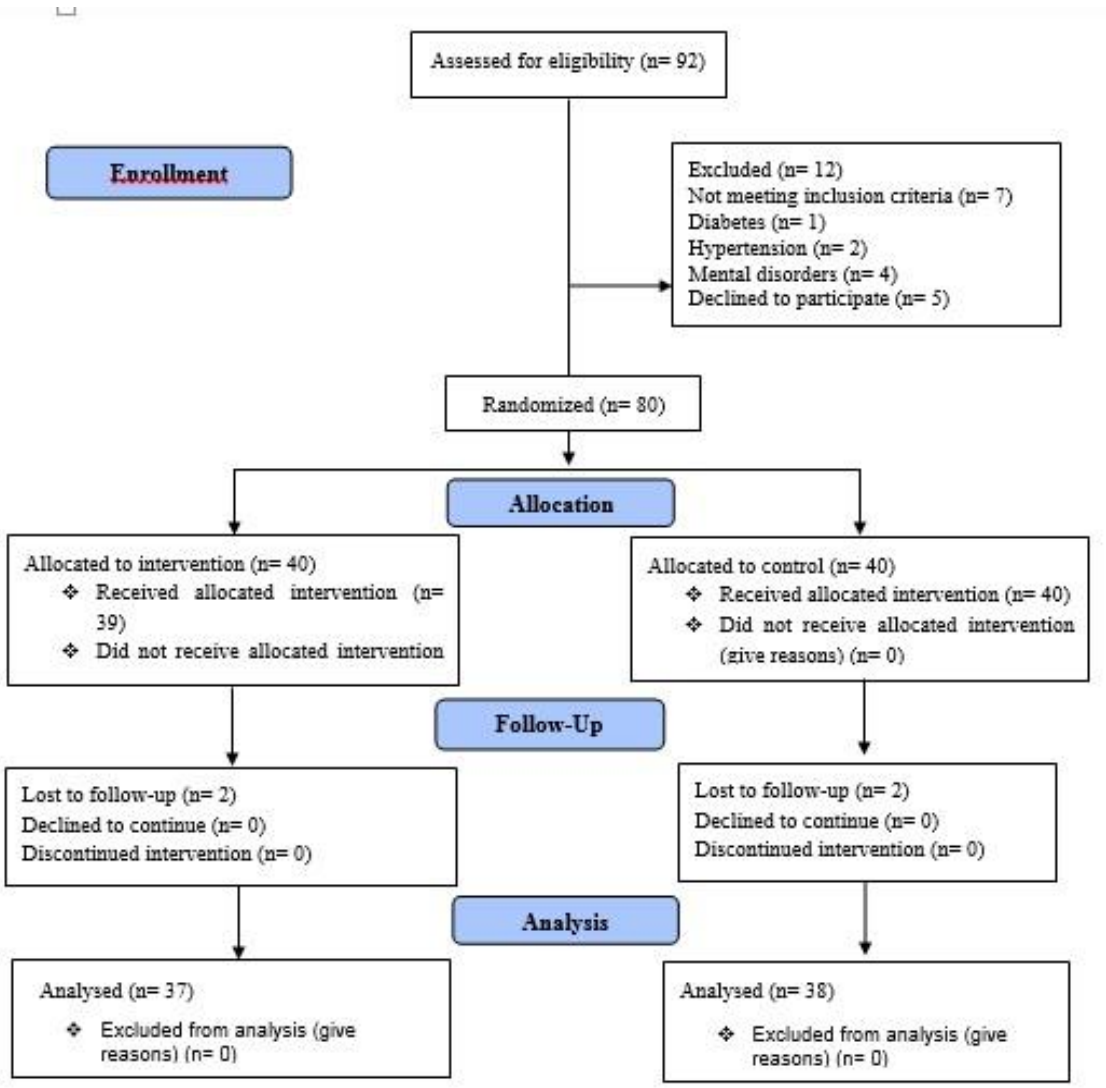

Fig. 1. Subject recruitment flowchart for emotional intelligence training program

The educational titles in the first workshop included the following: Welcoming and expressing goals of the workshop, Emotional Intelligence History and Application, Emotional Intelligence Assessment, Identifying Key Emotions, Workshop # 1 (Self-Awareness) and Group Discussion,

Rest and catering,
Understanding emotions, changing one's mind and building skills, workgroup # 2 (Self-Management) and Group Discussion, Summarizing Questions and Responding to Participants' Questions
The educational titles in the second workshop included the following: Reviewing previous workshop content and expressing goals, using emotional intelligence in the workplace, using emotional intelligence in the family environment, emotion regulation and control, Workgroup 3 (social awareness) and group discussion,
Rest and catering,
Effective use of emotions, improving and enhancing emotional intelligence, Workgroup # 4 (relationship management) and group discussion, summarizing content, and answering participants' questions.
Supplementary Table 1 describes the schedule and content of Emotional Intelligence Workshop No. 1. Supplementary Table 2 outlines the schedule and content of Emotional Intelligence Workshop No. 2.
Descriptive information, including gender, age, place of employment, employment status, educational background, employment history, marital status, and the number of children, was obtained. Primary and secondary outcome measures included emotional intelligence, perceived stress, and occupational stress assessed by self-report questionnaires, namely Brad-Berry 's, Cohen's Perceived Stress, and HSE standard questionnaires. These were completed before and one month after the intervention by both the intervention and control groups.
Brad-berry & Graves Emotional Intelligence Questionnaire: Brad-berry's Emotional Intelligence Questionnaire consists of 28 items based on four components (self-awareness, self-management, social awareness, and relationship management). Questions 1 to 6 measure self-awareness, 7 to 15 self-management, 16 to 20 social awareness, and 21 to 28 assessed relationship management. The Likert scale is scored using a 6-point scale (never = 1, rarely = 2, sometimes = 3, usually = 4, almost always = 5, always = 6). Questions 6-14-15-20-28 involve reverse scoring, with the score range of 168-28 where a score within 28-78 shows low emotional intelligence, score between 128 and 78 indicates moderate emotional intelligence, and a score within 168-128 reveal high emotional intelligence [18]. The reliability of this test in studies based on Cronbach's alpha coefficient was 0.83. The correlation coefficient of Bradberry & Graves' emotional intelligence scores with positive Bar-On emotional intelligence scores was significant at $\alpha = 0.01$ level. More than 70% of the matrix correlations were statistically significant and no negative correlation was found to be statistically significant [3].
HSE (UK Health and Safety Executive) Standard Occupational Stress Questionnaire: The standard HSE Occupational Stress Questionnaire consists of 35 questions with 7-sub-scales (demand, control, chief support, peer support, connection, role, and change) as follows: Role Questions (1-4-11-13-17), Connection Questions (5-14-21-34), Chief Support Questions (8-23-29-33-35), Peer Support Questions (7-24-27-31), Control Questions (2-10-15-19-25-30), Demand Questions (3-6-9-12-16-18-20-22), Change Questions (26-28-32). The Likert scale would be scored on a 5-point scale (never = 1, rarely = 2, sometimes = 3, often = 4, always = 5). Scoring on the scale of connection and demand is inversely related. The overall score of occupational stress would be calculated in the range of 35 to 175, with a higher score indicating greater health and safety in terms of occupational stressors. The ranges represent the following: a score of 35–70 (high stress), 70–105 (moderate stress), 105–140 (mild stress), and above 140 (no stress) [19]. The validity and reliability of the HSE questionnaire have been evaluated and validated in previous studies, including that by Marzabadi et al. The reliability of the questionnaire was calculated using Cronbach's alpha of 0.78. In addition, the split-half method with the Spearman-Brown formula was used to calculate a correlation coefficient of 0.65 and an overall validity of 0.92 [18, 19].
Cohen et al. Perceived Stress Questionnaire (pss-10): The Perceived Stress Questionnaire was developed by Cohen et al. in 1983 and can be used to measure perceived general stress in the past month. A 10-item questionnaire with two dimensions of perceived helplessness (questions1, 2, 3, 6, 9, and 10) and perceived self-efficacy (questions 4, 5, 7, and 8) was employed in this study. Emotions measure stressful events, control, overcome, cope with stress, and the stress experienced. It also examines risk factors for behavioral disorders and illustrates the process of stressful relationships. The Likert scale was scored using a 5-point scale (never = 0, almost never = 1, sometimes = 2, often = 3, always = 4). The expressions for item 4,5,7,8 are reversed. The lowest score is zero and the highest is 40, respectively. A higher score indicates greater perceived stress. Cronbach's alpha for this scale was obtained in three studies as 0.84, 0.85, and 0.86 [20].
Intervention workshop: The intervention group underwent Emotional Intelligence training following the Emotional Intelligence protocol of Bradberry and Graves [21]. The training consisted of two workshops, each lasting two weeks, with each session spanning six hours. The first workshop focused on the components of self-awareness and self-management, whereas the second workshop covered social awareness and relationship management. The training sessions included lectures, question-and-answer sessions, and small teaching groups comprising to 7-8 participants for practice and group discussion. The lectures were

supported using a video projector. For more detailed information, please refer to the Supplementary Tables 1 and 2.

Intervention task reminders: Following the workshops, participants in the intervention group received SMS reminders once or twice a week during working hours, for a total of 12 reminders. These reminders contained short tasks related to presence and well-being at work.

To maintain the integrity of the study, participants in the intervention group were instructed not to share training details with colleagues at other health centers until the completion of the study. This ensured that the information would not be shared between the experimental and control groups.

Randomization and allocation to trial group: The researchers were informed of the group assignments at the beginning of the study. However, the participants were unaware of the community in which they were assigned. The group assignment information was kept undisclosed to both the participant groups and new field researchers.

In Andimeshk City, with a population of 175,000, there are a total of six Integrative Healthcare Centers (IHC). The city was geographically divided into two sections, with each section being allocated three IHCs, resulting in a total of six centers. The six centers were randomly assigned to either the experimental group (three centers) or the control group (three centers). Random division ensured that the health centers and their respective bases were evenly distributed between the two groups. Specifically, IHC 2, 3, and 6 were assigned to the experimental group, whereas IHC 1, 4, and 5 were assigned to the control group.

To ensure the comparability of groups, the characteristics of participants were investigated using appropriate statistical inference tests. In order to check the normality of the data, Kolmogorov-Smirnov test was used, and in order to test the difference between the findings before and after the groups, the paired t-test was used. To examine the effect of the emotional intelligence training program (EITP) on perceived and occupational stress in health workers, we calculated the absolute change from baseline to the outcomes measured. We used an independent t-test to compare the mean difference in the change from baseline between the experimental and control groups. A significance threshold of P=0.05 was used in all analyses. Statistical analyses were performed using STATA version 14 (STATA LLC, College Station, TX, USA).

Results

Three people from the intervention group were excluded from the study due to various reasons (non-participation in the workshops, diagnosis of diabetes with kidney and eye complications, complete rest due to pregnancy) and 2 people from the control group were excluded from the study due to not completing the questionnaires, and finally 75 people were included in the study.

The flow diagram of participant recruitment is displayed in Fig. 1. Participant recruitment began in January 2019 and the intervention phase ended in March 2019. Final follow-up measurements were completed in May 2019.

The number of participants in the experimental group was 37, with a mean age of 36 ± 6.03 and the control group was 38, with a mean age of 35 ± 6.49 (total sample size was 75). The demographic variables of the study subjects are outlined in Table 1; there was no significant difference in demographic variables between the experimental and control groups.

Table 1. Demographic characteristics of health worker of Andimeshk, Khuzestan

Variables		Experiment (%)	Control (%)	P-value
Age- yrs.		36 ±6.03	35 ± 6.49	0.813*
Work experience- yrs.		9.26 ± 6.48	8.73 ± 7.23	0.751*
Female		35(94.6)	35(92.1)	0.513†
Education	**Associate Degree**	8(21.6)	10(26.3)	0.634
	Bachelor's degree	29(78.4)	28(73.7)	
Employment status	**Official, contractual and contractual**	22(59.5)	22(57.9)	0.891
	Contractor (transformation plan)	15(40.5)	16(42.1)	
Workplace	**Health Center**	13(35.1)	16(42.1)	0.116
	Attached Health Base Non-	6(16.2)	13(34.2)	
	Attached Health Site	18(48.7)	9(23.7)	
Marital status	**Married**	26(70.3)	29(76.3)	0.548
Having children	**Yes**	20(74.1)	22(75.9)	0.845
Number of children	**One**	7(35)	11(50)	0.741
	Two or more	13(65)	11(50)	

t-test*, † FISHER , P<0.05

The mean scores of emotional intelligence (EI), occupational stress (OS), and perceived stress (PS) as well as their dimensions before and after the intervention are reported in Table 2. Baseline EI, OS, and PS were similar in the experiment and control groups (all P<0.05). After completion of the training program, we observed mean scores of EI, OS, and PS differ significantly between experimental intervention and control groups.

Table 2. Emotional intelligence, occupational, and perceived stress as well as its dimensions before and after intervention in health care providers of Andimeshk, Khuzestan

Variables		Before		p-value*	After		p-value*
		Experiment	Control		Experiment	Control	
Emotional Intelligence	Total	79.27 ± 7.00	76.47 ± 7.10	0.09	80.43 ± 7.80	75.26 ± 6.25	0.00
	Self-awareness	28.48 ± 3.72	26.52 ± 3.61	0.02	28.16 ± 3.51	25.60 ± 3.51	0.00
	Self-management	37.08 ± 5.84	35.92 ± 4.43	0.33	38.32 ± 6.39	35.47 ±4.36	0.03
	Social awareness	23.97 ± 2.65	22.57 ± 3.11	0.04	23.62 ± 3.14	21.76 ± 2.78	0.00
	Relationship management	35.64 ± 5.11	34.44 ± 5.30	0.32	35.89 ± 5.23	34.65 ± 5.18	0.30
Occupational stress	Total	110.29 ± 15.77	112.39 ± 14.06	0.54	116.59 ± 15.41	112.13 ±14.35	0.19
	Role	21.91 ± 2.64	20.47 ± 3.16	0.03	21.86 ± 2.51	19.71 ± 3.08	0.00
	Connect	13.97 ± 4.13	14.50 ± 3.01	0.52	15.32 ± 3.14	14.97 ± 2.54	0.59
	Official support	14.59 ± 4.07	15.76 ± 3.32	0.17	15.37 ± 4.01	14.89 ± 3.31	0.57
	Peer support	13.70 ± 3.24	13.31 ± 2.27	0.55	14.62 ± 3.04	13.13 ± 2.52	0.02
	Control	18.97 ± 3.65	18.76 ± 4.75	0.83	19.35 ± 3.52	18.28 ± 4.15	0.23
	Demand	17.08 ± 6.43	20.00 ± 5.57	0.03	19.72 ± 6.44	21.78 ± 5.03	0.12
	Changes	10.05 ± 2.18	9.57 ± 2.46	0.38	10.32 ±2.23	9.34 ± 2.08	0.05
Perceived Stress	Total	19.83 ± 10.05	17.28 ± 6.04	0.19	16.62 ± 8.53	16.28 ± 7.17	0.85
	Helplessness	13.27 ± 7.27	11.39 ± 5.17	0.20	10.59 ± 5.96	10.18 ± 5.11	0.75
	Self-efficacy	6.56 ± 3.35	5.89 ± 2.51	0.34	6.02 ± 3.22	6.10 ± 2.91	0.91

Independent t-test*, P<0.05

Changes in EI, OS, and PS are depicted in Fig. 2. The experimental group showed greater improvement than the control group did. Although the change in EI was not significant in either groups, the experimental group revealed a significant improvement in the mean scores of occupational stress and perceived stress after the intervention (p<0.05). However, no significant improvement was observed in the mean scores of occupational and perceived stress in the control group. The results of the present study indicated that the effect sizes of the educational intervention through Cohen's method significantly improved perceived stress.

As outlined in Table 3, we observed a significant difference between occupational stress and connection scores only in the experimental group.

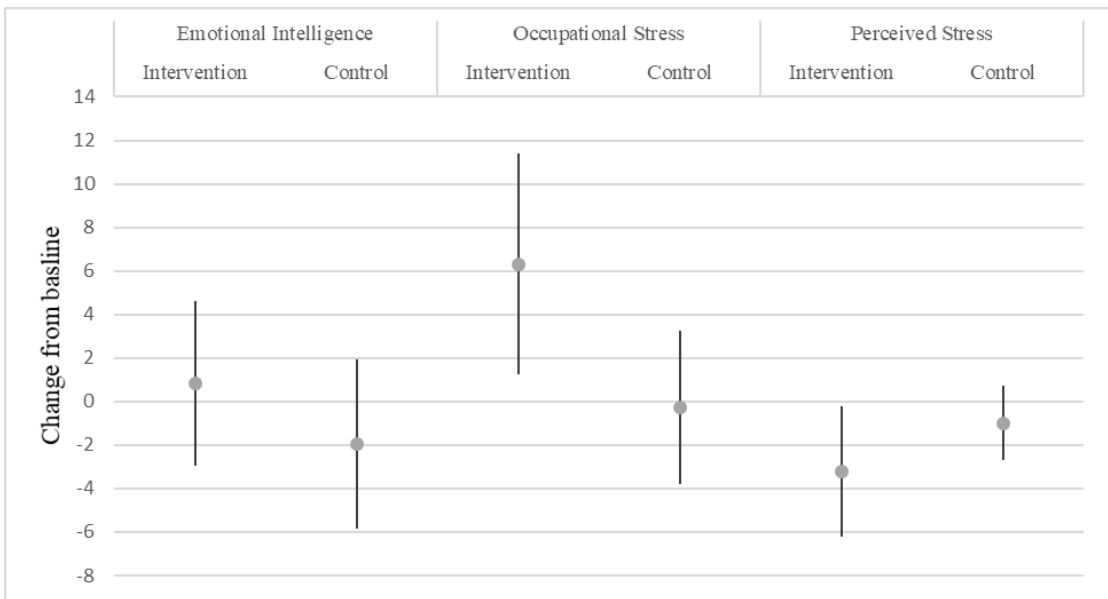

Fig. 2. Absolute change from baseline in emotional intelligence, occupational, and perceived stress. Error bar indicate 95% confidence interval.

Table 3. Comparison of mean emotional intelligence, job stress, perceived stress, as well as its dimensions in experimental and control groups pre- and post-intervention

Variables	Experimental mean ± SD		p-value	Control mean ± SD		P-Value
	Before	After		Before	After	
Self-awareness	28.48 ± 3.72	28.16 ± 3.51	0.612	26.52 ± 3.61	25.60 ± 3.51	0.21
Self-management	37.08 ± 5.84	38.32 ± 6.39	0.202	35.92 ± 4.43	35.47 ±4.36	0.507
Social Awareness	23.97 ± 2.65	23.62 ± 3.14	0.437	22.57 ± 3.11	21.76 ± 2.78	0.124
Relationship management	35.64 ± 5.11	35.89 ± 5.23	0.719	34.44 ± 5.30	34.65 ± 5.18	0.807
Emotional intelligence (Total)	79.27 ± 7.00	80.43 ± 7.80	0.369	76.47 ± 7.10	75.26 ± 6.25	0.221
Role	21.91 ± 2.64	21.86 ± 2.51	0.879	20.47 ± 3.16	19.71 ± 3.08	0.049
Connect	13.97 ± 4.13	15.32 ± 3.14	0.016	14.50 ± 3.01	14.97 ± 2.54	0.298
Official support	14.59 ± 4.07	15.37 ± 4.01	0.233	15.76 ± 3.32	14.89 ± 3.31	0.233
Peer support	13.70 ± 3.24	14.62 ± 3.04	0.055	13.31 ± 2.27	13.13 ± 2.52	0.708
Control	18.97 ± 3.65	19.35 ± 3.52	0.560	18.76 ± 4.75	18.28 ± 4.15	0.463
Demand	17.08 ± 6.43	19.72 ± 6.44	0.002	20.00 ± 5.57	21.78 ± 5.03	0.039
Changes	10.05 ± 2.18	10.32 ±2.23	0.568	9.57 ± 2.46	9.34 ± 2.08	0.409
Job stress (total)	110.29 ± 15.77	116.59 ± 15.41	0.016	112.39 ± 14.06	112.13 ±14.35	0.881
Perceived helplessness	13.27 ± 7.27	10.59 ± 5.96	0.015	11.39 ± 5.17	10.18 ± 5.11	0.071
Perceived self-efficacy	6.56 ± 3.35	6.02 ± 3.22	0.343	5.89 ± 2.51	6.10 ± 2.91	0.681
Perceived stress (Total)	19.83 ± 10.05	16.62 ± 8.53	0.036	17.28 ± 6.04	16.28 ± 7.17	0.242

Paired T-test , P<0.05

Discussion

This study aimed to explore the short-term impact of emotional intelligence-based training through face-to-face workshops on occupational stress and perceived stress in health personnel.

A. Emotional Intelligence: In the present study, following the intervention, the mean EI score was significantly higher in the experimental group than in the control group. In other words, emotional intelligence training in the experimental group had a positive effect, which is consistent with the results of the studies by Abbasi on emergency residents, Gholizadeh on students, Kozlowski on Australian nurses, and Dacre on English students [22-25]. Therefore, it can be claimed that the educational intervention had a positive effect on the participants in the experimental group; in other words, emotional intelligence is a learning and teaching skill.

The results of the present study revealed that there was no significant difference between the participants in the experimental and control groups before the intervention; however, after the intervention, the self-management component score in the experimental group increased, and there was a significant difference between the two groups. Thus, it can be claimed that the educational intervention promoted self-management in the experimental group, which is in line with the study by Halamova et al study [26]. Emotional intelligence educational interventions seem to be more effective for the the self-management component.

B- Occupational stress: In the present study, there was a significant improvement in the mean score of occupational stress after the intervention in the experimental group, whereas no significant change was observed in the control group. These findings are consistent with those reported by Forouhar and Nooryan [10, 27]. Similar studies of the effects of emotional intelligence associated with occupational stress were also concordnt with the present study including the Nakhaie study on nurses 'anxiety, the comments on nurses' resilience, Sharif and Ghorban Shiroudi on nurses 'general health, Akhund Lotfali on nurses' occupational conflict, Shahid on Chicago Residents' stress management and well-being, Meng on the stress of nursing students in China, Castillo on physical and anxiety symptoms in Hispanic adolescents, [28-33].

The results of this study revealed that there was a significant difference only in the field of peer support after the intervention between the two groups. According to Esmaili study, the greatest impact of emotional education was on peer relationships, which is consistent with the present study (peer support) [34]. It seems that emotional intelligence training in the experiment group caused more empathy among them, which had a positive effect on the relationships between peers and reduced stress among the experiment group. This resulted in a significant difference in peer support post-intervention. Since there was a significant difference in the demand component after intervention between the experimental and control groups, it was assumed that factors other than intervention, such as changing a work plan and organizational factors, would have an impact on it. Since the connection component had a significant difference only in the experimental group, the results of this study indicated that emotional intelligence improved the relationships between individuals and their social abilities. Therefore, it seems that in the present study, emotional intelligence training

intervention was more effective for peer support and communication factors.

C- Perceived stress: In the present study, following the intervention, the mean score for perceived stress in the experimental group was significantly lower than that before the intervention. This finding is consistent with a study by Nouri on high school boys and Jung's study in South Korea [9, 35]. The results of the study by Benzo on healthcare workers in America were in line with those of the present study [36]. In Yilmaz et al.'s study in Turkey, there was an inverse relationship between emotional intelligence and perceived stress whereby improving emotional intelligence in people reduced perceived stress [37].

The results of this study presented that emotional intelligence educational intervention was more effective on perceived helplessness than perceived self-efficacy, since in the experimental group, before and after the intervention, a significant difference in the component of helplessness was observed. One of the strengths of the present study was that it conducted a clinical trial with three standard questionnaires on a population of healthcare workers who have been studied less than medical staff. The limitations of the present study were the small sample size, short follow-up (one month), and limited access to participants.

Conclusion

The present study found that emotional intelligence training intervention had a positive effect on occupational stress. Based on research and experience, the National Institute of Occupational Health and Safety (NIOSH) agrees with the view that working conditions play a central role in creating job stress while also considering the role of individual factors. Therefore, to have a greater effect of emotional intelligence training on job stress, additional auxiliary training such as a total quality management program (TQM) seems necessary. It is recommended that emotional intelligence training be included in routine annual training programs. The city where the study was conducted may not be representative of other settings, and the short duration of intervention may not have a clinically significant impact; therefore, further studies will be needed to generalize the results.

Acknowledgments

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Conflict of interest

None declared.

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Ethical Considerations

Informed consent was obtained from all subjects. RCT registration number: IRCT20160418027449N4.

Code of Ethics

The study was approved by the Ethics committee of Shiraz University of Medical Sciences (IR.SUMS.REC.1397.935).

Authors' Contributions

Maryam Heydarifard: Researched, wrote, discussed, and edited the manuscript; Tayebeh Rakhshani: Researched, wrote, discussed, and edited the manuscript; Mohhamad Fararoie: Contributed to the data analysis and discussion; Morteza Abdullatif Khafaie: Researched, wrote, discussed, and edited the manuscript, guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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