

Research Paper

The Relationship Between Distress Tolerance and Emotion Regulation With Health Anxiety and the Mediating Role of Spiritual Intelligence



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ABSTRACT

Background and Objectives: Medical staff experience higher levels of health anxiety due to exposure to various diseases. Therefore, the present study aimed to investigate the predictors of health anxiety and examine the relationship between distress tolerance and emotion regulation with health anxiety, considering the mediating role of spiritual intelligence among medical staff.

Methods: This descriptive correlational study employed the structural equation model and was conducted on 212 staff members of Algardir Hospital in Tabriz City, Iran (including doctors, nurses, paramedics, and paramedic assistants, receptionists, and secretaries of doctors from all departments) selected via the convenience sampling method in 2024. This study utilized the health anxiety inventory by Salkovskis and Warwick (2002), the distress tolerance scale by Simons and Gaher (2005), the difficulties in emotion regulation scale by Gratz and Roemer (2004), and the spiritual intelligence scale by Abdollahzadeh et al. (2008). Data were analyzed using SPSS software, version 26 and Smart-pls software, version 3.

Results: The study results showed a significant relationship between health anxiety and both distress tolerance and difficulty in emotional regulation, as well as spiritual intelligence. Difficulty in emotion regulation, directly and indirectly, could predict health anxiety with the mediating role of spiritual intelligence. The proposed model demonstrated a desirable fit; however, distress tolerance was found to neither directly nor indirectly predict health anxiety.

Conclusion: Health anxiety in medical staff is affected by cognitive and emotional variables.

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Introduction

Health anxiety occurs when sensations or perceived physical changes are interpreted as symptoms of a severe disease [1]. It is defined as an excessively negative interpretation of normal bodily sensations, although the person has no physical disease [2]. Fear of disease and fear of death cause healthy people to be involved in disease with anxiety [3]. Health anxiety is a common issue among medical staff, with studies indicating its high prevalence ranging from 30.14% to 72.3% [4]. Factors, such as working in specialized hospitals, being a woman, marriage, low income, introversion, graduate or higher education, and physical illness are identified as risk factors for health anxiety in medical staff [5].

In the conceptualization of anxiety, the primary models emphasize two cognitive and emotional dimensions: the mental dimension, which relies on the evaluative element, and the emotional dimension, which is based on physiological changes. Mental and emotional factors of anxiety talk pertain to self-regulation and emotions [6]. It seems that the difficulties in emotion regulation play a significant role in anxiety; therefore, the defect in emotion regulation helps create, develop, and maintain anxiety states [7]. Emotion regulation is a key concept in emotional development, including the modification of experiences, expressions, and emotional physiology to create appropriate responses to environmental demands [8]. Distress tolerance is defined as the ability of a person to experience and tolerate negative emotional states [9]. High distress tolerance, or the ability to effectively resist mental distress, predicts positive physical and mental health outcomes [10].

However, the main question is whether difficulties in emotion regulation and distress tolerance have a direct relationship with health anxiety or if other variables exist that play a mediating role in this area [11]. Recent research indicates the emergence of the concept of spiritual intelligence in the field of health. Spiritual intelligence refers to the adjustable use of spiritual information to speed up solving daily problems and achieving goals [12]. As one of the components of mental health, it is a psychological and religious concept that can reduce psychological problems and improve the experienced level of mental health of people [13]. In this regard, Safavi et al. [14] showed that spiritual intelligence is related to coping styles for stress, anxiety, and depression, and the relationship between emotional regulation and spiritual intelligence was also confirmed [15]. In this regard, Ra-

jabi and Gharehchahi [16] state that spiritual intelligence aids in the development of emotional intelligence, which in turn helps individuals lead a fulfilling life characterized by physical, mental, and spiritual health without stress. While it is challenging to predict how people will respond when faced with difficult situations, stable traits, such as spiritual intelligence can predict a person's resistance under challenging situations [17]. Also, in recent studies, the effect of spiritual components on anxiety and mental health has been emphasized [18].

Considering the increase in people's awareness of diseases and the impact that this information has on people's mental health and anxiety, identifying the correlates of health anxiety underscores the importance of the study. On the other hand, some people, including the treatment staff, experience more anxiety symptoms, and this issue has a significant impact on their quality of life [19]. Therefore, by identifying the cognitive and behavioral components involved in health anxiety, more decisive steps can be taken in the field of psychological treatments because it seems that concepts, such as spiritual intelligence, emotion regulation, and distress intolerance influence the level of health anxiety. Therefore, the question of the present study is whether a relationship exists between distress tolerance and difficulties in emotion regulation with health anxiety, with spiritual intelligence serving as a mediating factor among the staff at Al-Ghadir Hospital.

Methods

Population, sample, and sampling method

This descriptive correlational employed a structural equation model (SEM), appropriate to its subject. The statistical population included all the staff of Al-Ghadir Hospital in Tabriz City, Iran in 2024. The statistical sample included 212 people from the statistical population selected by convenience sampling method. To determine the sample size, Loehlin suggests that when examining a structural model with 2-4 variables, the researcher should plan to collect at least 100 to 200 cases. Using smaller samples can cause failure in achieving convergence and obtaining inappropriate results, as well as low parameter estimation accuracy, and especially high standard errors. After coordinating and specifying the research samples, the questionnaires were provided to the staff in the hospital. The reason for choosing Al-Ghadir Hospital as the target hospital was that one of the authors was employed in this hospital and had easy access to the study sample. All individual information from each participant was completely confidential. The inclusion criteria included

having at least a high school education and being employed at Al-Ghadir Naja Hospital as medical staff (including physicians, nurses, paramedic assistants, receptionists, and physician's secretaries in all departments). Ethical considerations in the present study included not requesting names, offering to send interpretations if the respondent was interested, and ensuring that participants understood the purpose of the study. The data were analyzed with descriptive and inferential statistical methods using SPSS software, version 26 and Smart-pls software, version 3.

Research tools

Health anxiety questionnaire: The health anxiety questionnaire by Salkovskis and Warwick [20] was used to measure health anxiety, which includes 18 items, and is scored on a 4-point Likert scale (never=0 to always=3). The total score is between 0 and 54. The test re-test validity of this tool is 0.9 and Cronbach's α coefficient is reported to be 0.7 to 0.82. Abramowitz and Moore [21] also reported the reliability coefficient of this tool as 0.94. In Nargesi et al.'s study [22], the internal consistency was 0.75 using Cronbach's α method. Cronbach's α in the present study was 0.95.

Emotion regulation difficulty questionnaire: Gratz and Roemer created this scale [23], which has 36 items and six factors, including non-acceptance of negative emotions, difficulty in performing purposeful behaviors, difficulty in impulse control, limited access to effective emotion regulation strategies, lack of emotional awareness and lack of emotional transparency. The items are scored from one (rarely) to five (almost always) and questions 1, 2, 6, 7, 8, 10, 17, 20, 22, 24, and 34 are scored in reverse, with high scores indicating more incredible difficulty in emotion regulation, and the range of scores is between 36 and 180. In examining the psychometric characteristics of the test, Gratz and Roemer reported this test's internal consistency, re-test reliability, construct validity, and predictability as desirable. In Besharat's research [24], Cronbach's α coefficient for the subscales and the whole test

was reported in the range of 0.72 to 0.92. Also, the re-test reliability was reported in the range of 0.76 to 0.87. Cronbach's α in the present study was reported as 0.97.

Distress tolerance questionnaire: Simons and Gaher [9] developed the distress tolerance questionnaire with 15 items. The items are scored on a five-point Likert scale (one=completely agree to five=completely disagree). Item 6 is scored inversely, and high scores indicate high distress tolerance. The alpha coefficient for the whole scale is 0.72. Also, criterion validity and appropriate convergence have been reported for this questionnaire. Azizi et al. [25] reported the Cronbach's α of this questionnaire as 0.67 and its re-test validity as 0.79. Cronbach's α was reported as 0.96 in the present study.

Spiritual intelligence questionnaire: Abdollahzadeh et al. [26] designed the Spiritual Intelligence Questionnaire with 29 items. Scoring is based on the Likert scale (zero=completely disagree, five=completely agree), with scores ranging between 29 and 145. The reliability of this questionnaire, which was obtained from 280 participants, was 0.89. To check the validity, in addition to the formal and content validity of the items, confirmed by experts' opinions, factor analysis was also used, and the correlation of all items was >0.3 . Cronbach's α in the present study was 0.96.

Results

Table 1 presents the descriptive findings of the study variables. It should be noted that the mean age of the participants in the study was 36.23 ± 6.00 , 52.8% were men, and 47.2% were women.

Based on the results of Table 1, the mean distress tolerance score was 45.69 ± 17 and the average spiritual intelligence score was 79.46 ± 25.42 . Also, the mean emotion regulation and health anxiety scores were 93.88 ± 31.74 and 11.36 ± 10.07 , respectively. The results of the Kolmogorov-Smirnov test for all research variables were

Table 1. Mean \pm SD, and normality of research variables

Variables	N	Mean \pm SD	Kolmogorov-Smirnov Test Result	P
Distress tolerance	212	45.69 \pm 17	0.18	0.001
Spiritual intelligence	212	79.46 \pm 25.42	0.12	0.001
Emotion dysregulation	212	93.88 \pm 31.74	0.12	0.001
Health anxiety	212	11.36 \pm 10.07	0.10	0.001

Table 2. Results of Pearson correlation matrix and separate validity index

Variables	Pearson Correlation Coefficient				Separate Validity			
	1	2	3	4	1	2	3	4
Health anxiety	1				0.776			
Distress tolerance	-0.453**	1			-0.526	0.865		
Emotion dysregulation	0.516**	-0.640**			0.500	-0.670	0.779	
Spiritual intelligence	-0.402**	0.370**	-0.510**	1	0.416	0.426	-0.554	-0.734

**P<0.01.



less than 0.05. Therefore, the data can be considered as having a non-normal distribution. Due to non-normality, the partial least square method was used. Also, the combined reliability value for the research variables, including distress tolerance, emotion regulation, health anxiety, and spiritual intelligence, Cronbach's α , and the combined reliability for all constructs (variables) were more than 0.7 and the average variance extracted for all constructs (variables) were >0.5. Hence, the constructs of this research exhibited sufficient validity in terms of convergence and correlation. The standard factor loading for items 1, 9, and 12 of the distress tolerance questionnaire, items 2 of the spiritual intelligence questionnaire, items 7 and 15 of the health anxiety questionnaire, and items 5, 9, 20, 22, 27, 35, and 36 of the emotion regulation questionnaire were lower than the emotion regulation questionnaire and were excluded from the analysis. The results of the correlation matrix are presented below.

Table 2 shows that the values for the primary diameter had the highest value in the column, indicating the structures' appropriate validity. Convergent validity was used to examine whether each indicator had the highest correlation with its own construct compared to other constructs. Cross-factor loading was used to examine this issue and the results showed that convergent validity was also confirmed.

Table 3. Structural model fit

Variables	R ²	Q ²
Health anxiety	0.324	0.516
Distress tolerance	Exogenous variable	0.668
Emotion dysregulation	Exogenous variable	0.550
Spiritual intelligence	0.306	0.479



Also, the Pearson correlation coefficients showed a positive relationship between health anxiety and distress tolerance but a negative relationship with difficulty in emotional regulation and spiritual intelligence. The distress tolerance variable had a negative relationship with difficulty in emotional regulation and spiritual intelligence, and a negative relationship was observed between the difficulty in emotional regulation and spiritual intelligence. The results of the structural fit of the model are presented below.

Table 3 shows that the values of R² and Q² were above 0.19 and 0.15, respectively, and therefore, thus allowing us to trust the model's fit from the structural dimension. Then, the relationship analysis was performed using the bootstrap test, the results of which are presented in Figure 1 (the model tested based on the path coefficients) and Figure 2 (the model tested based on the t statistics). Table 4 also presents the results of this test.

Based on Table 4, the test results showed no significant difference between distress tolerance and spiritual intelligence ($r=0.099$, $t=1.21$); however, distress tolerance had a negative relationship with health anxiety ($r=-0.252$, $t=2.91$). The relationship between difficulty in emotional regulation and spiritual intelligence was negative ($r=-0.488$, $t=6.16$) and the relationship be-

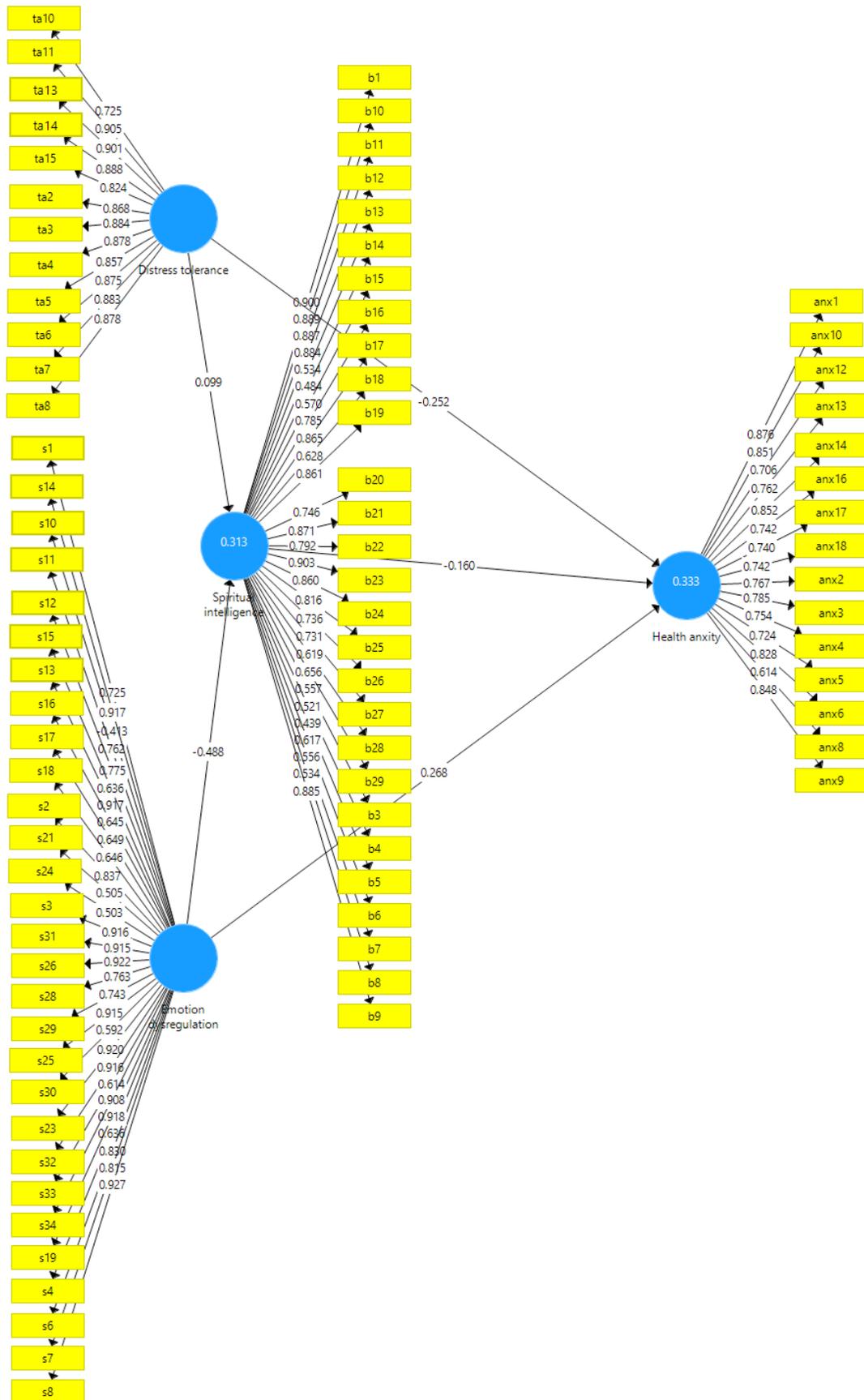


Figure 1. Modified research model based on path coefficients

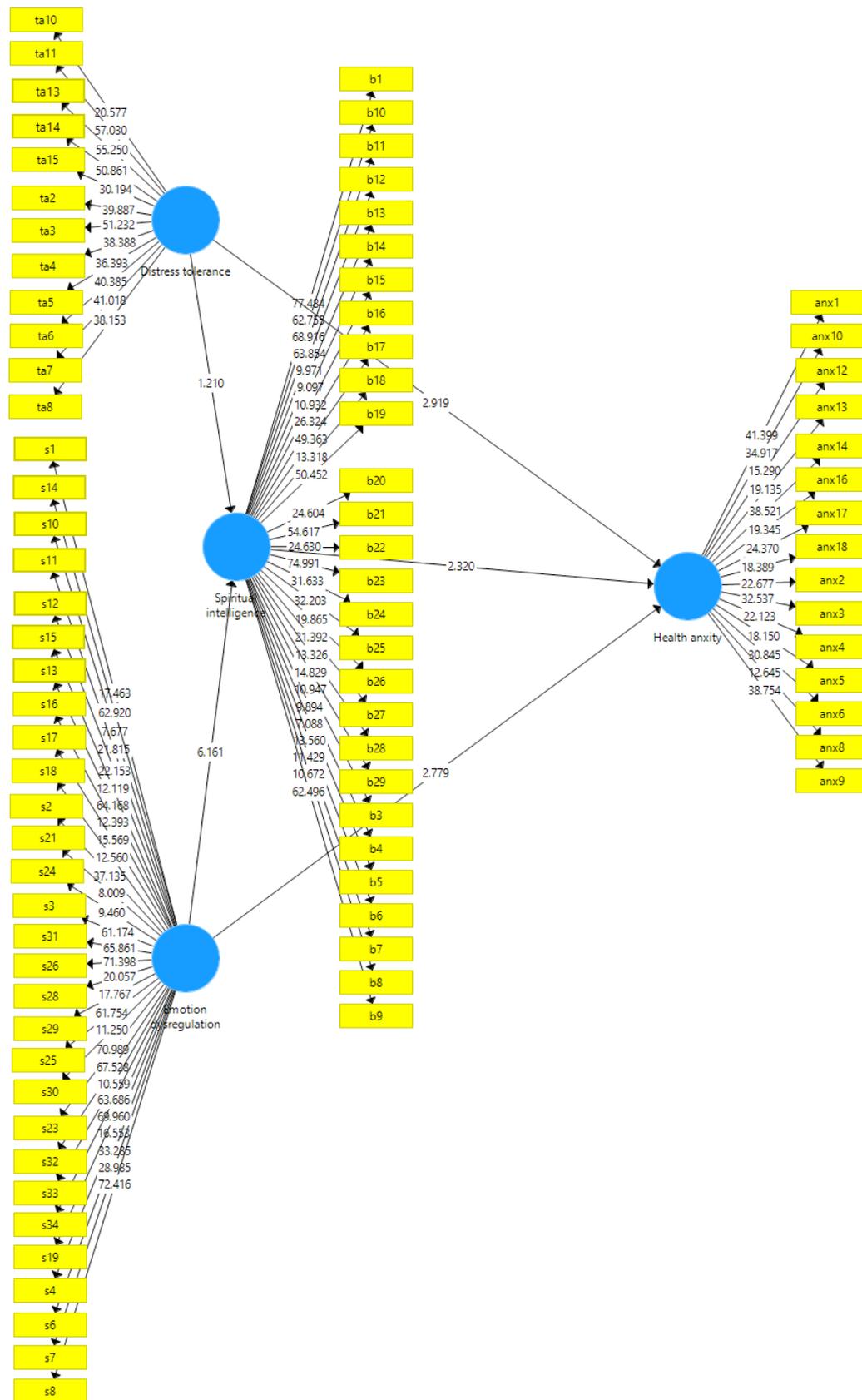


Figure 2. Modified research model based on t values

Table 4. Path coefficient test and values regarding the relationship between distress tolerance and emotion dysregulation with spiritual intelligence

Direct and Indirect Paths	Path Coefficient	t	P
Distress tolerance → spiritual intelligence	0.099	1	0.219
Emotion dysregulation → spiritual intelligence	-0.488	6.16	0.001
Distress tolerance → health anxiety	-0.252	2.91	0.004
Emotion dysregulation → health anxiety	0.268	2.77	0.006
Distress tolerance → spiritual intelligence → health anxiety	-0.016	1.01	0.309
Emotion dysregulation → spiritual intelligence → health anxiety	0.078	2.02	0.043



tween emotion regulation difficulty and health anxiety ($r=0.268$, $t=2.77$) was positive. The results showed no relationship between distress tolerance and the mediating role of spiritual intelligence on health anxiety ($r=-0.016$, $t=1.01$). The final results showed an indirect relationship between difficulty in emotional regulation and the mediating role of spiritual intelligence on health anxiety ($r=0.078$, $t=2.02$). In other words, the lower the difficulty in emotion regulation, the higher the spiritual intelligence; and the higher the spiritual intelligence, the better the health anxiety, and vice versa.

Discussion

The results of the present study showed a relationship between difficulty in emotion regulation and health anxiety, both directly and indirectly (through spiritual intelligence); in other words, difficulty in emotion regulation had a significant effect on increasing health anxiety. The role of spiritual intelligence mediates this relationship. The results of the study are consistent with those of Akbari and Hossaini [15], Ogińska-Bulik [27], and Akbarizadeh et al [28].

It has been found that spiritual intelligence has a positive relationship with the quality of life and mental health and reduces job burnout of hospital staff, with emotion regulation playing a mediating role [15]. Spiritual intelligence in healthcare regulations affects nurses' work performance [29]. Similarly, emotional intelligence has been shown to help staff cope with job stress and prevent adverse health outcomes in human service personnel [27]. A study on nurses showed a significant relationship between spiritual intelligence, hardiness, and health, which shows that improving spiritual intelligence can increase the overall well-being of nurses [28]. Therefore, spiritual intelligence can play a crucial

role in helping people deal with health anxiety by providing a framework for understanding and managing stress and anxiety. Research shows that higher spiritual intelligence is associated with reduced stress, anxiety, and depression, which leads to improved mental health outcomes [30]. Hospital staff encounters a wide range of unknown and emerging diseases, which may lead to increased health anxiety [4]. Possessing psychological resources, such as spiritual intelligence, enables individuals to maintain a hopeful and meaningful perspective on events, allowing them to employ effective emotion management strategies and better manage their anxiety in stressful situations.

The results of the present study's second finding indicated a direct relationship between distress tolerance and health anxiety. The results of the present study are consistent with those of Maghool et al. [31] and Ajele et al. [32]. Also, distress tolerance indirectly (mediated by spiritual intelligence) was not related to health anxiety, which is inconsistent with previous findings [32, 33]. In other words, the hypothesis of the present study was that high distress tolerance leads to a decrease in health anxiety due to spiritual intelligence in medical staff, which was not confirmed. Research shows that religious beliefs and spiritual practices can have positive effects on health anxiety and mental well-being, especially for medical staff and patients, and religious practices can significantly reduce anxiety in healthcare staff [34]. Distress tolerance plays a mediating role in the relationship between health anxiety, stress, and moral distress in emergency nurses, indicating that strengthening distress tolerance can reduce moral distress in the workplace [33]. Spiritual intelligence as a key mediator positively affects mental health by reducing stress and increasing emotional flexibility [32]. However, the results of the present study, despite confirming the direct role of spiritual intelli-

gence in health anxiety, did not confirm the mediating role of this variable in the relationship between distress tolerance and health anxiety. To explain this result, the limited sample size and the use of various other tools may be contributing factors. In other words, conducting the study with a larger research sample and utilizing different tools might yield different results. Additionally, this study was conducted in the post-COVID-19 period, which may have affected the distress tolerance of the treatment staff during this time.

The present study had some limitations, including the completion of the questionnaire by people in uncontrollable conditions, and the need for more control of individual differences due to the lack of random sampling. In future studies, it is suggested that randomization be implemented to increase the possibility to enhance the ability to control conditions and ensure accountability. Also, the aforementioned model should be analyzed based on the demographic variables and service history of the staff.

Conclusion

The results of the present study show that factors such as difficulty in regulating emotions, spiritual intelligence, and distress intolerance play a role in health anxiety among medical staff, and these components should be considered in the treatment of problems related to health anxiety.

Ethical Considerations

Compliance with ethical guidelines

To comply with ethical principles, all participants were informed about the research objectives and their options to participate. Their names were not recorded on the questionnaire, and the information remained confidential. It should be noted that the Psychology Department of [Urmia University](#), Urmia, Iran granted permission to conduct the study.

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Authors' contributions

Conceptualization: Shirin Zeinali; Data collection and statistical analysis: Hossein Rostami; Writing the original draft: Shirin Zeinali and Hassan Bafande; Review and editing: Gholamreza Chalabianlou.

Conflict of interest

The authors declared no conflict of interest.

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