Original Article   **Open Access**

Relationship between emotional intelligence and health anxiety: An Iranian survey

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Abstract

Introduction: Evidence shows that higher emotional intelligence can influence health anxiety. We aimed to assess the relationship between emotional intelligence can influence health anxiety.

Materials and Methods: This cross-sectional study was conducted on the Iranian general population using an online Persian questionnaire (demographic checklist, Emotional Intelligence Scale, and the Health Anxiety Inventory (HAI-18)), which fulfilled by 784 participants. The online form was available from May 17th to December 31st, 2020. Data were analyzed using SPSS version 16.

Results: Among the participants, 595 (76%) were female, and the total mean age of the participants was 25.90±6.81 years. University students (51%) and people with bachelor's educational degrees (34%) had the highest participation. There was a significant negative correlation between the total Emotional Intelligence (EQ) score and the total Health Anxiety (HA) score for females (r= -0.306; $P< 0.001$) and males (r= -0.263; $P< 0.001$). Utilization of Emotion (UOE) in both genders was not significantly related to the total HAI score or its fields ($P> 0.05$). In contrast to the females, in males, Other's Emotion Appraisal (OEA) was not correlated with worry HA and affected HA ($P> 0.05$). Lower total HA scores, as a predictor, were seen among older participants and participants with higher total EQ scores (β= -0.118, $P= 0.003$; β= -0.266, $P< 0.0001$, respectively).

Conclusion: Health anxiety has a medium correlation with emotional intelligence. Interventions intended to increase emotional intelligence can benefit public health by regulating health anxiety.

Keywords: Emotional intelligence, Emotion regulation, Health anxiety

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Introduction

The COVID-19 pandemic first emerged in late December 2019 in Wuhan, Hubei Province, China. On January 30th, 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic and a public health emergency requiring international coordination (1). Despite the current developments in vaccination and treatment of COVID-19, the main mechanism of controlling this pandemic is still public health measures to break the chain of transmission from one person to another; these include social distancing, quarantining, social isolation, and community containment; all of which can cause and/or exacerbate mental and psychological issues (2). Past experiences during infectious disease epidemics have demonstrated wide and profound psychosocial effects on individuals and society, such as fear of disease and death, stigma, and a sense of helplessness (3). Health Anxiety (HA) is an illogical and obsessive fear of developing a major medical illness. It is also known as illness anxiety disorder, formerly hypochondriasis. Health anxiety is characterized by a person's fantasy of physical symptoms of sickness. It happens because of excessive concern about body or sensation changes (4). A growing body of literature explains why HA levels have significantly increased during the COVID-19 pandemic (5,6). HA increases health-promoting behaviors, but in severe cases, it causes anxiety-related issues and irrational behaviors (7,8). Previous research has linked HA and health perception to gender, marital status, occupation, education level, income level, awareness of COVID-19 incidents, and age (7,9,10). A study on the Iranian population revealed that general health concerns, physical components of anxiety sensitivity, and following the news about COVID-19 were substantially related to anxiety during the COVID-19 pandemic (11). Emotional intelligence, which is abbreviated as "EQ" or "EI", was first framed in 1983 by Howard Gardner (12). Mayer and Salovey defined EQ as the ability to recognize, express, perceive, and manage the emotions of oneself and others. People with higher EQ have better social adjustment and social skills (13). Social skills help people improve their social lives and their ability to interact more effectively with others. Moreover, social skills are reciprocal, meaning others better treat people with higher social skills. In other words, EQ indicates people's knowledge about emotions and how this knowledge affects people's interpersonal relationships (13). Several studies looked at the role of EQ in various aspects of life, such as stress (14), well-being (15), social anxiety (15), and so on.

Some studies assessing the relationship between EQ and various aspects of mental health have shown that higher EQ predicts fewer mental health issues like anxiety, stress, and depression (16,17). People who participated in the EQ training program scored lower on depression, suicidal ideation, and state anxiety than those who were allocated to the placebo training program (18). Based on our research, there is no study on the relationship between EQ and HA. In summary, HA is one of the most common issues during the COVID-19 pandemic. From a long-term practical perspective, if there is a link between HA and EQ, the prevalence of HA-related issues might be decreased during future pandemics by establishing strategies to improve EQ. Therefore, the current survey investigates the potential relationship between emotional intelligence and health anxiety in Iran. However, other related factors and their influences should be further investigated.

Materials and Methods

The current cross-sectional study was designed online using the Google Form platform. Then, a link was posted on popular social networks (Telegram and WhatsApp) in Iran to collect data from the population using a convenient sampling strategy. The online survey was active from May 17 to December 31, 2020. Inclusion criteria included all Iranian individuals between the ages of 18 and 60 who have access to social networks, and exclusion criteria included individuals with current or previous mental disorders, substance addiction, and patients taking psychotropic medication. According to a study by Heidari et al., the sample size was calculated at a minimum of 194 individuals, based on the formula for estimating the correlation coefficient in similar studies (25,26).

Research instruments

A) Wong and Law's Emotional Intelligence Scale: This self-reported scale was developed in 2002 (19,20). This scale contains 16 questions in the fields of Self Emotion Appraisal (SEA), Utilization of Emotion (UOE), Other's Emotion Appraisal (OEA), and

Regulation of Emotion (ROE). SEA refers to the individual's ability to recognize and express their profound emotions, whereas OEA refers to an individual's ability to realize the emotions of people around them. ROE relates to the ability of people to control their emotions, which allows them to recover more quickly from psychological distress, and UOE relates to people's ability to channel their emotions into productive activities and personal performance. All questions are scored on a Likert scale from completely disagree (score 1) to agree (score 5) completely. A higher score is associated with a higher level of emotional intelligence (19). We used Persian version of this scale, which was considered valid and reliable (Cronbach's alpha 0.79) by Chizari et al. (21).

B) Health Anxiety Inventory-18 (HAI-18): Salkovskis and Warwick developed this inventory in 2002 with 18 questions (22,23). This questionnaire evaluates three fields: being ill and awareness of bodily sensations or changes (affected), disease consequences (outcome), and general health concerns and worries (worried). Each item in this questionnaire has four options, each describing the components of health and illness as a new sentence. The respondents must choose one of the sentences that best describes them.

Scoring for each item is from zero to three points; therefore, the total maximum score is 54, and the minimum is 0. A higher score is attributed to a higher level of HA (22). The Persian version of this scale was considered valid and reliable (Cronbach's alpha 0.75) by Nargesi et al. (24).

The SPSS version 16 was used to analyze the data. We analyzed the data using descriptive statistics, Pearson correlation, independent sample t-test, and linear regression analysis.

Results

In the present study, out of 784 participants, 595 (76%) were female, and 189 (24%) were males, with a total mean age of 25.90 ± 6.81 years and a range of 18 to 40 years old. University students (51%) and people with bachelor's educational degrees (34%) had the highest participation. Demographic information is presented in Table 1.

Also, based on the findings, physicians reported the highest total EQ score, whereas homemakers reported the lowest total EQ score (58.6 ± 6.8 and 52.01 ± 8.24, respectively). Jobless people had the highest HAI score, and employed people had the lowest(19.07 ± 7.97 and 13.76 ± 8.35, respectively).

Table 1. The demographic variables of the participants and the correlation between emotional intelligence and total health anxiety

Variable	Number	Percent (%)	Correlation between EQ and HA	P
Occupational status				
Private job	54	6.9	-0.239	0.081
Jobless	60	7.7	-0.385	0.002*
Homemaker	125	15.9	-0.290	0.001*
Working people	59	7.5	-0.471	< 0.0001*
Medicine science student	137	17.5	-0.259	0.002*
Physician	15	1.9	0.409-	0.130
Non-medicine university student	256	32.7	-0.197	0.002*
Teacher	33	4.2	-0.455	0.008*
Health practitioner	22	2.8	-0.263	0.238
Other	23	2.9	-0.377	0.076
Educational degree				
Elementary	6	.8	-0.399	0.433
Middle school	17	2.2	-0.229	0.376
Diploma and higher	231	29.5	-0.241	< 0.0001*
Bachelor	266	33.9	-0.350	< 0.0001*
Master	76	9.7	-0.416	< 0.0001*
Ph.D.	188	24.0	-0.240	0.001*

*$P< 0.05$, HA: Health Anxiety, EQ: Emotional intelligence

The mean scores of the total EQ, Self-Emotion Appraisal (SEA), Utilization of Emotion (UOE), Other's Emotion Appraisal (OEA), and Regulation of Emotion (ROE) questions were 3.42 ± 0.99, 3.53 ± 0.97, 3.73 ± 0.89, $3.41 \pm$ 0.99, and 3.01 ± 0.98, respectively. The HAI mean scores were 4.30 ± 3.01, 4.79 ± 2.76, 7.15 ± 3.29, and 16.25 ± 7.54 in the fields of affected outcome, worry, and total HA, respectively. The scores of the two inventories based on

gender are presented in Table 2; males had higher total EQ scores, and females had higher HAI scores; however, they were non-significant (t= -1.93; t= 1.25, respectively).

Table 2. The scores of emotional intelligence and health anxiety based on gender

Gender	HAI				EQ				
	Affected	Outcome	Worry	Total	Self-Emotion Appraisal (SEA)	Utilization of Emotion (UOE)	Other's Emotion Appraisal (OEA)	Regulation of Emotion (ROE)	Total
Female	4.27 ± 2.98	4.95 ± 2.77	7.21 ± 3.32	16.44 ± 7.56	14.06 ± 2.77	15.05 ± 2.71	13.41 ± 3.25	11.92 ± 3.26	54.46 ± 8.40
Male	4.39 ± 3.09	4.30 ± 2.65	6.96 ± 3.16	15.66 ± 7.44	14.35 ± 2.66	14.57 ± 2.81	14.38 ± 3.12	12.51 ± 3.14	55.82 ± 8.51
P	0.640	0.004	0.369	0.212	0.206	0.034	< 0.001	0.030	0.054

*Independent t-test   Abbreviations: EQ: Emotional intelligence; HAI: Health anxiety inventory.

The results of the correlations between the variables, EQ, HAI, their fields, and age, are shown in Table 3; they are separated according to gender in Table 4. A negative correlation exists between the total EQ and HA scores.

UOE was unrelated to total HAI or its fields in both genders ($P > 0.05$).

In contrast to females, male OEA was not correlated with worried HA and affected HA ($P > 0.05$).

Table 3. The correlations between the fields of emotional intelligence and health anxiety

	EQ total	SEA	UOE	OEA	ROE	Age
HAI. total	-0.297**	-0.239**	-0.029	-0.242**	-0.306**	-0.107*
Affected	-0.264**	-0.208**	-0.081*	-0.204**	-0.240**	-0.128**
Outcome	-0.309**	-0.248**	0.016	-0.279**	-0.329**	-0.056
Worry	-0.180**	-0.150**	-0.005	-0.133**	-0.205**	-0.080*
Age	0.026	0.031	0.058	-0.009	0.002	-

*$P < 0.05$ **$P < 0.001$ Abbreviations: Self Emotion Appraisal (SEA), Utilization of Emotion (UOE), Other's Emotion Appraisal (OEA), Regulation of Emotion (ROE), Emotional intelligence (EQ), Health Anxiety Inventory (HAI)

Table 4. The results of the correlation between the fields of health anxiety and emotional intelligence according to gender

Gender		EQ total	SEA	UOE	OEA	ROE	Age
Female	HAI. total	-0.306**	-0.249**	-0.016	-0.254**	-0.309**	-0.110*
	Affected	-0.286**	-0.225**	-0.065	-0.240**	-0.252**	-0.158**
	Outcome	-0.310**	-0.249**	-0.037	-0.280**	-0.338**	-0.021
	Worry	-0.180**	-0.158**	-0.010	-0.128**	-0.193**	-0.091*
	Age	0.013	0.033	0.077	-0.039	-0.019	-
Male	HAI. total	-0.263**	-0.198**	-0.083	-0.185*	-0.286**	-0.103
	Affected	-0.207**	-0.158*	-0.124	-0.105	-0.210**	-0.031
	Outcome	-0.287**	-0.230**	-0.085	-0.233**	-0.275**	-0.194*
	Worry	-0.174*	-0.116	-0.002	-0.138	-0.235**	-0.049
	Age	0.080	0.034	-0.011	0.113	0.087	-

*$P < 0.05$ **$P < 0.001$ Abbreviations: Self Emotion Appraisal (SEA), Utilization of Emotion (UOE), Other's Emotion Appraisal (OEA), Regulation of Emotion (ROE), Emotional intelligence (EQ), Health Anxiety Inventory (HAI)

Furthermore, the linear regression analysis showed that higher HA scores, as a criterion, were seen among younger participants and participants with lower EQ scores (β= -0.109, P= 0.004; β= -0.267, $P < 0.001$, respectively).

Discussion

The outbreak of the COVID-19 pandemic has strained different aspects of our daily lives and raised awareness of public health issues. HA is categorized as a mental health issue that can be

widely observed during the COVID-19 pandemic, particularly among the high-risk groups for infection (27). Overestimation of the threat, combined with the fear of COVID-19 infection and its complications, leads to increased HA (28). Regarding varied stress responses among people to difficult situations (29), it is important to recognize the factors that raise HA among people. The leading causes of high HA, like fear and coping strategies, are associated with EQ (30,31). Previous studies assess the effects of EQ on various topics related to HA have shown it as a possible factor (32,33). EQ is a determinant personality factor contributing considerably to effective coping in stressful situations (34).

In the present study, we showed an inverse correlation between EQ and HA. High EQ scores were associated with low HA scores in both genders. However, there were some differences between males and females. The results showed that EQ, opposite to HA, had no relation to age. Moreover, the results predicted a ratio of decreasing HA by increasing EQ.

Several studies have been conducted on general and specific populations to assess the correlation between EQ and anxiety and stress. They showed that anxiety and stress are negatively correlated with EQ (16,34).

A recent study of 567 university students used the same method as ours to investigate the relationship between EI and anxiety, depression, and stress. Similar to our results, a direct relationship was found between all four aspects of EI and levels of anxiety, depression, and stress (35). In another cross-sectional study of 1388 medical students, anxiety and EI traits were measured using a validated questionnaire. Consistent with our results, they found that EI was negatively associated with anxiety (36). Studies have looked at the direct relationship between HA and emotion regulation. Canlı et al. (37), in contrast with Görgen et al. (38), concluded that there is no significant relationship between HA and emotion regulation.

A secondary finding was seen when comparing HA and EQ levels regarding gender. Contrary to our findings, most studies showed that females had higher levels of HA during the COVID-19 pandemic (39,40). The outcome field of HAI showed a higher score among females, while the affected and worried fields did not. Female reported a higher ability to utilize emotions. Nevertheless, male subjects reported greater capability in OEP and ROE abilities. Due to the significant relationship between EQ and HA and a lower ROE score among other EQ concepts, we recommend that future research investigate the causative relationship between EQ and HA. The determination of this topic may provide new ways to control health anxiety during future pandemics and the remaining days of the COVID-19 pandemic. Furthermore, health professionals can assess EQ before upcoming situations to identify susceptible social groups for further interventions. More research on the various dimensions of EQ and interventional programs to improve EQ are suggested.

To our knowledge, this is the first study on this topic that has been done on the Iranian population. One strength of our study is the large sample size. Our study had some limitations. Firstly, some occupational/social groups did not have a large enough sample size. Secondly, only people with access to the internet and/or smart digital devices could participate in our study; therefore, it should not be generalized to the general population. Thirdly, the results cannot be generalized to the older population as we could not effectively assess the elderly population; the oldest participant in the study was 40.

Fourthly, the participation of females was three times that of males. Fifthly, despite their benefits, a limitation of online surveys and self-assessments might be their limited accuracy and validity. Sixthly, some other confounding factors have not been checked, such as deaths in their family (due to COVID and/or other causes), having children, or different socioeconomic status. Further studies with larger sample sizes can address these. Another limitation is the study period; during the six-month sampling period, other public or personal societal stresses may affect the results. Finally, we did not assess HA using COVID-19-related questionnaires when conducting this study due to the unavailability of well-examined Persian scales.

Conclusion
Health anxiety may be related to emotional intelligence; a lower emotional intelligence determines the higher levels of health anxiety. The nature and effects of emotional intelligence highlight the necessity of its improvement through appropriate training for the general population, especially vulnerable groups.

Authors' Contributions
M.Em. and M.Es. Designed the study. All authors contributed to the data collection. M.E., H.M.A., A.M.G., and A.A. did the analysis and interpreted the results. A.A., A.M.G., H.M.A., and S.M.N. wrote the primary manuscript, and all authors revised the manuscript.

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