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# Relationship between emotional intelligence and health literacy in patients with COVID-19

**Leila Heidarzade [1*], Monir Rezaee [2], Nasrin Heidarzade [2], Leila Alilu [3]**

[1] School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran
[2] Department of Midwifery Urmia Branch, Islamic Azad University of Urmia, Urmia, Iran
[3] Department of Nursing and Midwifery, Urmia Branch, Islamic Azad University, Urmia, Iran
[4] Department of Medical Surgical Nursing School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran

*** Corresponding author email: leilaheydare63@yahoo.com**
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**Abstract**

During the epidemic, individuals face various health risks that impact their personal lives and workplaces, and this is one of the key factors of emotional intelligence. Many factors influence emotional intelligence with health literacy being a significant one. This study aims to explore the relationship between two factors that affect the recovery process of patients with coronavirus. This descriptive-analytical correlational study involved 250 COVID-19 patients at Imam Khomeini Hospital of Urmia in 2020 selected through stratified random sampling. The research utilized a demographic questionnaire, health literacy, and emotional intelligence assessments. Data analysis was conducted using SPSS software, with descriptive statistics such as relative and absolute frequency distributions employed to describe the data. The chi-square test and Spearman correlation were used to assess the relationship between variables. The findings indicated a significant relationship between gender, material status, and education level with health literacy (p-value < 0.05), while no significant relationship was found between income, age, or family history of COVID-19 and health literacy(p-value > 0.05).

There was a statistically significant correlation between health literacy and emotional intelligence (p-value < 0.05), as evidenced by the Spearman correlation test revealing a significant relationship between levels of emotional intelligence and health literacy (p-value < 0.05). This study, highlights the connection between emotional intelligence and health literacy. Given the importance of health in enhancing emotional intelligence, interventions to enhance both health literacy and emotional intelligence should be implemented.

**Keywords:** emotional intelligence, health literacy, COVID-19

## Introduction

The COVID-19 virus, which causes severe acute respiratory syndrome, has recently emerged in Wuhan, China. The World Health Organization (WHO) declared the outbreak of the coronavirus a public health emergency on January 31, 2020. As of February 23, 2020, 2,445 patients have died and 77,041 confirmed cases have been identified in China. Moreover, 1,724 cases have been confirmed in 29 other countries (1). The disease has spread rapidly, affecting 199 countries worldwide with 24,117 deaths reported. As of August 13, 2021, the highest rates of daily death were reported in Russia (816), Mexico (608), and Iran (528). Iran has the highest morbidity rate globally (2).

Emotional intelligence is an individual's ability to understand their own emotions and the emotions of those they are interacting with. Higher emotional intelligence comes with several benefits, including reducing stress and burnout and increasing job satisfaction(3). Emotional intelligence involves the ability to control negative emotions like anger, low self-confidence, and anxiety, and replace them with positive emotions like self-confidence, empathy, and friendship (4). According to broadly, emotional intelligence is the ability to understand others' emotions and align with them, while Cooper defines emotional intelligence as the ability to feel, perceive, and effectively use the power and acuteness of emotions as a source of energy, information, connection, and personal influence. In 2009, Smith reviewed 39 articles at the University of Alberta in Canada and declared that emotional intelligence affects the quality of students' learning, creative decision-making ability, performance in critical situations, quality of patient care, and patient disease outcomes (5).

Given that health literacy considered a necessary health need in today's society, and considering that COVID-19 patients are exposed to more stress and anxiety, which can threaten their mental health, this study was conducted to determine the relationship between emotional intelligence and health literacy in patients suffering from COVID-19.

## Methods

The present study is a descriptive correlational study conducted in 2020. The study sample consisted of 250 patients suffering from COVID-19 at Imam Khomeini Hospital of Urmia. The selection criteria included patients aged 30 to 70 who were able to communicate, willing to participate, had basic reading and writing skills, and did not have acute mental illness or prior educational programs about their illness. Exclusion criteria included withdrawal from the study or participation in other related studies. The convenience sampling method was used, with a sample size estimated at 238 individuals using Cochran's formula based on a previous study by Beikzadeh on the relationship between managers' emotional intelligence, self-efficacy, and mental health. The final sample size was 250 participants, accounting for potential dropouts (6).

After obtaining the ethics code IR.IAU.TMU.REC.1400.233, the researcher visited healthcare centers and asked patients to complete questionnaires, ensuring they had given their consent. Three questionnaires were used for data collection in this study. The first questionnaire gathered demographic information about the patients including age, gender, marital status, education, income, and history of COVID-19 in the family. The second questionnaire used in the study was the Test of Functional Health Literacy in Adults (TOFHLA), which was validated and standardized in Iran by Bani Hashemi Tehrani et al (7). The reliability of the questionnaire was confirmed through Cronbach's alpha test, with a 95% confidence coefficient, 79% for the numeracy section, and 88% for the reading comprehension section. The TOFHLA consists of two sections: computation and reading comprehension. The reading comprehension section evaluates individuals' ability to read

health-related materials and includes 50 questions. The computational section includes explanations about prescribed medications, appointment schedules, steps for obtaining financial assistance, and an example of a medical test result.

Health literacy scores range from 1 to 100 and are classified into three categories using cutoff points: adequate health literacy (above 74), marginal health literacy (59% to 74%), and inadequate health literacy (below 59%). The third questionnaire used was the Bradberry-Greaves' Emotional Intelligence Test, which consists of 28 questions. This questionnaire is divided into four scales: self-awareness, self-management, social awareness, and relationship management, each containing 7 questions. All questions are scored on a 6-point Likert scale. The total score is calculated by summing the scores for each question. The maximum possible score is 140 and the minimum score is 0. In Iran, Ghanji et al. assessed the validity of this questionnaire using two methods: convergent validity and factor analysis. They confirmed the validity by using it at the same time as the Bar-On Emotional Intelligence Questionnaire. They also measured the reliability of this questionnaire using Cronbach's alpha and reported a reliability coefficient of 0.83 for it(8). The collected data was analyzed using SPSS software. Descriptive statistics, including relative and absolute frequency distribution, were used to describe the data. Additionally, the Chi-square test and Spearman correlation were used to examine the relationship between variables.

## Results

Demographic findings indicated that most participants were women, married, had sub-diploma education and were over 60 years old with a history of COVID-19 in the family.

**Table 1. Relationship between Demographic Characteristics and Health Literacy Levels in Patients with COVID-19**

| Demographic | | Health Literacy | | | | | | Chi Square | P-value |
|---|---|---|---|---|---|---|---|---|---|
| | | weak | | average | | agreeable | | | |
| | | number | percent | number | percent | number | percent | | |
| Gender | women | 25 | 10 | 122 | 48 | 0 | 0 | 66.39 | 0.00 |
| | man | 0 | 0 | 70 | 28 | 33 | 13 | | |
| Marital Status | single | 0 | 0 | 36 | 14 | 11 | 4 | 10.36 | 0.00 |
| | married | 25 | 10 | 156 | 62 | 22 | 8 | | |
| Education | Sub - diploma | 25 | 10 | 92 | 36 | 21 | 8.4 | 29.72 | 0.00 |
| | diploma | 1 | 0.4 | 58 | 23 | 11 | 4 | | |
| | university | 1 | 0.4 | 40 | 16 | 1 | 0.4 | | |
| Age | 20-40 | 7 | 2.8 | 24 | 9.6 | 3 | 1.2 | 6.75 | 0.14 |
| | 40-60 | 7 | 2.8 | 70 | 28 | 16 | 6.4 | | |
| | More than 60 | 11 | 4.4 | 98 | 39.2 | 14 | 5.6 | | |
| History of COVID-19 in the family | Yes | 17 | 6.8 | 108 | 43.2 | 16 | 6.4 | 2.21 | 0.33 |
| | No | 8 | 3.2 | 84 | 33.6 | 17 | 8.6 | | |

**Table 2. Relationship between Emotional Intelligence and Health Literacy in Patients with COVID-19**

| variable | Reading | | Access to information | | Understanding | | Evaluation | | Decision-making and behavior | |
|---|---|---|---|---|---|---|---|---|---|---|
| | p-value | r | p-value | r | p-value | r | p-value | r | p-value | r |
| Self- awareness | 0.00 | 0.43 | 0.00 | 0.72 | 0.00 | 0.54 | 0.00 | 0.28 | 0.00 | 0.18 |
| Self - management | 0.00 | 0.45 | 0.00 | 0.70 | 0.00 | 0.54 | 0.00 | 0.2 | 0.04 | 0.18 |
| Social - awareness | 0.00 | 0.42 | 0.00 | 0.64 | 0.00 | 0.51 | 0.00 | 0.18 | 0.02 | 0.18 |
| Relationship- management | 0.00 | 0.41 | 0.00 | 0.72 | 0.00 | 0.52 | 0.02 | 0.14 | 0.01 | 0.15 |

Table 1 shows a significant relationship between gender, marital status, education, and health literacy (p-value < 0.05). However, there was no significant relationship found between income, age, family history of COVID-19 and health literacy (p-value > 0.05). Among these variables, the lack of a significant relationship was most noticeable in family history of the disease, while income had the lowest correlation. Table 2 shows a significant correlation between health literacy and emotional intelligence. The strongest correlations were found between information access and self-awareness as well as relationship management.

## Discussion

The COVID-19 crisis poses a widespread health threat across diverse population groups. A major response to such threats is concern, which is a component of anxiety and can significantly influence the representation of symptoms, perception of risk, and other health-related outcomes (9). According to the obtained results, health literacy is directly related to gender, education, and marital status, with higher health literacy observed in educated individuals, males, and married individuals. In addition to demographic characteristics, greater self-awareness has played a role in individuals' health literacy, with self-awareness being the most effective factor in controlling emotional intelligence. A study by Sotorubio titled “Impact of Emotional and Psychosocial Intelligence on Burnout, Job Satisfaction, and Health of Nurses during the COVID-19 Pandemic was conducted cross-sectionally among 125 nurses. The results demonstrated a close relationship between emotional intelligence and reduced burnout, job satisfaction, and nurse health. It is recommended to pay attention to the emotional intelligence and psychosocial factors of nurses (10). Another study by Alonazi, entitled "The Impact of Emotional Intelligence on Job Performance during the COVID-19 Crisis: A Cross-Sectional Analysis," was conducted among 350 nurses working with patients suffering from COVID-19. Significant effects of emotional intelligence on job performance were observed among the nurses (11). Both studies emphasized the importance of emotional intelligence in employee performance. Zisberg conducted a study entitled "Emotional Intelligence and Social Support during the COVID-19 Crisis," based on which emotional intelligence and social support are crucial tools for managing the COVID-19 crisis (9). A study by Miller et al. titled "Health Literacy and Adherence to Medical Treatment in Chronic and Acute Diseases” indicated the importance of

health literacy and the effectiveness of health literacy interventions, particularly in vulnerable patient groups (12). Okan conducted a study titled "Health Literacy Related to COVID-19" among individuals aged 16 and above in Germany, revealing that more than half of the participants had low health literacy regarding COVID-19. Given the importance of health literacy, it is recommended that future national health programs focus more on this field (13). A study by Sentel entitled “Research on Health Literacy in the World during the COVID-19 Pandemic” demonstrated the great importance of health literacy at all times, particularly during a pandemic. The findings represented that health literacy is essential for global health. The conducted studies addressed the importance of health literacy, especially in critical situations (14). The results of studies show that health literacy plays an important role in achieving the best performance in critical conditions. A study by Saldar et al. titled “Structural Equation Modeling of the Relationship between Media Literacy and Emotional Intelligence with Health Literacy” was conducted among 327 postgraduate students and showed a significant relationship between emotional intelligence and the health literacy of students (15). According to the results of these studies, the importance of health literacy and emotional intelligence in this global COVID-19 crisis can be understood, and more attention can be paid in other studies to effective methods for improving health literacy and emotional intelligence of patients.

## Limitations

1- Data collection through questionnaires may face challenges with participant cooperation. To address this, obtaining informed consent, ensuring data confidentiality, and minimizing the number of questions in the questionnaire are recommended. 2- Lack of cooperation from hospital staff may be mitigated through meticulous planning and coordination 3- Sample dropout rates can be addressed by increasing the sample size to for potential dropouts.

## Conclusion

The present study demonstrates a relationship between the literacy of COVID-19 patients and emotional intelligence. Given the significance of health literacy in enhancing emotional intelligence, it is recommended to develop strategies to improve both health literacy and emotional intelligence. Future research should explore additional factors influencing emotional intelligence and make comparisons.

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