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Predicting life expectancy based on emotional intelligence: Mediating role of self-efficacy in Covid-19 patients

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The aim of this study was to predict life expectancy based on emotional intelligence mediated by self-efficacy in Covid-19 patients. The present study is applied in terms of purpose and correlational in terms of method. The study population consisted of all patients with Covid-19 in Lamerd city in July and August 2021, from which 60 people were selected as a sample. The instruments of this study included Emotional Quotient Questionnaire, Sherer General Self-Efficacy Scale, and Miller Hope Questionnaire. The method of analysis of this research is path analysis by which the causal relationships of research variables were investigated. The research findings showed that emotional intelligence predicts life expectancy among patients with covid-19 through the self-efficacy. Based on it, by using their emotional intelligence and increasing self-efficacy, people affected by Coronavirus can increase their life expectancy and avoid the psychological risks of this disease.

Keywords
Covid-19 disease, life expectancy, emotional intelligence, self-efficacy

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Introduction

COVID-19 has become the biggest global issue in the present era. Until now, humanity's understanding of pandemics was limited to historical stories. Plagues, epidemics, etc. were only considered as a chapter in biology or history books, and the comprehensive mindset of the global community about pandemics was limited to that. However, the widespread prevalence and mortality rate of COVID-19 has made the World Health Organization declare a state of health emergency and take actions to control and manage the virus. Health officials and decision-makers have implemented measures such as quarantine and isolation of individuals, closure of recreational centers, businesses, schools, and universities, providing health protocols, setting up hospitals, physical and social distancing, traffic restrictions, media reporting, mandatory use of masks and disinfectants on a widespread scale (Lai et al., 2020).

In the meantime, examining the psychological damages caused by the COVID-19 pandemic has become doubly important. The extent of this importance has gone so far that even infectious and respiratory disease specialists and physicians consider negative psychological factors as an exacerbating factor for the symptoms of this inescapable disease. The current unfavorable situation has created a deep and urgent social responsibility for the psychological community, which is to solve the psychological damages in the human community. Greeley et al. (2020) consider life in such conditions as a severe threat to the physical and mental health of individuals.

The level of hope for life is one of the fundamental indicators of human life that has positive psychological consequences in any situation. In the current situation, where the medical community has not yet found a unified and definitive solution for the treatment of COVID-19, examining the hope for life indicator to achieve the mental health of the patients is essential. According to ISNA news agency (2021), the Centers for Disease Control and Prevention in the United States have announced that the rate of hope for life in the country has decreased by about 1.5 in 2020 and has reached 3.77. According to the center, the decrease in the rate of hope for life among the people of the United States is mostly due to the COVID-19 pandemic and has reached its lowest level since 2003. According to ISNA news agency (2021), more than 3.3 million people died in the United States last year, which is the highest mortality rate in the country in one year, and about 11% of the deaths were due to COVID-19.

Snyder (2001), the founder of the theory of hope and its therapeutic application, defines hope as a structure consisting of two concepts: pathways (the ability to plan different routes to reach a goal)

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and agency (goal-directed decision-making). In other words, hope means the ability to design pathways towards desirable goals, despite obstacles, and an agent or motivator to use these pathways. Hope is one of the fundamental aspects of human life that leads us to seek a better tomorrow. Hope means success, a better future, and a reason to live. When hope exists in the heart and mind, happiness and joy will be present in life. Therefore, finding psychological predictors of hope in life is essential. Researchers have identified self-efficacy as a predictor of hope in life. For example, Kark et al. (2015) stated that self-efficacy seems to be closely related to hope in life. Also, Adolf and Berger (2015) stated that self-efficacy is one of the most influential factors in the psychological and social growth of individuals. In fact, hope for life provides a situation in which each individual can think more about hope for life and has special importance in life successes and individual adaptation. Psychologists pay special attention to the individual's adaptation to the environment and recognize certain personality traits that lead to the individual's adaptation, meaning living in peace and harmony with others and achieving a place in society for themselves. The concept of self-efficacy was first introduced byAlbert Bandura (1986). Bandura believed that individuals develop specific beliefs about their ability to cope with specific circumstances based on their experiences. The core of Bandura's cognitive-social theory is based on the principle that an individual's expectations of their abilities are influenced by their self-efficacy beliefs regarding work, benefits, goals, and actions (McLenna et al., 2017).

Some theoretical sources have confirmed the relationship between emotional intelligence, self-efficacy, and the hope indicator. For example, Mayer and his colleagues (2000) stated that emotional intelligence refers to the ability to identify and recognize the meanings and concepts of emotions, the relationships between them, arguing, and problem-solving. In this regard, Salovey and his colleagues (2009) believe that individuals with high emotional intelligence are more effective in coping with stressful situations because they perceive and evaluate their emotions more accurately, know when and how to express their emotions, and can effectively regulate their mood. Emotional intelligence includes self-awareness and regulation of one's emotions. In other words, individuals with high emotional intelligence successfully integrate the three components of emotions (cognitive, physiological, and behavioral components). Goldman believes that high emotional intelligence explains why individuals with an average IQ are often more successful than those with very high IQ scores (Kivanloo et al., 2010).

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Numerous studies have been conducted on the three variables discussed in this study both domestically and internationally. Yazdani Cherati et al. (2014) determined and tracked changes in life expectancy of people in Sari and found that men had the highest life expectancy in 2007 at 76.52 years, while women had the highest life expectancy in 2005 at 79.68 years. Amin Al-Shariah et al. (2017) found a positive and significant correlation between self-efficacy and hope in cancer patients. Self-efficacy was able to predict 45% of the variance in hope for life, and self-efficacy had the greatest role in predicting hope for life among other variables in their study. Rostami et al. (2010) stated that among the components of emotional intelligence, emotional perception played a more important role in explaining the variance in self-efficacy. Heydari Bigi et al. (2019) confirmed that emotional intelligence positively affects the hope for life of female vocational school students. Naderi and Akbari (2017) found that emotional intelligence creates hope and motivation in individuals who have experienced failure. Assadollahi and Rafiei (2021) conducted a systematic review of the psychological effects of the COVID-19 pandemic on the general population and healthcare providers and found that it has caused anxiety, insecurity, and reduced happiness more than depression. Deary et al. (2000) showed that individual differences in emotional intelligence are hidden in the speed of processing emotional information, and studies have shown that individual differences in emotional information processing predict success in life (cited in Goldman, 1996). Zheng et al. (2019) found that parental bonding is related to depression in college students, and that self-esteem and emotional intelligence mediate this relationship.

A lot of research has been done on the three variables discussed in this study, and many of them have looked at emotional intelligence and self-efficacy in predicting hope for life. What sets this study apart from previous research is its focus on the moderating role of COVID-19. Therefore, in this study, the researcher, with a realistic and analytical view, examined the prediction of hope for life based on emotional intelligence with the mediating role of self-efficacy in COVID-19 patients.

Materials and Methods

The present study is applied research in terms of its objectives and a correlation study in terms of its methodology. The analysis method used in this study is path analysis, which was used to examine the relationships among the research variables. The independent variable in this study was emotional intelligence, the mediating variable was self-efficacy, and the dependent variable was hope for life. The data were analyzed using SPSS version 24 and AMOS version 24 software.

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The population of this study consisted of all COVID-19 patients in Lamerd city in July and August 2021, and 60 patients were selected as the sample based on availability and the patients' conditions. The researcher, in collaboration with the Lamerd health network, selected the research sample from among the patients who had referred to Vali Asr Hospital in Lamerd, and then collected the data with their informed consent. The participants were assured that their responses would remain confidential and they could withdraw from the study at any time. The following tools were used to collect the data:

Goldman Emotional Intelligence Scale (GEI): This scale consists of 33 items and is scored on a 5-point Likert scale. The five dimensions of the scale are self-awareness (items 6, 10, 12, 14, 24, 27, 32, 33), self-regulation (2, 5, 11, 16, 18, 23, 30), motivation(1, 9, 15, 20, 21, 26, 31), empathy (3, 4, 17, 22, 25, 29), and social skills (7, 8, 13, 19, 28). Mansouri (2001) reported the internal consistency of this scale using Cronbach's alpha as 0.85 and its validity as acceptable. The content validity of this questionnaire was confirmed in the present study by experts' opinions for COVID-19 patients, and its reliability was obtained using Cronbach's alpha method as 0.83. Each participant in this scale can score between 33 and 165.

General Self-Efficacy Scale (GSE-17): This scale, created by Sherer and colleagues (1982), consists of 17 items and is scored on a 5-point Likert scale. Each item is scored from 1 to 5, with items 1, 3, 8, 9, 13, and 15 being positively scored, and items 2, 4, 5, 6, 7, 10, 11, and 12 being reverse-scored. The total score is obtained by summing up the scores of all items. Individuals with scores above or below the mean deviation are considered to have high or low self-efficacy, respectively (Sherer et al., 1982; as cited in Heydari et al., 2017). In a study by Borjali (1997) with a sample of 100 participants, the validity and reliability of this questionnaire were reported to be satisfactory. The obtained correlations between self-esteem, self-appraisal, and self-efficacy confirmed the validity of this scale. The reliability was also obtained through Spearman-Brown and Guttman split-half methods, with coefficients of 0.76 and 0.79, respectively. In the present study, the content validity of the questionnaire was confirmed by experts' opinions for COVID-19 patients, and its reliability was obtained using Cronbach's alpha method as 0.76. Each participant can score between 17 and 85 on this scale.

Miller Hope Scale (MHS): This scale was developed by Miller and Powers in 1988 to measure individuals' level of hope. The original scale consisted of 40 items, which were increased to 48 items in subsequent versions. This questionnaire is scored on a Likert scale ranging from strongly

disagree (score of 1) to strongly agree (score of 5). Miller reported the validity of this scale to be satisfactory and its reliability to be 0.80 using Cronbach's alpha. Abolghasemi (2010) used two methods, Cronbach's alpha and test-retest reliability, to determine the reliability of this scale, which were 0.90 and 0.89, respectively. He also reported the validity of the scale to be 0.61. In the present study, the content validity of the questionnaire was confirmed by experts' opinions for COVID-19 patients, and its reliability was obtained using Cronbach's alpha method as 0.73. Each participant can score between 48 and 240 on this scale.

Results

In this section, descriptive indices of research variables, including mean, standard deviation, minimum and maximum scores, kurtosis, and skewness, are reported in Table 1. As shown in Table 1, the kurtosis and skewness values are less than 5.0 for all three variables, indicating that the data are normally distributed. Assuming the normality of the data, the Pearson correlation coefficient test was conducted, and the zero-order correlation matrix is reported in Table 2. As can be seen in Table 2, positive and significant relationships were observed among all three research variables. Among the reported relationships, a very strong relationship was found between emotional intelligence and hope for life.

Table 1. Descriptive results of study variables

Variable	Min.	Max.	Mean	SD	Skewness	Kurtosis
Emotional intelligence	48	142	95.10	23.62	.19	-.47
Self-efficacy	23	74	48.05	13.32	.48	-.50
Hope for life	56	213	136.55	35.81	.22	-.20

Table 2. Correlation matrix of research variables

Variable	1	2	3
1. Emotional intelligence	-		
2. Self-efficacy	.69**	-	
3. Hope for life	.93**	.68**	-

** p < .01

For hypothesis testing, path analysis was used, and standardized and unstandardized regression weights were reported to show the significance of direct and indirect paths. Table 3 shows the estimated coefficients of direct and indirect paths among the research variables. Based on the results in Table 3, all direct and indirect paths are statistically significant. Emotional intelligence

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predicts hope for life (p = 0.05) and self-efficacy (p = 0.001) directly and significantly. Self-efficacy predicts hope for life (p = 0.05) significantly. Emotional intelligence also predicts hope for life indirectly and significantly through the mediator of self-efficacy. The significance of regression weights alone is not sufficient to confirm the research hypothesis. Therefore, the significance of the research model should be examined. Table 4 presents the indices of model fit.

Table 3. Estimated coefficients of direct and indirect paths among the research variables

Variables	B	β	S.E.	T (C.R)	p
Emotional Intelligence to Hope for Life	1.24	.16	1.49	.84	.05
Emotional Intelligence to Self-efficacy	.41	.77	.045	9.22	.001
Self-efficacy to Hope for Life	1.07	.077	2.74	.39	.05
Emotional Intelligence (indirect) to Hope for Life	.44	.06			.05

Table 4. Fit indexes of research model

Fit inexes	Type	Value	Accepted value
X^2/df	Absulot	4.10	< 5
P	Absulot	.001	P < .05
GFI	Relative	.95	> .90
AGFI	Relative	.93	> .90
NFI	Relative	.98	> .90
RFI	Relative	.81	> .90
IFI	Relative	.91	> .90
TLI	Relative	.96	> .90
CFI	Relative	.97	> .90
RMSEA	Relative	.03	< .06

Based on Table 4, the goodness-of-fit indices indicate that the model fits well with the data. The ratio of chi-squared to degrees of freedom is 103.4, indicating a significant level of 0.001. The goodness-of-fit index is 0.951, the adjusted goodness-of-fit index is 0.933, the comparative fit index is 0.986, and the normed fit index is 0.816, all of which are within an acceptable range. The incremental fit index is 0.910 and the Tucker-Lewis index is 0.966, both of which indicate a good fit. The parsimony comparative fit index is 0.977, and the root mean square error of approximation is 0.033, both of which are within the desired range. Therefore, based on these results, it can be concluded that the model fits well with the data, and the research hypothesis is confirmed.

Discussion

The results of the study indicated that emotional intelligence predicts hope for life among COVID-19 patients through self-efficacy. Individuals with high emotional intelligence can increase their

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hope for life by enhancing their self-efficacy. Lack of hope for life is a major issue among COVID-19 patients, influenced by the impact of news, social media, and external factors. In this study, emotional intelligence was not an absolute or unchangeable variable, but rather a measure of how effectively individuals use their emotional intelligence. In other words, those who use their emotional intelligence more effectively have higher self-efficacy and ultimately higher hope for life. The sub-findings of the study regarding the relationships between variables were also significant. Emotional intelligence significantly predicts both self-efficacy and hope for life, while self-efficacy significantly predicts hope for life. The strongest predictor was found to be between emotional intelligence and self-efficacy. This suggests that emotional intelligence strongly explains the variance in self-efficacy.

In conclusion, the findings of this study suggest that emotional intelligence plays an important role in predicting hope for life among COVID-19 patients through self-efficacy. The study highlights the potential benefits of enhancing emotional intelligence to improve self-efficacy and increase hope for life in COVID-19 patients.

The findings of the present study are consistent with the findings of several other studies, including Shahed Hakim and colleagues (2020), Chobdari and colleagues (2020), Xiao and colleagues (2020), Yekta and colleagues (2021), Hossein and colleagues (2020), Arpasi and colleagues (2020), Asgari and colleagues (2021), Rostami and colleagues (2010), Heydari-Beigie and colleagues (2019), Naderi and Akbar (2017), and Asadollahi and Rafezi (2021). Some of these studies have focused on predicting hope for life based on one of the variables, without examining the relationship between emotional intelligence, self-efficacy, and hope for life among COVID-19 patients. In addition, some studies were conducted before 2020 and did not specifically focus on COVID-19 patients.

In the present study, it can be argued that the daily statistics of death and morbidity caused by COVID-19 have created a collective phobia among humans, and since no definitive cure for this disease has been found, it has led society towards depression. Depression has a direct negative effect on the level of hope for life. Therefore, it is natural that COVID-19 illness reduces the level of hope for life in humans. However, variables such as emotional intelligence and self-efficacy have helped humans maintain a certain level of hope for life by creating psychological coherence. The COVID-19 pandemic has led to a significant increase in mortality worldwide. The pressure on healthcare systems in many countries has potentially increased the spread of the disease and

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resulted in more deaths, beyond the direct impact of COVID-19 infection. This increase in mortality, both directly and indirectly, can lead to a recession or a decrease in hope for life (Tracey, 2020). Yekta and colleagues (2021) have evaluated the positive impact of providing desirable counseling to families on improving this crisis. They also stated that monitoring the level of hope for life in Iran and around the world provides valuable evidence of the overall impact of the pandemic on mortality.

The researcher of the present study faced limitations in accessing COVID-19 patients and going through existing administrative processes. Conducting such research on COVID-19 patients may also create additional fears for them, which is the most serious limitation of this study. It is suggested that future research focus on the recovery of COVID-19 patients and compare the results with the present study. Moreover, using intervention methods, hope for life training programs could be offered to COVID-19 patients to increase their level of hope for life.

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Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

A.S and A.S contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee University of Hormozgan.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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