

# Impact of spirituality on elderly people's quality of life and life satisfaction after acute myocardial infarction: Iranian hospital-based study

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## Background

As people age, survival after a heart attack can affect their quality of life and lead to a decrease in life satisfaction. After a myocardial infarction, elderly patients may experience physical, psychological, emotional and social changes that affect their thoughts and behaviour in relation to spirituality.

## Aims

To investigate the relationship between spiritual well-being and other sociodemographic and medical history-related factors on quality of life and life satisfaction among elderly people after myocardial infarction.

## Method

In a census-based cross-sectional study conducted at the Imam Reza Hospital in Amol, Iran, from May 2020 to May 2021, data on sociodemographics, medical history, subjective well-being, life satisfaction and quality of life were collected from 502 participants who were referred at the heart clinic.

## Results

The findings showed that spiritual well-being dimensions (religious well-being, [self-assessment of one's relationship with God], and existential well-being, [self-assessment of one's sense of purpose in life and life satisfaction]) were not significantly associated with life satisfaction, but a high perception of both dimensions of spiritual well-being were associated with higher self-reported quality of life. A history of past-year hospital

admission and cardiopulmonary resuscitation were significant predictors of life satisfaction, and educational level was a predictor of quality of life.

## Conclusions

The study found no significant association between spiritual well-being and life satisfaction among elderly people following myocardial infarction. This finding might have been influenced by the physical and emotional challenges experienced by the participants during the COVID-19 pandemic. Further studies are needed to confirm this relationship.

## Keywords

Quality of life; life satisfaction; spirituality; myocardial infarction; heart diseases.

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According to the United Nations Population Division, the global population is ageing, with a predicted increase from 800 million people over the age of 60 in 2011 to over 2 billion in 2050.<sup>1</sup> Iran is also experiencing an ageing population owing to factors such as a decline in birth rates, medical advancements and increased life expectancy.<sup>1,2</sup> As of 2016, there were over 6 million elderly individuals in Iran (approximately 49% men and 51% women).<sup>2</sup> With this trend towards ageing, non-communicable diseases, particularly cardiovascular diseases (CVDs), are expected to increase. CVDs are the most common chronic diseases among the elderly population, with an estimated two-fold increase in disability-adjusted life-years caused by CVDs in Iranian adults aged  $\geq 30$  years by 2025.<sup>3</sup> Among CVDs, acute myocardial infarction is particularly dangerous owing to its high mortality rate, with the elderly at increased risk.<sup>4</sup>

Owing to the heart's importance and sensitivity, any damage to it can have a negative impact on a person's health. Acute myocardial infarction is accompanied by severe physical problems, such as cardiogenic shock, heart rupture, ventricular aneurysm, fatal arrhythmia, ischaemia, stroke and other complications.<sup>5,6</sup> These symptoms and complications significantly affect a person's function and quality of life (QoL), causing people who have suffered myocardial infarction to have lower QoL and subjective well-being than healthy individuals.<sup>7</sup> Myocardial infarction not only affects the physical aspects of health but also disrupts social communication,

life patterns and social activities. Consequently, patients are at risk of poor QoL and reduced adaptability, and the condition negatively affects their return to work.<sup>8,9</sup> To determine optimal care and identify appropriate interventions, studies on QoL are crucial because people who have had an acute myocardial infarction have lower QoL than the general population and may experience concerns about social roles, interpersonal relationships and health-related issues after hospital discharge.<sup>10</sup>

The concept of QoL encompasses various dimensions of mental health, including cognitive function and psychological well-being. Recent research has shown that perceived life satisfaction and achievement of goals is a critical aspect of positive spiritual enhancement, enhancing an individual's well-being and QoL.<sup>11</sup> The relationship between different religions and their impact on life satisfaction has been investigated among participants from 57 countries,<sup>12</sup> emphasising the need for further research in this area, particularly for religions such as Islam. Spiritual awareness can be heightened in life-threatening situations, with spirituality inspiring individuals to find meaning, purpose and fulfilment in their lives, even in the face of suffering and death.<sup>13,14</sup> It is essential to note that spirituality is a factor that typically increases with age, with elderly individuals tending to have more mature spiritual experiences.<sup>15</sup> Since life satisfaction is an individual's worldview, it is particularly crucial for older adults and requires careful interventions; for instance, in a religious-spiritual interventional programme

designed in accordance with Islam and Shia regulations, higher life satisfaction and lower depression were reported.<sup>16</sup> Therefore, examining life satisfaction among the elderly and their need for health education and lifestyle changes is critical.

The role of spirituality in providing meaning and hope during times of stress, such as severe health conditions, has been highlighted by the biopsychosocial–spiritual model.<sup>14</sup> This can lead to inner satisfaction and confidence. Studies have also demonstrated the crucial role of spiritual health in promoting life satisfaction and shown that individuals living a faithful life may experience greater optimism and satisfaction with life owing to their spiritual well-being.<sup>15–17</sup> Moreover, religious individuals may experience less stress during difficult times, such as illness, owing to their belief in a higher power, social and spiritual support, and sense of belonging to a larger community.<sup>18,19</sup> This leads to a higher spiritual state positively correlating with higher life satisfaction and lower anxiety about death.<sup>15</sup> Thus, spirituality can provide a positive perspective on the world and help individuals cope with adverse life events, while also giving meaning and purpose to life, which is essential for mental health and the ability to accomplish tasks.<sup>13,14</sup>

A comprehensive meta-analysis involving 15 studies indicated a significant association between spirituality and QoL.<sup>20</sup> Specifically, individuals with higher levels of spiritual well-being, intrinsic religiousness and frequency of church attendance were found to have better mental and emotional well-being. These findings suggest that spirituality plays a crucial role in enhancing one's overall QoL, particularly with respect to mental and emotional well-being, as reported among Iranian patients with heart disease.<sup>21</sup> Patients with heart disease who considered religion/spirituality to be important in their lives and were religious/spiritual had better QoL, life satisfaction and health behaviours, but among patients in more secular countries, spirituality had a negative association with physical and mental health.<sup>22</sup> Similarly, a positive correlation between spiritual well-being, perceived social support and life satisfaction was found in other studies.<sup>23</sup> Findings from studies conducted in Iran and elsewhere among people with heart disease found a generally better QoL among individuals who were younger, had a higher income, possessed higher levels of education, suffered from fewer comorbidities, took longer to return to work, had better health behaviours, took more exercise, had better nutrition, had better self-realisation, were of lower socioeconomic status, received more social support, were capable of better utilisation of social support, had positive coping strategies and had greater spiritual well-being.<sup>9,24</sup> These findings suggest that various personal and social factors can affect an individual's QoL and life satisfaction, and that spiritual well-being may be one such factor.

In summary, spiritual health is associated with self-rated health status, complaints related to health and life satisfaction. Understanding the relationship between spiritual well-being and QoL and life satisfaction is critical for managing the psychological health of people following myocardial infarction. However, research on elderly people who have had a myocardial infarction is limited. Therefore, this study investigated the associations of spiritual well-being and other sociodemographic and medical history-related factors on QoL and life satisfaction in a population of older adults.

## Method

### Study population and site

This cross-sectional study was conducted between May 2020 and December 2021 among elderly patients with acute myocardial infarction who were referred to the heart clinic at the Imam Reza Hospital in Amol City, Iran. The clinic was used as the research

setting. More than 90% of people who survive acute myocardial infarction from all over the city come to the clinic for services. The sampling method in the study was a census, and the research team carried out face-to-face data collection. All patients aged 60 years and older who had recovered from the acute stage of the disease, had a file in the clinic, met the inclusion criteria and agreed to participate were included in the study based on census sampling.

### Inclusion and exclusion criteria

All patients aged 60 years and older who had suffered acute myocardial infarction and were present in the clinic during data collection were eligible to participate. Individuals were free to decline participation. Acute myocardial infarction was determined on the basis of electrocardiogram (ECG) results, the presence of cardiac enzymes and other universally accepted medical diagnostic techniques carried out by qualified physicians. Participants were required to have no previous psychiatric disorder, to have stable vital signs, to be Farsi speakers and to be taking no medicines for mental disorder.

### Data collection procedure

The study questionnaire was administered orally by members of the research team. Patients who had consented to participate were taken individually to a quiet room where the researcher explained the purpose of the research. The researcher then read aloud each question and marked the participant's answer in the appropriate column. The questionnaire took 20–25 min to complete.

### Research instruments

This questionnaire comprised four sections: (a) questions on socio-demographic and medical factors; (b) the Spiritual Well-Being Scale; (c) the Life Satisfaction Scale; and (d) the Myocardial Infarction Dimensional Assessment Scale.

#### Sociodemographic and medical factors

The first section of the form asked questions about the participants, such as age, gender, income, educational level, marital status, residence, family history of CVD, history of hospital admissions during the past year and experience of cardiopulmonary resuscitation (CPR) in the past year.

#### Spiritual Well-Being Scale

The Spiritual Well-Being Scale was utilised to evaluate spirituality; it measures both individual and congregational spiritual well-being as an indicator of perceived well-being.<sup>25</sup> It includes two subscales, religious well-being (self-assessment of one's relationship with God) and existential well-being (self-assessment of one's sense of purpose in life and life satisfaction). Each subscale consists of ten items and uses a six-point Likert-type scale (1, completely disagree; 6, completely agree). Negative questions were reverse-scored (i.e. items 1, 2, 5, 6, 9, 12, 13, 16 and 18); the range of scores for each subscale was 10–60, with a higher score indicating better religious and existential health. The instrument has been psychometrically evaluated in Iran and studies have established its reliability and validity, with a Cronbach's alpha of 0.85 in this study, similar to a previous study.<sup>26</sup>

#### Life Satisfaction Scale

The study utilised the Persian version of the Salamon–Conte Life Satisfaction in the Elderly Scale (the 'Life Satisfaction Scale'), originally developed for assessing the life satisfaction of older adults,

which comprises 40 items.<sup>27</sup> This scale collects information related to eight dimensions: daily activities, meaning, goals, mood, positive self-concept, health, finances and social contacts. The scale employs a five-point Likert scale and the total score ranges from 40 to 200, with a higher score indicating higher life satisfaction. Moghadam et al reported that all of the subscales exceeded the minimum intra-class correlation coefficient level of 0.60 and the minimum level of reliability indices, including Cronbach's alpha, composite reliability and indicator reliability, demonstrating the scale's reliability and validity in the Persian language.<sup>28</sup> In this study, Cronbach's alpha was calculated to be 0.73.

#### Myocardial Infarction Dimensional Assessment Scale

The Myocardial Infarction Dimensional Assessment Scale (MIDAS) was first designed and developed by Thompson et al.<sup>29</sup> This tool has seven dimensions: physical activity, insecurity, emotional reaction, dependency, diet, concerns about medication, and side-effects. The scale consists of 35 questions with a five-point Likert scoring scheme (0, never; 4, always) and the total score ranges from 0 to 140. A lower score indicates a better QoL. Rejeh et al evaluated the psychometrics of the MIDAS in the Iranian version.<sup>30</sup> The subscales had Cronbach's alpha values ranging from 0.88 to 0.98 and test-retest reliability intraclass correlation coefficients ranging from 0.81 to 0.97, indicating that the instrument was reliable in the Iranian version. In this study, Cronbach's alpha was 0.85.

#### Ethics approval and consent

Ethics approval for conducting this study was obtained from the Ethics Committee of the Mazandaran University of Medical Sciences, Mazandaran, Iran (ID number: IR.MAZUMS.REC.1399.7709). Given that the study participants were older adults and may have had limitations with reading and writing, oral consent was obtained.

#### Statistical analysis

Descriptive statistics were applied for reporting frequencies and percentages. Data analysis was performed with SPSS Statistics 25 for Windows. Descriptive statistics and inferential statistics using univariate and multivariate linear regressions were applied for data analysis. The normality of the data was checked using the Kolmogorov-Smirnov test. Life satisfaction and QoL variables were included as dependent variables. Spiritual health was included as the main independent variable, and the rest of the independent variables were included as confounders in the analyses. Significant confounder variables in the univariate stage were entered into a multivariate model. In other words, confounder variables with a *P*-value <0.05 are included in multivariate regression analysis to investigate the association between spiritual health dimensions and each dependent variable. Cronbach's alpha was also evaluated for the four administered scales.

## Results

All the participants answered all the questions; hence, the response rate was 100%.

#### Description of the participants

Table 1 shows each qualitative variable's relative number and frequency and the means and standard deviation for quantitative variables. Of the 502 study participants, 55.8% were male; the mean age was 63.12 years (s.d. = 7.81). Most of the participants had an undesirable income (93%) and were married and separated from

**Table 1** Descriptive statistics of independent and dependent variables (*n* = 502)

Variable	
<b>Independent variables</b>	
Gender, <i>n</i> (%)	
Female	222 (44.2)
Male	280 (55.8)
Income, <i>n</i> (%)	
Undesirable	467 (93)
Desirable	35 (7)
Marital status, <i>n</i> (%)	
Single	34 (6.8)
Married and separated from the child	318 (63.3)
Married and with the child	150 (29.9)
Education level, <i>n</i> (%)	
Illiterate	418 (83.3)
Primary	67 (13.3)
Intermediate	17 (3.4)
Residence, <i>n</i> (%)	
City	297 (59.2)
Village	163 (32.5)
Suburbs	42 (8.4)
Family history of CVD, <i>n</i> (%)	
No	239 (47.6)
Yes	263 (52.4)
Hospital admission in the past year, <i>n</i> (%)	
No	403 (80.3)
Yes	99 (19.7)
Experience of CPR in the past year, <i>n</i> (%)	
No	464 (92.4)
Yes	38 (7.6)
Age, years: mean (s.d.)	63.12 (7.81)
Spiritual well-being score, mean (s.d.)	
Spiritual well-being (total)	65.28 (9.47)
Relationship with God	29.74 (8.34)
Relationship with life	30.7 (6.48)
<b>Dependent variables</b>	
Quality of life score, mean (s.d.)	139.4 (8.78)
Life satisfaction score, mean (s.d.)	71.93 (9.64)

CVD, cardiovascular disease; CPR, cardiopulmonary resuscitation.

their children (63.3%). About 83.3% of the participants were illiterate. Over half had a family history of CVD (52.4%). Most participants did not report any hospital admissions in the past year (80.3%), and only 7.6% mentioned a previous experience of CPR, which was also recorded in the patients' records in the clinic (Table 1). The average spiritual well-being score was 65.28 (s.d. = 9.47) and the average scores for QoL and life satisfaction were 139.4 (s.d. = 8.78) and 71.93 (s.d. = 9.64) respectively.

#### Factors associated with life satisfaction

Table 2 shows the univariate linear regression analysis results for the relationship between independent variables and life satisfaction. Except for the variables of hospital admission in the past year and previous experience of CPR, the variables were not statistically significant. In other words, people with a hospital admission in the past year had an average life satisfaction score 8.49 lower than those without. Also, people with a history of CPR had an average life satisfaction score 20.19 less than those without. Table 3 shows the multivariate linear regression analysis results for the relationship between spiritual health variables (relationship with God and relationship with life) and life satisfaction variables by matching the effect of significant variables from univariate regression analysis (here, hospital admission and history of CPR). As in the univariate analysis, the relationship between spiritual health variables and life satisfaction was not significant in multivariate analysis. The explained variance of this model was 31%.

**Table 2** Univariate regression analysis for examining the association between independent variables and life satisfaction

Variable	$\beta$	s.e.	t-statistic	P	95% CI	
					Lower	Upper
Age	-0.04	0.05	-0.732	0.46	-0.14	0.067
Gender (reference: female)	-0.3	0.86	-0.349	0.72	-2	1.39
Income (reference: undesirable)	-0.81	1.68	-0.482	0.629	-4.12	2.94
Marital status (reference: married and separated from the child)						
Single	2.48	1.73	1.43	0.15	-0.91	5.8
Married and with the child	-0.85	0.95	-0.89	0.37	-2.71	1.01
Education (reference: illiterate)						
Primary	-1.32	1.26	-1.04	0.32	-3.8	1.15
Intermediate	2.33	2.37	0.97	0.33	-2.33	6.98
Residence (reference: city)						
Village	0.34	0.94	0.36	0.71	-1.49	2.18
Suburbs	1.08	1.59	0.68	0.49	-2.02	4.19
Family history of CVD (reference: no)	-1.13	0.85	-1.32	0.18	-2.82	0.54
Hospital admission in the past year (Reference: No)	-8.49	1.01	-8.37	<0.001	-10.47	-6.51
Experience of CPR in the past year (Reference: No)	-20.19	1.35	-14.89	<0.001	-22.84	-17.54
Quality of life	0.012	0.049	0.239	0.81	-0.08	0.1
Relationship with God	-0.03	0.05	-0.58	0.55	-0.13	0.07
Relationship with life	0.01	0.06	0.21	0.83	-0.11	0.14

CVD, cardiovascular disease; CPR, cardiopulmonary resuscitation.

### Factors associated with quality of life

Table 4 shows the univariate linear regression analysis results for the relationship between independent variables and QoL. The relationship between independent variables and QoL was significant ( $\beta = 0.25$ ,  $P < 0.001$  for the relationship with God, and  $\beta = 0.29$ ,  $P < 0.001$  for the relationship with life). The results of multivariate regression analysis in Table 5 showed that participants with a higher level of spiritual health regarding their relationship with God showed a higher level of QoL (standardised  $\beta = 0.17$ ,  $P < 0.001$ ). The explained variance of this model was 6%.

### Discussion

This study investigated the associations of spiritual well-being and other sociodemographic and medical history-related factors with QoL and life satisfaction. The study's results indicated that, although spiritual well-being dimensions, i.e. religious well-being (self-assessment of one's relationship with God) and existential well-being (self-assessment of one's sense of purpose in life and life satisfaction), were not significantly associated with life satisfaction, having a high perception of one's relationship with God was positively correlated with a higher QoL. Furthermore, factors such as previous hospital admissions and history of cardiopulmonary resuscitation emerged as significant predictors of life satisfaction, while educational level was identified as a predictor of QoL. These findings suggest that various personal and medical factors may play distinct roles in influencing different aspects of an individual's well-being.

**Table 3** Multivariate regression analysis for examining the association between independent variables and life satisfaction

Variable	$\beta$	s.e.	t-statistic	P	95% CI	
					Lower	Upper
Hospital admission in the past year (reference: no)	-1.42	1.08	-1.31	0.18	-3.55	0.69
Experience of CPR in the past year (reference: no)	-18.96	1.63	-11.57	0.00	-22.16	-15.77
Relationship with God	-0.02	0.06	0.19	0.66	-0.15	0.09
Relationship with life	0.05	0.08	0.37	0.54	-0.11	0.21

CPR, cardiopulmonary resuscitation.

### Comparison with the literature

Park et al's study on patients with heart failure revealed that all seven dimensions of religious and spiritual well-being were reported at fairly high levels, with daily spiritual experiences being linked to higher existential well-being and less subsequent spiritual strain.<sup>31</sup> However, no aspect of religion/spirituality was related to physical well-being, and only a few aspects were related to mental well-being. Forgiveness was associated with less subsequent depression, while belief in the afterlife was related to poorer mental health. These findings suggest that religion/spirituality may not significantly affect physical well-being in advanced disease but can influence other aspects of well-being, particularly existential aspects.<sup>31</sup> In contrast, Manning-Walsh's study among women with breast cancer found that higher spiritual conflict was associated with less life satisfaction,<sup>32</sup> and another study among adults with congenital heart disease suggested that higher levels of spiritual health may lead to improved self-rated health status, reduced health complaints and increased life satisfaction.<sup>22</sup> The role of religiosity and spiritual well-being in buffering psychological distress and feelings of hopelessness and improving coping mechanisms for stress associated with heart disease has also been explored. Although some studies have shown a significant association between spirituality and life satisfaction, others have reported contradictory findings, which may be due to differences in the phase of the disease. Despite the non-significant association found in our study, it is crucial to continue exploring the relationship between spiritual well-being and life satisfaction in future research. By identifying the factors that contribute to these constructs, researchers can develop effective interventions and programmes to enhance overall well-being and QoL.

Perceived life satisfaction and achievement of goals are critical aspects of positive spiritual enhancement, which enhances an individual's well-being and QoL.<sup>11,14</sup> Spirituality has been shown to provide meaning and hope during times of stress, such as severe health conditions, to help individuals cope with adverse life events and to lead to inner satisfaction and confidence, resulting in higher QoL.<sup>14,18,19</sup> In a study on Iranian patients with cancer, a negative correlation was found between negative emotions and subjective well-being, mental health and QoL, whereas a positive and significant correlation was found between spiritual well-being, mental health and QoL.<sup>33</sup> Similarly, a survey of Iranian heart transplantation candidates found a significant relationship between



**Table 4** Univariate regression analysis for examining the association between independent variables and quality of life

Variable	$\beta$	s.e.	t-statistic	P	95% CI	
					Lower	Upper
Age	-0.008	0.05	-0.16	0.86	-0.1	0.09
Gender (reference: female)	0.11	0.78	0.15	0.88	-1.42	1.66
Income (reference: undesirable)	-0.4	1.53	-0.26	0.79	-2.62	3.43
Marital status (reference: married and separated from the child)						
Single	-0.24	1.58	-0.15	0.87	-3.34	2.85
Married and with the child	0.89	0.86	1.02	0.3	-0.8	2.59
Education (reference: illiterate)						
Primary	1.02	1.15	0.88	0.37	-5.86	2.63
Intermediate	-1.61	2.16	-0.74	0.45	-1.23	3.28
Residence (reference: city)						
Village	0.86	0.85	1.01	0.31	-0.8	2.54
Suburbs	-0.18	1.44	-0.12	0.89	-3.01	2.64
Family history of CVD (reference: no)	-0.37	0.78	-0.47	0.63	-1.9	1.16
Hospital admission in the past year (reference: no)	0.01	0.98	0.01	0.99	-1.91	1.94
Experience of CPR in the past year (reference: no)	-0.52	1.48	-0.35	0.72	-3.42	2.37
Relationship with God	0.25	0.04	5.47	<0.001	0.16	0.34
Relationship with life	0.29	0.05	5.04	<0.001	0.18	0.41

spiritual well-being and QoL.<sup>34</sup> Although spiritual well-being was not significantly associated with the life satisfaction of the myocardial infarction patients in our study, we did find its positive relationship with QoL. More specifically, our findings showed that spiritual well-being in the areas of relationship with God and relationship with life positively affects various aspects of QoL. This could be because spirituality increases the ability to cope with illness and the speed of recovery.<sup>35</sup> Besides, spiritual support from the faith community has been shown to lead to greater benevolent images of God, which positively influence QoL. Gratitude for God has been linked to hope for the future, which has been associated with physical well-being.<sup>36,37</sup> A strong sense of purpose or meaning in life has been found to increase QoL.<sup>14</sup> Negative religious coping has been shown to be significantly related to low levels of QoL when demographic and clinical variables were adjusted for, whereas positive religious coping was significantly associated with positive affect and life satisfaction, but not with overall QoL.<sup>38</sup> The relationship between spiritual well-being and QoL may be positive or negative depending on the disease's nature, demographic variables and cultural differences. In our study, which focused on elderly patients with heart disease, it was demonstrated that increasing QoL can increase spiritual well-being.

The mean age of the participants in our study was 63.12 years (s.d. = 7.81) and the income level was unfavourable for 93%. The older age range and subsequent retirement and inability to work because of illness could explain the lower income levels. This might have led to the inadequate life satisfaction and poor QoL of our participants. Job satisfaction and self-achievements have been found to be important factors in the life satisfaction of younger patients after a heart attack, indicating the role of the spiritual dimension of life satisfaction.<sup>11</sup> However, most of our elderly participants had an unfavourable economic situation, which could be because the majority had lower educational levels. It appears that the better the economic situation of elderly people, the higher their life satisfaction, which may be due to the reduction of financial

burden.<sup>39,40</sup> Besides, elderly individuals responsible for their living expenses may have better mental well-being and life satisfaction than those dependent on others. Therefore, having a better economic situation may enable older people to manage their lives better, maintain their independence and ultimately feel more life satisfaction. In addition, another study of individuals following myocardial infarction found that younger age, better education, higher income, better health behaviours, more self-realisation, higher social support, positive coping strategies and more spiritual well-being were associated with better QoL.<sup>9</sup> However, the sociodemographic variables in our study were not associated with either life satisfaction or QoL, possibly owing to the different phases of the disease (acute or chronic) and other factors.

**Clinical implications**

It has been suggested that establishing a spiritual relationship with a higher power can provide patients with a sense of support and protection. Research has shown that individuals with high levels of spiritual well-being are better equipped to deal with problems related to illness, experiencing less anxiety and stress as a result.<sup>24</sup> Therefore, it is important to consider patients' spiritual needs when planning and providing care, as promoting spiritual well-being can contribute to overall psychological and physical health. In societies with rich cultural and religious beliefs, such as Iran, paying attention to spirituality can effectively promote multidimensional protection and improve QoL, particularly for patients with life-threatening physical disabilities. Developing plans and interventions addressing patients' spiritual and emotional dimensions may be necessary to promote spiritual well-being and overall well-being.




**Limitations**

This study had a cross-sectional design and could not establish causal relationships between the study variables. Therefore, longitudinal quantitative studies are recommended to investigate cause-and-effect relationships further. Additionally, our study participants were recruited solely from Amol city in Iran; most were illiterate and the cohort did not include patients from other regions in the country, which could limit the generalisability of the findings. Furthermore, all participants were Muslim and lived in an Islamic cultural context, which may restrict generalisability to people of other religions or cultures. Therefore, conducting similar studies in other countries with diverse cultural backgrounds is highly recommended. Last, the study did not include any COVID-19-

**Table 5** Multivariate regression analysis for examining the association between independent variables and quality of life

	$\beta$	s.e.	t-statistic	P	95% CI	
					Lower	Upper
Relationship with God	0.17	0.07	2.51	0.01	0.03	0.31
Relationship with life	0.13	0.09	1.43	0.15	-0.04	0.3

related variables, which could provide useful information related to the study's outcome variables.

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### Data availability

Data associated with this publication are available on reasonable request from the corresponding author, M.A.M.

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### Author contributions

Z.H.M., M.K. and A.M. planned the study with the assistance of M.A.M.; Z.H.M. and M.A.M. wrote the first draft, which was critically revised by M.A.M., and other authors took part in subsequent edits of the manuscript; Z.H.M., M.K. and A.M. analysed the data, and data interpretation was carried out by all authors; M.A.M. revised the manuscript and addressed the reviewer's comments with the assistance of Z.H.M. All authors agreed to publication and approved the final version to be published.

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