

# Analysis of the Relationships between Health-Related Quality of Life and the Factors of Social Capital, Social Isolation, Social Support, and Life Satisfaction: A Structural Equation Modeling

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## Abstract

**Background:** Changes in health conditions can be influenced by different social variables. These components can modify and improve people's overall health. This study aimed to explore the role of social capital, social isolation, social support, and life satisfaction in relation to university students' health-related quality of life.

**Methods:** In the present cross-sectional investigation, 250 students of the Faculty of Health at Mashhad University of Medical Sciences were randomly selected using simple random sampling. The data collection tools were a demographic questionnaire, social capital, social isolation, social support, and life satisfaction, and 36-item short-form health survey questionnaire. The data collected were analyzed using SPSS. Moreover, the Structural Equation Model was applied using Amos.

**Results:** Results showed several significant predictors which were displayed as values of standardized beta. Individuals' health-related quality of life was associated significantly with higher social capital, social support, and life satisfaction, and lower social isolation. As shown in the model, social capital was the strongest health-related quality of life predictor.

**Conclusion:** Considering these findings, it is crucial for public health policies to prioritize fostering social relationships between people, particularly among individuals who are at a higher social isolation. By addressing these issues, efforts can be made to reduce health inequalities and promote overall well-being, especially among university students.

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**Keywords:** Social capital, Social isolation, Social support, Life quality, Health

## Introduction

The health behaviors of students in Iran are worrying, as per the most recent report.<sup>1</sup> It should be taken into account that health is influenced by various environmental, economic, and social factors, apart from individual behaviors, biology, and genetics.<sup>2</sup>

The healthcare system accounts for 25% of an individual's health, while biological factors contribute to 15%. Behavioral, environmental, and physical factors play a 10% role, whereas social factors have the largest share of 50% in determining an individual's health, when considering the factors that impact health.<sup>3</sup>

Social capital is a well-known concept from sociology that has been applied to public health, indeed.<sup>4</sup> It is often defined as the resources associated with being part of a durable network of relationships, which can be institutionalized. These relationships provide individuals with the support and backing of the collective, essentially acting as a “credential” that grants them access to credit within the group.<sup>5</sup> According to social capital theory, the resources embedded within trusting social relationships can have an impact on health behaviors and outcomes.<sup>6</sup> A meta-analysis study done by Gilbert et al. showed a positive association between self-reported health, mortality, and social capital. This suggests that higher levels of social capital can have a beneficial effect on overall health and well-being.<sup>7</sup>

The importance of social support in maintaining good health is widely recognized. Social support is a multifaceted concept that encompasses various types of assistance, such as emotional, appraisal, informational, instrumental, and tangible support.<sup>8</sup> It refers to an individual’s perception of being cared for and having access to help when needed, typically provided by close friends, family, and society.<sup>9</sup> Research shows that social support can have both physical and psychological effects on individuals, encouraging them to engage in health-promoting behaviors like following medical advice, adopting a healthy diet, and participating in physical activities.<sup>10</sup>

Different studies have indicated that life satisfaction is closely related with better outcomes of health.<sup>11</sup> Satisfaction with life is a subjective concept that varies for each individual, representing their assessment of their own lives.<sup>12</sup> Interestingly, individuals with higher life satisfaction tend to engage in healthier behaviors, which can have a positive impact on their overall health.<sup>11</sup> Considering these findings, life satisfaction is expected to play critical roles in shaping health policies.

The insufficient quality and quantity of social contacts, also known as social isolation, is a significant public health concern recognized globally. When exploring the impact of the social environment on people’s health, social isolation emerges as a key factor.<sup>13</sup> Social isolation can lead to a reduction in social connections and a diminished sense of coherence or meaning in life. Consequently, it can contribute to various detrimental health conditions, including depression, cardiovascular disease, coronary heart disease, or stroke.<sup>14</sup>

The theoretical understanding of how social factors impact individuals’ health is of great importance.<sup>15</sup> Additionally, in practical terms, identifying the mechanisms through which these factors influence health can have significant implications for improving service systems and

designing cost-effective interventions for health promotion. The study aimed to explore the role of social support, social capital, social isolation, and life satisfaction about students’ health-related quality of life. By investigating these factors, the study aimed to gain insights into how they contribute to the overall health of students. This information can be valuable in developing strategies and interventions to enhance students’ well-being and promote better health outcomes.

## Methods

### *Study Participants and Sampling*

In the present cross-sectional investigation, 250 students of the Faculty of Health at Mashhad University of Medical Sciences were selected. A systematic stratified random sampling method was used for sampling. In this sampling, the classes of educational levels were included, and the sample size in each class was allocated according to the size of that class. Next, within each class, based on the list of students, people were selected to enter the study by systematic sampling, and the questionnaires were completed by them. Before the commencement of the research, informed consent was taken from participating students. Furthermore, the research protocol was approved by Mashhad University of Medical Sciences. The inclusion criteria included studying in college, having Iranian citizenship, and being willing to participate in the study. The exclusion criteria included incomplete questionnaires and personal unwillingness to participate.

### *Data Collection Tool*

#### *Sociodemographic Questionnaire:*

In the first section of the questionnaire, sociodemographic information such as participants’ age, sex, marital status, and education was assessed.

#### *Social Capital Questionnaire:*

The questionnaire of social capital consists of 36 items separated into 8 dimensions. These dimensions include feeling of confidence (5 questions), social engagement (7 questions), neighborhood relationships (6 questions), living value (2 questions), family relations (3 questions), differences acceptance (2 questions), being active in society (8 questions), and work relationships (3 questions).<sup>16</sup> Items are scored on a 5-point Likert scale, ranging from 1 (never) to 5 (always). Higher scores indicate better social capital. The validity of this scale has been confirmed by Eftekharian et al.<sup>17</sup> Additionally, its reliability was evaluated using the Cronbach’s alpha test method, which was conducted on 30 students. The obtained value for reliability was 0.79, indicating a satisfactory level of internal consistency.

### Social Support Questionnaire:

Social support questionnaire has been developed as a scale and was utilized by Vaux et al.<sup>18</sup> This scale consists of 23 items and is divided into three sub-scales. The sub-scales specifically focus on family and friends, comprising seven questions. Participants were asked to answer each item on a 5-point Likert Scale, ranging from strongly disagree (1) to strongly agree (5). A higher score on the scale indicates a greater level of perceived social support. The validity of this scale within Iranian society has been confirmed by Pourseyed et al.<sup>19</sup> Additionally, the scale reliability was evaluated through the Cronbach's alpha, which was conducted on a sample of 30 students. The obtained value for reliability was 0.87, indicating a satisfactory level of internal consistency.

### Social Isolation Questionnaire:

In order to examine feelings of emotional and social loneliness, we used the DG Loneliness Scale.<sup>20</sup> This scale consists of two subscales (11 items): social loneliness, which evaluates the lack of a wide engaging social network, and emotional loneliness, which assesses a perceived deficiency in intimate dependence. Participants respond to items applying a 5-point Likert scale. The validity of this scale has been confirmed by Karimian et al.<sup>21</sup> Additionally, the scale reliability was evaluated using the Cronbach's alpha, which was conducted on a sample of 30 students. The obtained value for reliability was 0.85, indicating a satisfactory level of internal consistency.

### Life Satisfaction Questionnaire:

The life satisfaction tool, developed by Diener et al.,<sup>22</sup> is a widely used scale for evaluating subjective well-being. It consists of five items that measure life satisfaction. The scale is reliable and effective in various studies, including the research conducted by Pavot et al.<sup>23</sup> Participants respond to questions applying a 5-point scale, ranging from strongly agree (5) to strongly disagree (1). The validity of this scale has been confirmed by Bayani et al.,<sup>24</sup> and its reliability was evaluated using the Cronbach's alpha, which was conducted on a sample of 30 students. The obtained value for reliability was 0.78, indicating a satisfactory level of internal consistency.

### 36-Item Short-Form Health Survey (SF-36) Questionnaire:

The SF-36<sup>25</sup> is a questionnaire consisting of 36 items that assess 8 dimensions of health. These dimensions include social functioning (2 questions), physical function (10 questions), limitations of role because of emotional issues (3 questions), limitations of role because of physical issues (4 questions), vitality/energy (4 questions), mental health (5 questions), pain (2 questions), and perception of general health

(5 questions). Each item is scored, summed, and converted to a scale ranging from 0 to 100. Higher scores show better health status. The validity of this scale has been confirmed by Montazeri et al.<sup>26</sup> Additionally, the scale reliability was evaluated using the Cronbach's alpha, which was conducted on a sample of 30 students. The obtained value for reliability was 0.88, indicating a satisfactory level of internal consistency.

### Analysis

Data were analyzed using SPSS 25.0. Quantitative results were displayed as mean, standard deviation, percentage, and frequency. Furthermore, Structural Equation Model (SEM) were done applying Amos 25 and indexes of Comparative Fit Index (CFI), Chi squared/Degrees of freedom ( $X^2/df$ ), Goodness of Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA), and Tucker Lewis index (TLI) were calculated.

## Results

Demographic characteristics of the students are displayed in Table 1.

**Table 1:** Demographic characteristics of the participants

Age (year), Mean±Standard Deviation	21.88±2.69
Sex, Number (%)	
Male	59 (23.6)
Female	191 (76.4)
Education, Number (%)	
Bachelor science	207 (82.8)
Master science	35 (14)
PhD degree	8 (3.2)
Marital status, Number (%)	
Married	83 (33.2)
Single	167 (66.8)

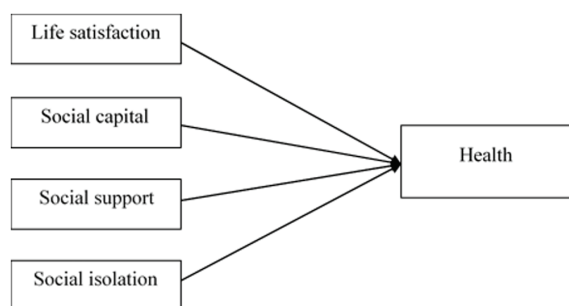
The results presented in Table 2 are related to the mean and standard deviation of the studied variables.

**Table 2:** Mean and standard deviation of variables

Variable	Mean±Standard Deviation
Health related quality of life	72.96±13.26
Social isolation	60.23±20.93
Social support	63.08±21.65
Social capital	49.40±23.82
Life satisfaction	47.54±19.13

In Figure 1, we posited our hypothesis to assign ways in which social capital, social isolation, social support, and life satisfaction can influence health-related quality of life.

Results showed several significant predictors which were displayed as values of standardized beta (Figure 2). Individuals' health-related quality of life was associated significantly with higher social capital, social support, and life satisfaction, and lower social isolation.



**Figure 1:** Graphical representation of the estimated path analysis model

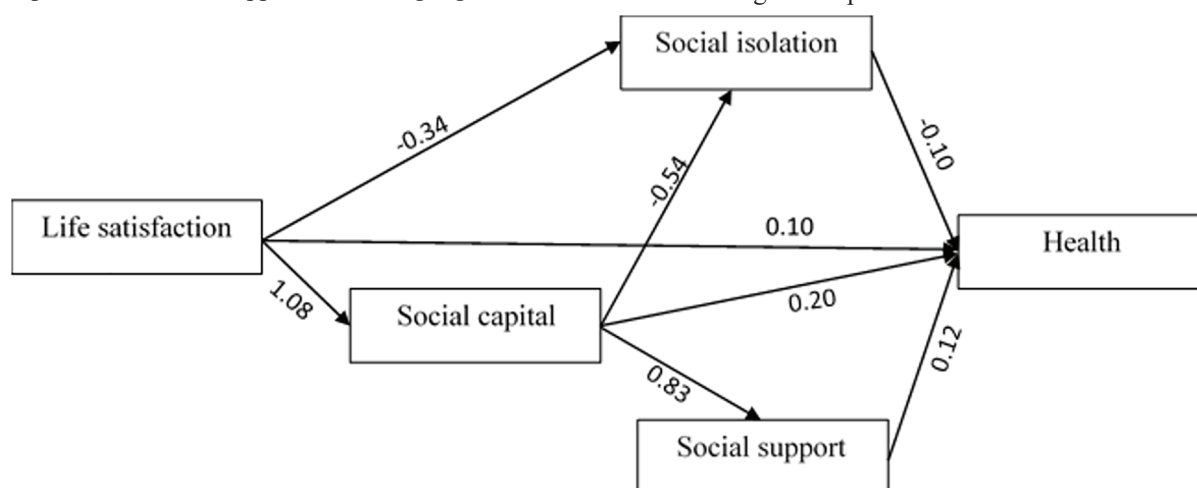
As shown in the model, social capital was the strongest health-related quality of life predictor. In addition to these direct effects, life satisfaction also showed a significant indirect effect on health-related quality of life through the mediating effect of social capital and social isolation. Moreover, social capital did indirectly influence health-related quality of life through the mediating effect of social support and social isolation.

This model demonstrated an acceptable fit with the studied data (Table 3). The model fit is found acceptable when indexes of  $X^2/df$  are  $<2-5$ , TLI, GFI, and CFI are  $>0.90$ , and RMSEA is  $<0.10$ .<sup>27</sup>

## Discussion

Health plays a significant role in shaping people's lives as one of the determinants of social, along with cultural and social capital. This study mentioned a positive significant relationship between individuals' social capital and health-related quality of life, with social capital being identified as the strongest predictor of health. The importance of social support is more highlighted in its

indirect relationship with health through social isolation and social support. Social capital has the potential to promote the adoption of appropriate lifestyles, healthy behaviors, and pro-health trends.<sup>6</sup> Closer relationships within societies and groups can lead to increased monitoring of their members, activating social control mechanisms to prevent behaviors that are inconsistent with pro-health norms.<sup>4</sup> Additionally, social capital fosters trust in interpersonal relationships and the formation of reciprocal norms, which in turn promote the development of intimate relationships and various forms of support.<sup>28</sup> This provision of resources, such as commodities and services, directly contributes to improving physical health.<sup>4</sup> Moreover, social capital can protect individuals from mental stresses and decrease the mental disorders like anxiety and depression.<sup>7</sup> According to Berkman (2000), relationships impact health beyond their ability to provide support.<sup>29</sup> Trust in familiar individuals can enhance health through the benefits of social integration, strengthening social support during stressful life events, promoting positive health behaviors through social norms, and motivating collective action to create a healthy physical and social environment. An investigation done in southern Brazil on 1000 participants showed that low levels of social capital were related to smoking, low vegetables and fruits, and low exercise. The study also revealed an inverse relationship between social capital scores and the number of inappropriate, unhealthy behaviors.<sup>30</sup> Furthermore, research conducted on 810 university students demonstrated that social capital was related to performing health behaviors.<sup>31</sup> Since social capital relies on stable social relationship networks built on cooperation and trust, it can serve as an effective means for disseminating information and influencing the adoption of health-related innovations.



**Figure 2:** Path model showing the significant standardized beta coefficients of health

**Table 3:** Goodness of fit indices

	<i>p</i>	$X^2/df$	CFI	GFI	TLI	RMSEA
Health	0.02	3.85	0.99	0.99	0.97	0.09

$X^2/df$ : Chi squared/Degrees of freedom, CFI: Fit Index, GFI: Goodness of Fit Index, TLI: Tucker Lewis index, RMSEA: Root Mean Square Error of Approximation

The study revealed a significant negative association between individuals' health-related quality of life and social isolation. The results also showed that the social isolation variable could mediate the relationship between social capital and health. The findings indicated that increased periods of isolation and unfavorable conditions for spending time in isolation contributed to higher levels of mental health-related issues.<sup>32</sup> A study suggested that feeling socially isolated among students could potentially hinder executive functions that can affect their health. Executive function refers to the capacity to regulate cognitive processes, attention, emotions, and behaviors to align with societal norms or personal objectives, essentially enabling self-regulation.<sup>33</sup> Additionally, research has demonstrated that social isolation enhances chronic diseases like diabetes, heart disease, and high blood pressure.<sup>34</sup> A meta-analysis investigation done by Holt-Lunstad et al. suggests that social isolation has twice the detrimental impact on physical health compared to obesity. Furthermore, it has been found that the social relationships causes health dangers equal to being an alcohol addict or smoking 15 cigarettes daily.<sup>35</sup> Considering these findings, it is crucial for public health policies to prioritize fostering social support and social relationships between people, particularly among individuals who are at a higher social isolation. By addressing these issues, efforts can be made to reduce health inequalities and promote overall well-being.

This research indicated a strong positive relationship between social support and health-related quality of life, with social support acting as a mediator between social capital and health. Social capital has been shown to influence health through social support.<sup>36</sup> Previous studies have also shown that social support may serve as both emotional and instrumental resources of individuals, leading to improved health conditions.<sup>36, 37</sup> Social support can enhance self-worth and sense of respect, ultimately contributing to overall well-being.<sup>37</sup> Additionally, having sufficient social support may provide individuals with greater emotional and cognitive resources to face challenges and be more receptive to new experiences, promoting independence. Furthermore, individuals who receive promising support from their community are more likely to express their satisfaction with society conditions and services, which in turn promotes better health.<sup>38</sup> Participants' friends, family, and other supportive individuals play a crucial role in providing various forms of support. They can offer valuable information and practical assistance, serve as positive role models for healthy behaviors, encourage and motivate individuals to engage in positive behaviors, and demonstrate that obstacles to health-promoting actions can be overcome. Strong

social ties, such as close relationships, are often the primary source of social support. Individuals are more likely to consider social support as a priority and consider it as a significant factor of well-being and health.<sup>37</sup> An investigation conducted in Hong Kong among adults indicated that social support was related to behaviors of mental health-promoting, which consequently was linked to better health-related life quality.<sup>39</sup> Another study by Mo et al. revealed that social support had a direct positive relationship with well-being and an indirect association through health-promoting behaviors.<sup>40</sup> Bukhari and Afzal indicated that the absence of social support played a crucial role in the development of mental health issues, such as depressive symptoms, among university students and had a negative impact on the life quality of students.<sup>41</sup> Consistent findings from these cross-sectional studies highlight the significant influence of social support on the well-being of university students. A study on 115 university students revealed that those with higher levels of social support experienced lower stress levels and demonstrated better adjustment to university life. Additionally, research indicates that the impact of academic stress, encompassing frustrations, conflicts, pressures, changes, and self-imposed demands, on psychological well-being is contingent upon the perceived level of social support from friends.<sup>42</sup> These findings highlight the significance of social support in promoting physical and mental well-being.

Our findings suggested that higher levels of life satisfaction are significantly related to higher levels of health-related quality of life. Recent studies have indicated that life satisfaction is one of the main factors in getting physical and psychological health, positively correlating with a high spectrum of helpful health-related behavioral variables.<sup>11</sup> Likewise, life dissatisfaction has been associated with different health-risk behaviors, such as substance use, alcohol consumption, and sexual perpetration.<sup>43</sup> Individuals who are satisfied with their lives generally have better relationships, engage in more structured extracurricular activities, and enjoy academic success with increased school satisfaction and overall health. Multiple studies have revealed that various confounding factors associated with life satisfaction can impact the quality of life of Iranian students. Based on existing literature, the life quality and life satisfaction of Iranian students are positively linked to postmodern values and identity status, perceived self-efficacy, health literacy, self-esteem, emotional intelligence, and individualism; they are negatively correlated with emotional loneliness and hopelessness.<sup>44, 45</sup> Future investigations should identify causal pathways between personality, environment, and life satisfaction. Understanding these relationships can aid in developing methods to promote life satisfaction among individuals who do

not meet normative levels.

The present study findings have significant implications for public health practices. The study provides preliminary evidence supporting the role of social capital, social isolation, and life satisfaction in health-related quality of life outcomes. Public health policy should consider fostering social connections and social support, particularly for those at higher risk of social isolation, to reduce health disparities. Health professionals can promote the quality of social connections through providing people with skills to enhance social interactions, modify negative perceptions about others, decrease contradictions, and seek support when required. Emphasizing social support can empower individuals within a supporting environment that facilitates health-promoting behaviors. Additionally, the strengths of this research included a large sample size and the utilization of a structural equation model.

The present investigation has some limitations that should be acknowledged. This research was cross-sectional, so it is not possible to infer causality from the results. Future longitudinal or experimental studies are needed to establish causal relationships among social determinants, health consequences, and behaviors related to health. Furthermore, this investigation relied on self-reported data that can be subject to over/under-reporting and recall bias. Moreover, the sample was predominantly female, and gender differences could not be explored due to the uneven distribution of participants. Future research should aim to recruit samples that are more balanced in terms of gender and ethnicity to investigate potential differences in the associations across subgroups.

## Conclusion

The present study revealed that individuals' health-related quality of life was associated significantly with higher social capital, social support, and life satisfaction, and lower social isolation. Furthermore, social capital was the strongest health-related quality of life predictor. Considering these findings, public health policies must prioritize fostering social relationships between people, particularly among individuals at a higher social isolation risk. By addressing these issues, efforts can be made to reduce health inequalities and promote overall well-being.

## Authors' Contribution

SM participated in the writing and design of the study, performed the statistical analysis, and drafted the manuscript. FSH helped to perform the statistical analysis and edit the manuscript. MV helped to edit the manuscript.

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## Ethics Number

IR.MUMS.FHMPM.REC.1402.124.

**Conflict of Interest:** None declared.

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