

Original Article

The Relationship of Health Literacy with Self-Care and the Quality of Life in Heart Failure Patients

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Abstract

Introduction: Heart failure (HF), a common cardiovascular disorder, impairs patients' quality of life (QoL) and self-management abilities because of its ongoing progression, severe symptoms, and related issues. Health literacy (HL) significantly affects these factors. Thus, this study explored the relationships among these components in HF.

Methods: Using convenience sampling, this cross-sectional research was conducted in 2025 on 150 patients with congestive HF. Data were collected using the Iranian-adapted HELIA (Health Literacy Instrument for Adults) for urban settings, the SCHFI (Self-Care of Heart Failure Index) by Riegel, and the MLHFQ (Minnesota Living with Heart Failure Questionnaire). Finally, the statistical analysis involved Pearson correlation and multiple linear regression, performed using SPSS 24.

Results: Most participants were male (62.67%), married (58%), retired (60%), and non-smokers (86%), lived in urban areas (77.33%), had primary or high school education (28.67%), and had an average age of 64.35 ± 4.78 years. Average scores showed HL at 118.4 ± 29.64 , SC at 141.56 ± 24.34 , and QoL at 53.19 ± 20.72 . Moreover, HL demonstrated a significant negative correlation with the QoL ($r = -0.37$, $P = 0.02$) and a significant positive correlation with SC ($r = 0.56$, $P = 0.009$). Finally, no meaningful link was found between SC and the QoL ($r = -0.013$, $P = 0.12$).

Conclusion: The notable ties between health literacy, self-care, and QoL revealed that boosting HL in HF patients could strengthen SC habits and elevate their overall well-being. Accordingly, it is recommended that focused educational programs and workshops be developed and delivered to enhance HL in this population.

Keywords: Health literacy, Self-care, Quality of life, Heart failure

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Introduction

Heart failure (HF) occurs when the heart fails to sufficiently pump blood to meet the body's needs for oxygen and nutrients, or it can only achieve adequate output at the cost of abnormally high pressures in the heart's filling chambers (1). Key risk factors contributing to its onset encompass hypertension, coronary artery disease, diabetes mellitus, obesity, tobacco consumption, and familial or genetic predispositions (2, 3). Patients with HF commonly experience dyspnea, peripheral edema, fatigue, reduced appetite, and nausea (4). The incidence of HF continues to climb globally. According to Ran et al, the population affected by this condition grew from 25.43 million to 55.5 million (5). In Iran, the disease affects approximately 1% of adults over the age of 40. Recognized as a chronic and progressive clinical syndrome, HF remains one of the

most common and resource-intensive diseases, frequently leading to repeated hospital admissions (6, 7). Its clinical manifestations typically cause exercise intolerance, reduced social participation, psychological burden, fatigue, greater dependency, premature workforce exit, and major lifestyle modifications, ultimately decreasing patient contentment, compromising health-related well-being, and driving up healthcare expenditures (8, 9).

The quality of life (QoL) describes a person's overall sense of well-being, encompassing their capacity to maintain physical health, emotional stability, and meaningful social relationships (10). Extensive research indicates that HF patient's exhibit severely diminished QoL relative to healthy counterparts (11-13). Given this significant impairment, the importance of lifestyle modifications in this population is widely recognized (14).



Improving self-care (SC) is regarded as a cornerstone of HF management programs globally (15) since effective SC practices can slow disease progression, enhance QoL, and reduce the rate of hospital readmissions (16). Consequently, early prevention, accurate diagnosis, optimal medical treatment, and the promotion of effective SC behaviors are considered essential components of comprehensive therapeutic strategies (17). Addressing gaps in SC is a fundamental nursing responsibility, with patient education and ongoing support playing critical roles (18). It should be noted that SC is a broad concept that involves both the knowledge and the practical skills required to adopt and sustain health-promoting behaviors. Patients must, therefore, not only understand their condition and recommended care practices but also be able to consistently apply this knowledge in their daily lives (19). In HF management, essential SC practices involve faithfully following prescribed medications and dietary guidelines, participating in suitable physical exercise, regularly tracking daily weight, monitoring fluid consumption diligently, and limiting sodium intake in the diet (14, 20). These practices help reduce complications and recurrent hospitalizations while significantly improving patients' QoL (21). It is noteworthy that effective long-term HF management relies on patients' capacity to obtain, comprehend, and utilize health information for treatment decisions and daily activities. This essential skill is termed health literacy (HL) (22). HL, also known as medical literacy, refers to the capacity of people to access, understand, and apply essential health information and services to make sound health-related choices (23). Karami et al found that HF patients with higher HL levels reported better QoL, while Abdi et al concluded that HL is a significant predictor of QoL in this population (10, 11). Moreover, adequate HL substantially strengthens patients' capacity to recognize and manage HF symptoms effectively. Multiple studies have confirmed that individuals with higher HL engage more successfully in SC practices and achieve better symptom control (20, 24).

While recent studies have extensively explored the links between HL, SC behaviors, and QoL in HF, key knowledge gaps remain. In particular, most research originates from Western nations, which restricts its applicability to diverse sociocultural settings, including Iran (21). Thus, this study aims to investigate the connections between HL, SC behaviors, and QoL among Iranian patients with HF.

Materials and Methods

This cross-sectional study was conducted in 2025 using a convenience sampling method and included 150 patients with HF who were referred to Farshchian Heart Educational and Medical Center in Hamadan, Iran. The inclusion criteria comprised a confirmed diagnosis of New York Heart Association functional class II or III HF, age over 18 years, and the ability to respond to questionnaires. On the other hand, the exclusion criteria

included incomplete questionnaires, unstable clinical conditions or critical illness, and withdrawal from the study. Several tools were used to gather data:

Demographic and Clinical Characteristics Checklist:

This checklist collected data on participants' gender, educational level, marital status, employment, income, and disease duration. Ten faculty members evaluated the checklist's face and content validity.

Health Literacy for Iranian Adults:

The tool developed by Montazeri et al, draws from HL principles and Iran's key public health issues. Through exploratory factor analysis, it includes 33 items across five subscales: obtaining information, reading ability, understanding, evaluation, and applying knowledge to health decisions. Items are scored on a 5-point Likert-type scale, producing a total score of 33–165, where elevated scores denote superior HL. In a validation study with 336 Tehranian adults from 22 districts, exploratory factor analysis verified construct validity (53.2% variance explained), while Cronbach's alpha values for subscales ranged from 0.72 to 0.89 (25). In our study, Cronbach's alpha was 0.89.

Self-Care of Heart Failure Index:

This instrument was first created by Riegel et al in 2004 and then revised by them in 2009 (26). Mansouri et al applied it to assess SC in Iranian HF cases. The Persian SCHFI (version 6.2) shows acceptable-to-good construct validity (confirmed by confirmatory factor analysis), high content validity, and excellent reliability (27). It consists of 22 items across three subscales (maintenance, monitoring, and management), scored on a 4-point Likert-type scale and transformed to 0–100; higher scores indicate better SC (26). Cronbach's alpha was 0.85 in our study.

Minnesota Living With Heart Failure Questionnaire:

The MLHFQ, which was first introduced by Rector (1984), is a 21-item tool evaluating physical, emotional, and socioeconomic constraints due to HF over the prior month. Items are rated from 0 to 5, generating total scores of 0–105, with elevated scores denoting reduced QoL (28, 29). Eskandari et al verified the validity and reliability of the Persian version (30). Previous studies (Rector et al., 1987; Rector & Cohn, 1992) reported excellent internal consistency for the MLHFQ, with a Cronbach's alpha value of 0.94 (31). In this investigation, Cronbach's alpha was 0.82.

Prior to study participation, all subjects signed informed consent forms following Helsinki Declaration ethical standards. The questionnaires were self-completed by participants. For those facing physical or literacy barriers, trained researchers conducted face-to-face interviews, documenting verbal responses. IBM SPSS Statistics (version 26.0) was employed for data analysis. Pearson or Spearman correlations were utilized to assess relationships based on normality. Moreover, multiple

linear regressions were used to evaluate health literacy's predictive role in the QoL and self-care, controlling for age, gender, and education. The significance threshold was $P < 0.05$ (two-tailed).

Results

Among the 150 participants, the majority were men (67.6%), married (58%), retired (60%), and urban residents (77.3%). In addition, the highest frequencies of the education level were observed among participants with primary and high school diplomas (28.7% each). Further, most participants lived with their spouses (44%), and caregiving responsibility was most often provided by children (41.3%). Additionally, 86% reported no smoking history, and 58% ($n = 87$) had hypertension. The mean age and body mass index of the participant were 64.35 ± 4.78 years and 27.23 ± 2.5 kg/m², respectively, and disease duration was 26.43 ± 14.58 months. Further, mean scores were 118.4 ± 29.64 , 141.56 ± 24.34 , and 53.19 ± 20.72 for health literacy, self-care, and QoL, respectively (Table 1).

HL demonstrated a strong positive association with SC ($r = 0.56$, $P = 0.009$, $r = 0.56$, $P = 0.009$). Conversely, HL had a notable negative relationship with the QoL (QoL) ($r = -0.37$, $P = 0.02$, $r = -0.37$, $P = 0.02$). No meaningful correlation was observed between SC and the QoL ($r = -0.013$, $P = 0.12$, $r = -0.013$, $P = 0.12$). (Table 2).

Table 1. Patient Demographics and Clinical Profile in Heart Failure

Variable	Category	Result
Gender, n (%)	Male	94 (67.6)
	Female	56 (37.3)
Marital status, n (%)	Married	87 (58.0)
	Single	63 (42.0)
Education level, n (%)	Illiterate	21 (14.0)
	Basic literacy	65 (43.4)
	Diploma	43 (28.7)
	University	21 (14.0)
Occupation, n (%)	Employed	9 (6.0)
	Retired	90 (60.0)
	Housewife	48 (32.0)
	Unemployed	3 (2.0)
Place of residence, n (%)	Urban	116 (77.3)
	Rural	34 (22.7)
Responsible caregiver, n (%)	Self	43 (28.7)
	Spouse	44 (29.3)
	Children	62 (41.3)
	Private nurse	1 (0.7)
Smoking status, n (%)	Smoker	21 (14.0)
Comorbidities, n (%)	Hypertension	87 (58.0)
	Hyperlipidemia	63 (42.0)
	Hyperglycemia	7 (4.7)
	Myocardial infarction	21 (14.0)
Age (years), mean $\pm$ SD		64.35 $\pm$ 4.78
Body mass index, mean $\pm$ SD		27.23 $\pm$ 2.5
Duration of disease (months, mean $\pm$ SD)		26.43 $\pm$ 14.58
Health literacy score, mean $\pm$ SD		118.4 $\pm$ 29.64
Self-care score, mean $\pm$ SD		141.56 $\pm$ 24.34
Quality of life score, mean $\pm$ SD		53.19 $\pm$ 20.72

Note. SD: Standard deviation.

Pearson correlation analysis (Table 3) revealed meaningful links between HL dimensions and key study variables. Moreover, SC significantly correlated with access ($P = 0.008$, $P = 0.008$), reading skills ($P = 0.017$, $P = 0.017$), understanding ($P = 0.009$, $P = 0.009$), self-assessment ($P = 0.045$, $P = 0.045$), and use of health information for decisions ($P = 0.005$, $P = 0.005$). Likewise, QoL showed considerable associations with HL domains, including access ($P = 0.012$, $P = 0.012$), reading skills ($P = 0.047$, $P = 0.047$), comprehension ($P = 0.023$, $P = 0.023$), and decision-making/application ($P = 0.009$, $P = 0.009$). However, self-evaluation demonstrated no significant tie to the QoL ($P = 0.057$, $P = 0.057$).

Discussion

Our findings indicated moderate HL, SC, and health-related QoL (HRQoL) among HF patients. HL positively and significantly correlated with both SC and HRQoL, whereas no significant link was detected between SC and HRQoL.

The results of our study revealed that patients exhibited a moderate level of HL, which is consistent with the findings reported by Karami et al and Farghadani et al (10, 32). In contrast, Abdi et al (11) reported considerably higher HL levels among their participants. This discrepancy can likely be explained by sociocultural and regional differences between the study populations, as well as variations in participants' educational attainments. Similarly, Lima et al observed higher HL scores (33) compared to those in the current study, which may be attributable to differences in the demographic and clinical characteristics of the samples and the use of different measurement instruments.

SC levels in the current sample were moderate, corroborating earlier observations by Tapak et al and Farghadani et al among individuals with HF (16, 32). Patients in this study exhibited moderate levels of

Table 2. Correlation Between Health Literacy, Self-Care, and Quality of Life

Variables	Health Literacy	Self-Care	Quality of Life
Health literacy	$r = 1$	$r = 0.56$	$r = -0.37$
	$P = *$	$P = 0.009$	$P = 0.02$
Self-care	$r = 0.56$	$r = 1$	$r = -0.013$
	$P = 0.009$	$P = *$	$P = 0.12$
Quality of life	$r = -0.37$	$r = -0.013$	$r = 1$
	$P = 0.02$	$P = 0.12$	$P = *$

Table 3. Associations Among Health Literacy Components, Self-Care Practices, and Quality of Life

Health Literacy Domain	Self-Care (r / P-Value)	Quality of Life (r / P-Value)
Access	$r = 0.64$ / $P = 0.008$	$r = -0.47$ / $P = 0.012$
Reading skills	$r = 0.59$ / $P = 0.017$	$r = -0.28$ / $P = 0.047$
Comprehension	$r = 0.69$ / $P = 0.009$	$r = -0.39$ / $P = 0.023$
Self-evaluation	$r = 0.31$ / $P = 0.045$	$r = -0.13$ / $P = 0.057$
Decision-making and application of health information	$r = 0.71$ / $P = 0.005$	$r = -0.51$ / $P = 0.009$

HRQoL, which conforms to prior observations by Karami et al and Abdi et al (10, 11). Likewise, the findings of Ghanbari-Afra et al confirmed that HRQoL in patients with HF was at a moderate level (34). Conversely, Tapak et al documented diminished HRQoL in their samples, notwithstanding the use of the identical questionnaire and the same recruitment site (16). The observed difference could potentially be explained by the influence of the coronavirus disease 2019 pandemic and its subsequent consequences, which is in line with the data collection phase in the study performed by Tapak et al.

The observed significant correlation between HL and SC in this investigation is consistent with that of prior research by Son et al, Farghadani et al, and Chen et al, demonstrating a positive association between these variables among individuals with HF (24, 32, 35). These results suggest that individuals possessing greater HL represented enhanced ability to perform effective SC practices.

Furthermore, the findings highlighted interrelationships between HL, SC behaviors, and HRQoL. In particular, individuals with greater HL showed enhanced SC capabilities and higher QoL. However, high SC performance was not invariably accompanied by elevated HL. Despite the absence of a statistically significant correlation between SC behaviors and the QoL in this study, those with superior QoL often displayed stronger SC engagement. Similar observations were reported by Tapak et al and Asadi et al (16, 36). Contrarily, Seid et al found a significant positive link between SC and HRQoL. This difference may stem from variations in assessment instruments, participant groups, or data collection timing (37).

Limitations of the Study

Convenience sampling and recruitment from a single center restricted the generalizability of these findings to wider HF populations. Accordingly, future studies can enhance external validity by involving multiple sites or random sampling methods. In addition, self-reported measures could carry risks of bias, including social desirability, misunderstanding of questions, and memory inaccuracies. Moreover, unmeasured factors, such as socioeconomic status, access to healthcare services, and family support, could influence the observed links between health literacy, self-care behaviors, and the QoL.

Conclusion

Given the robust associations among HL, SC practices, and HRQoL, enhancing HL in HF patients holds promise for bolstering SC and QoL metrics. These interventions can mitigate related complications. Finally, targeted educational programs are advised to boost health literacy, foster superior self-care, and improve patient well-being.

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Authors' Contribution

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Competing Interests

The authors declare they have no competing interests.

Ethical Approval

Our study received approval from the Ethics Committee of Hamadan University of Medical Sciences (ethical code IR.UMSHA.REC.1403.917; project No. 1403121411141). In addition, written informed consent was obtained from all participants prior to enrollment.

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