

Original Article

The Relationship between Health Locus of Control and Self-Efficacy in Patients with Heart Failure

Yaser Moradi, Samira Amin Al Shara, Farideh Namadi, Farzin Mollazadeh

Patient Safety Research Center, Clinical Research Institute, School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran

ORCID:

Yaser Moradi:
0000-0001-9331-7573
Samira Amin Al Shara:
0000-0001-6533-7681
Farideh Namadi:
0000-0001-7849-9049
Farzin Mollazadeh:
0000-0002-4730-172X

ABSTRACT

Background: Self-efficacy and the health locus of control (HLC) are the most important determinants of compliance with self-care behaviors in patients with heart failure (HF). However, there is still a lack of studies in this area. **Objective:** This study aimed at investigating the relationship between HLC and self-efficacy in patients with HF. **Methods:** This cross-sectional study was conducted on 170 patients with HF in 2019 in Urmia, Iran. The participants were enrolled by using a consecutive sampling method. Data collection was conducted by using a demographic questionnaire, the questionnaire for assessing the Strategies Used by People to Promote Health (SUPPH), and the Multidimensional Health Locus of Control (MHLC) Scale. Descriptive statistics, the Pearson correlation coefficient, and stepwise linear regression analysis were used to analyze the data. **Results:** The mean age of the participants was 67.47 ± 11.27 years. The majority of participants were male (59.8%) and married (76.8%). Among the components of the MHLC, the internal and powerful others obtained the highest mean scores (28.52 ± 5.97 vs. 26.6 ± 4.01). On average, the patients possessed about half of the self-efficacy scores. The internal HLC (IHLC) only had a direct correlation with the overall score of self-efficacy ($r=0.24$, $P = 0.03$), and the powerful others HLC (PHLC) was directly correlated with a positive attitude ($r=0.39$, $P = 0.001$) and the overall score of self-efficacy ($r=0.32$, $P = 0.004$). In regression analysis, only the scores of IHLC and PHLC were associated with the self-efficacy scores. **Conclusion:** Patients' self-efficacy improves as the mean scores of the IHLC and PHLC increase.

KEYWORDS: Health locus of control, heart failure, self-efficacy

INTRODUCTION

Nearly 64.3 million people worldwide are living with HF.^[1] HF is one of the leading causes of disability and mortality in Iran^[2] and its one-year mortality rate is about 32%, which is equal to the rate in other countries.^[3] Considering the growing share of the elderly population and the high prevalence of cardiovascular disease risk factors in Iran,^[3] HF would be considered one of the major health challenges in Iran.^[4] HF is a debilitating disease with profound effects on the quality of life, and the functional and socioeconomic status of patients and their families.^[5] The limitations imposed by HF can negatively affect the sexual function, occupational performance, family functioning, and social life of the patients. It can also cause social isolation and depression.^[6,7] The average

annual costs of medical care and hospitalizations for each patient with HF are estimated at \$24,383 and \$15,879, respectively.^[8] The success of treatment for HF depends largely on the patient. Therefore, the patients' self-efficacy and health locus of control (HLC) seem to have profound effects on their capability and efficacy in controlling the disease and reducing its complications.^[9] Self-efficacy is defined as the personal judgment of "how well one can

Address for correspondence: Farzin Mollazadeh, School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran.
E-mail: farzin.nurse@gmail.com

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execute courses of actions successfully by controlling the surrounding factors.” People with a high level of self-efficacy usually recognize difficult tasks as challenges for mastering the situation, so they do not avoid doing these tasks.^[10] Self-efficacy beliefs determine an individual’s mindset, motivation, and behavior.^[11] People with low self-efficacy are easily persuaded that their efforts are useless and therefore, give up easily. However, those with high self-efficacy overcome obstacles, face difficulties, and try to possess more control over the situations by improving their self-care skills and perseverance. Therefore, improving self-efficacy can help maintain health promotion behaviors.^[12,13] Effective learning requires possessing the feeling of the capability to succeed on an assignment (self-efficacy) and a sense of control over the results (locus of control). Both these concepts are cornerstones of the social learning theory. Self-efficacy is also positively associated with locus of control.^[14]

The HLC is also an important variable in patients with HF. It refers to the source of individual behaviors and fluctuates between a range of internal and external control.^[15,16] The concept of HLC is derived from the social learning theory of personality.^[17] People with an external HLC (EHLC) believe that certain health outcomes in their lives are derived from external forces, such as health-care professionals (PHLC), chance (chance locus of control: CHLC), and destiny. However, individuals with an internal health locus of control (IHLC) believe that their health outcomes are primarily derived from their own behavior and actions.^[18,19]

Several studies on different groups of people have been attempted to determine the relationship between HLC and self-efficacy. Some studies reported a significant correlation between HLC and self-efficacy,^[20-22] but others have failed to confirm such a correlation.^[23,24] Moreover, a few studies have been conducted on patients with HF in this area. A pilot study of 66 patients with systolic HF showed that those with greater IHLC had higher levels of self-efficacy.^[24]

Since HF is a chronic health condition, the therapeutic strategy requires long-term adherence to treatment regimens, for example, following a doctor’s instructions, using a low-sodium diet, and daily weight monitoring. Due to the essential role of nurses in caring for and educating patients with HF, they must assess the HLC and self-efficacy of these patients.^[15,25] It is also important for nurses to know how self-efficacy and HLC are associated. Such information helps nurses develop and implement more effective programs for educating, continuing care, enhancing self-efficacy, and empowering their patients.^[26,27]

Objective

This study aimed at determining the relationship between self-efficacy and HLC in patients with HF.

METHODS

Design and participants

This cross-sectional study was conducted in 2020 on patients with HF referred to Seyed Al-Shohada Cardiovascular Center, Urmia, Iran. The sample size was calculated by using formula 1 [Figure 1] and based on the results of a former pilot study, where the correlation coefficient (r) between the HLC and self-efficacy was reported at 0.29.^[15] Then, with a type 1 error of 0.05 and a power of 0.90, and given the possible attrition of 40%, 170 patients were estimated to be studied. Then, the needed sample was recruited consecutively from the eligible patients referred to the aforementioned medical center.

Inclusion criteria consisted of a medical diagnosis of HF (i.e., class II and III according to the New York Heart Association functional classification), passing at least six months from the beginning of the treatment, being literate, having no known mental illness, and inclination to participate in the study. A patient’s decision to withdraw from the study and incomplete responding to the questionnaires were regarded as exclusion criteria.

Data collection instruments

Data were collected by using a demographic questionnaire, the 29-item questionnaire for assessing the SUPPH-29, and the MHLC Scale. The SUPPH-29 is a self-report measure of self-care and self-efficacy.^[28] It consists of 29 items in three subscales of stress reduction (10 items), positive attitude (16 items), and decision making (3 items). All items are scored on a 5-point Likert scale from “5=I have quite confidence” to “1=I have very little confidence,” producing a score ranging from 29 to 145. A higher score indicates better self-care and self-efficacy.^[29] Fini *et al.*^[30] have translated the SUPPH into Persian, confirmed its content validity, and reported its test–retest reliability coefficient as 0.94.

The MHLC Scale includes 18 items in three six-item subscales assessing the IHLC, PHLC, and CHLC. The two latter subscales represent the peoples’ EHLC. All items are scored on a 6-point Likert scale from “strongly agree=1” to “strongly disagree=6.”^[31] Moshki *et al.*^[32]

$$n = 3 + \frac{(Z_{1-\alpha} + Z_{1-\beta})^2}{\left[\frac{1}{2} \ln \left(\frac{1+r}{1-r} \right)\right]^2}$$

Figure 1: Sample size calculation formula

assessed and confirmed the content, concurrent, and construct validity of MHLC. They also reported the Cronbach's alpha of the internal, powerful others, and chance subscales at 0.68, 0.72, and 0.66, respectively.

Procedure

The researcher visited the aforementioned research setting every day at 10–12 am and 4–6 pm (when the patients are usually awake and the ward round is usually over) to find eligible patients (i.e., those with HF of class II and III who were hospitalized due to exacerbation symptoms). After finding eligible ones, the researcher explained to them the study aims and methods and invited them to participate in the study. When patients agreed to partake in the study, the researcher provided them with a copy of the study questionnaires, briefed the patients on how to complete them, asked them to skim them, in case of ambiguities answered their questions, and asked them to return the completed questionnaires to the researcher at his next visit (usually an hour later). He then left the patient's room, allowing them to answer the questionnaires in a quiet and private setting. Each questionnaire took approximately 10 min to be completed.

Ethical considerations

The study protocol was approved by the Ethics Committee of Urmia University of Medical Sciences, Urmia, Iran (Ethics ID: IR.UMSU.REC.1399.110). Participants were provided with the necessary explanations of the study objectives and they were ensured that their data would remain confidential and they would be free to withdraw from the study. Verbal and written informed consent was obtained from all participants. The questionnaires were also anonymous.

Data analysis

All statistical analyses were conducted by using the SPSS software, version 16.0 (SPSS Inc., Chicago, Ill., USA). The normality of the quantitative data was assessed by using the Kolmogorov-Smirnov test. Descriptive statistics such as frequency, percent, mean, and standard deviation were used to describe the data. The relationship between the HLC and self-efficacy scores was examined by using the Pearson correlation coefficient. The stepwise linear regression analysis was used to examine the effect of

IHLC, PHLC, and CHLC on self-efficacy (response variable). The significance level was set at less than 0.05.

RESULTS

A total of 170 patients with HF participated in this study. The age of the participants ranged from 41 to 88 years, with a mean age of 67.47 ± 11.27 years. The majority of participants were male (59.8%), married (76.8%), and had primary education (67.1%). Respectively, 95 (55.9%) and 75 (44.1%) patients were in stage B and stage C of HF. The mean cardiac ejection fraction among the participants was 28.83 ± 8.24 .

Among the components of the HLC, the IHLC and PHLC obtained the highest scores, respectively [Table 1]. On average, the patients possessed about half of the self-efficacy scores [Table 2].

The Pearson correlation test showed that the IHLC only had a direct correlation with the overall score of self-efficacy ($r=0.24$, $P=0.03$) and the PHLC was directly correlated with a positive attitude ($r=0.39$, $P=0.001$) and the overall score of self-efficacy ($r=0.32$, $P=0.004$). However, no significant correlation was found between the CHLC and self-efficacy scores [Table 3].

According to the results of regression analysis, among the three subscales of the HLC, only the scores of IHLC and PHLC were associated with the self-efficacy scores [Table 4]. Based on the beta (β) coefficients listed in Table 4, for every 1-unit increase in IHLC, the self-efficacy score of patients with HF will increase by 0.24 points. Also, for every 1-unit increase in PHLC, the self-efficacy score will increase by 0.34 points.

DISCUSSION

The results showed that the patients with HF obtained the highest mean scores in the IHLC and PHLC subscales of the HLC. Findings indicate that patients themselves and powerful others, such as health-care professionals, have significant effects on the health-related behaviors of patients with HF. In line with our findings, an earlier study on patients with breast cancer concluded that the majority of the patients had an IHLC.^[16] However, a study of patients undergoing coronary artery bypass graft surgery concluded that a patient's HLC varies depending on the

Table 1: Mean and standard deviation (SD) of the components of HLC

Variable	Mean \pm SD	Average percentage ^a
Internal health locus of control	28.52 \pm 5.97	79.22
Powerful others locus of control	26.6 \pm 4.01	73.88
Chance locus of control	20.27 \pm 6.61	56.30

$$^a \text{Average Percentage} = \frac{\text{the mean score obtained for the component}}{\text{the maximum score of the component}} \times 100$$

patient’s condition. In the preoperative phase, patients are more dependent on external sources to control their health outcomes. However, in the rehabilitation period, their health-related behaviors are mainly influenced by the IHLC.^[27] Health-care providers, especially nurses, should be aware of patients’ HLC and its changes as the patient goes through various stages of the disease and treatment plan. Nurses should spare no efforts in empowering patients to achieve an appropriate level of self-care. They also should strengthen the patients’ IHLC by providing them with sufficient information and education about self-care and the patient’s own role (internal sources) in the process of disease management.^[33,34]

In the present study, patients with HF possessed about half of the self-efficacy score that can be interpreted as moderate. This finding is almost consistent with the results of two previous studies in patients with HF^[35] and ischemic heart disease.^[36] However, an earlier study has reported that patients with HF had low self-efficacy and low engagement in the process of disease management (i.e. low self-management behaviors) due to low activation level, and inadequate HF knowledge.^[37] The discrepancy between the latter study and ours might be attributed to the difference in the data collection instruments since both studies were almost similar in terms of participants’ demographic characteristics such as age and education. Nonetheless, we used a general self-efficacy scale; however, the latter study used the Self-Care of Heart Failure Index (SCHFI), which was a disease-special self-care scale.

In the present study, we found a significant direct correlation between the scores of the two subscales of IHLC and PHLC and the level of self-efficacy in patients with HF. Further, we found that patients’ self-efficacy improves as the mean scores of IHLC and PHLC increase. These findings are consistent

with the results of earlier studies in patients with HF. The latter study found a significant direct relationship between self-efficacy and the PHLC and reported that patients with HF believe that other people, including physicians, have a major effect on their health status. They were also aware of the effect of their own activities in coping with the disease.^[15] A study of the employees of Yazd University of Medical Sciences also reported a significant direct relationship between the IHLC and self-efficacy but found no significant relationship between the PHLC and self-efficacy.^[38] The differences observed between our findings and the latter study might be attributable to the difference between the study participants.

The results of regression analysis showed that the scores of two subscales of IHLC and PHLC could partially explain the self-efficacy in patients with HF. The patients’ self-efficacy score increases when the scores of IHLC and PHLC increase. However, several other variables can affect the self-efficacy of patients with heart failure who have not been considered in this study.

This study was one of the first studies conducted in the area of HLC and its relationship with self-efficacy in patients with HF. However, the study has some limitations that should be considered. We used self-report questionnaires and the self-report can lead to a potential risk of misstatement. Further, this study was conducted on hospitalized patients with HF of classes II and III. Accordingly, the results are less generalizable to patients with class I of HF. Therefore, further studies are suggested to be conducted on patients with different classes of HF in different populations and with considering more variables affecting self-efficacy in patients with HF.

Table 2: Mean and standard deviation (SD) of self-efficacy and its dimensions

Self-efficacy	Range of score	Mean ± SD	Average percentage ^a
Stress reduction	10–50	26.08 ± 2.53	52.16
Positive attitude	16–80	42.93 ± 3.61	53.66
Decision making	3–15	7.51 ± 1.43	50.06
General self-efficacy	29–145	76.37 ± 5.38	52.66

^a Average Percentage = $\frac{\text{the mean score obtained for the component}}{\text{the maximum score of the component}} \times 100$

Table 3: Correlation between the components of the HLC and the dimensions of self-efficacy

Variables	r (P Value)		
	Internal health locus of control	Powerful others locus of control	Chance locus of control
Stress reduction	0.16 (0.15)	0.15 (0.16)	0.01 (0.92)
Positive attitude	0.15 (0.16)	0.39 (0.001)	0.01 (0.92)
Decision making	0.03 (0.77)	0.04 (0.68)	0.53 (0.64)
Overall self-efficacy	0.24 (0.03)	0.32 (0.004)	0.06 (0.56)

Table 4: Summary of the stepwise regression model of the association between HLC and self-efficacy^a

Model	Unstandardized coefficients		Standardized coefficients Beta	T	P Value
	B	Std. error			
Constant	55.872	5.176		10.795	<.000
Internal health locus of control	0.221	0.094	0.245	2.354	0.021
Powerful others locus of control	0.466	0.141	0.347	3.297	0.001
Chance locus of control	0.090	0.086	0.111	1.049	0.297

^aR² = 0.178; adjusted R² = 0.146

CONCLUSION

This study indicated that IHLC and PHLC can significantly affect the self-efficacy in patients with HF. Considering the role of internal and external factors in the self-care self-efficacy of patients and the effects of powerful others such as nurses and physicians on the patients' health-related behaviors, health-care providers, especially nurses, are recommended to use various interventions to strengthen the patients' self-efficacy as well as their knowledge, skills, and self-care capacities. Then, the patients' IHLC would also be strengthened and the patients would be able to make more effective decisions about their health status and take care of themselves.

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Conflicts of interest

No potential conflict of interest was reported by the authors.

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