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Investigating the predictive role of spiritual health, social support, and quality of life in self-care behaviors among heart failure patients

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Abstract:

BACKGROUND: Self-care behaviors, which have a vital role in the management of heart failure disease, are influenced by several factors that are of paramount importance. This study aimed to determine the predictive role of spiritual health, social support, and quality of life in self-care behaviors among heart failure patients.

MATERIALS AND METHODS: This descriptive-analytical study was conducted from July to September 2021 on 203 patients with heart failure. Samples were selected by convenience sampling method from six centers in Ahvaz city. Data were collected using a clinical-demographic information questionnaire, the European Heart Failure Self-care Behavior Scale (EHFScBs), the Multidimensional Scale of Perceived Social Support (MSPSS), the 12-Item Short Form Health Survey (SF-12), and Paloutzian and Ellison's Spiritual Well-being Scale. Data analysis was performed with SPSS 16 using descriptive and analytical statistical methods including Pearson's correlation coefficient, regression analysis, independent *t*-test, and analysis of variance.

RESULT: The mean and standard deviation of the age of the female and male participants were 63.54 ± 14.03 and 62.34 ± 13.79, respectively. The majority of the participants (54.2%) were female, had primary education (23.2%), and were married (82.8%). Statistically significant relationships were observed between perceived social support and self-care ($r = -0.22$, $P < 0.01$), between spiritual health and self-care ($r = -0.39$, $P < 0.01$), and between the quality of life and self-care ($r = 0.62$, $P < 0.01$). However, no such relationship was found between demographic characteristics and self-care.

CONCLUSION: Considering the predictive role of spiritual health, social support, and quality of life in self-care behaviors, it is necessary for planners to pay special attention to these factors when designing educational-supportive programs for these patients.

Keywords:

Heart failure, quality of life, self-care, social support, spirituality

Introduction

Heart failure (HF) is known as the common final path of all heart disorders,[1] and about one-third of all deaths worldwide are attributed to it and its related disabilities.[2] There is evidence that this disease is on the rise in Iran, and in 2017, its rate increased by a rate of 20% to 45%.[3]

There are many options for controlling HF, and self-care is, *inter alia*, a case in point.[4] Considered an important component in controlling and successfully treating HF, self-care in this respect includes measures such as management of diet and medication, restriction of sodium and fluid intake, daily weighing, regular exercise, monitoring signs and symptoms of disease exacerbation, and searching for and deciding on appropriate

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treatment options.[4-6] Unfortunately, studies have shown that HF patients do not usually have an optimal level of compliance with self-care.[7-9] In fact, the adoption of self-care behaviors in these patients seems to be affected by several factors that need to be investigated and identified. Previous studies have reported factors such as health beliefs, economic status, and life events as factors influencing patient compliance by affecting different individual and psychological aspects of these patients.[10-12]

Spiritual health is one of the four dimensions of health in humans, which, along with other dimensions of health (i.e., physical, mental, and social), promotes general health.[13] According to the literature, spiritual health has a greater effect on the quality of life when it comes to many chronic diseases.[14,15] The results of Jahani *et al*. and Abu *et al*., for instance, show that people with HF who are more spiritual health experience less anxiety and better quality of life.[16,17]

Social support, which refers to a person's feeling and perception of being cared for by others, a sense of belonging to a social network, and a feeling of being of value to others,[18] has been introduced as another important factor in the management of chronic diseases. Based on the available evidence, perceived social support has been reported as a facilitating factor in health-related behaviors which has an impact on physical and mental status, satisfaction with life, quality of life, and coping with and adaptation to stressful life conditions.[19,20]

Compared to other chronic diseases, HF has a greater impact on the quality of a person's life due to the associated debilitating complications, and it causes the destruction of functional roles in social, family, and marital relationships and reduced professional performance.[6,8] An understanding of the quality of life of patients with HF can serve as a guide for nursing diagnoses, measures, interventions, assessment, and regulation of patient discharge.[21] In this regard, Abbasi *et al.* found in their study that patients with HF have a poor quality of life. In fact, an undesirable quality of life is associated with disease exacerbation, lower survival rate, increased number of hospitalization days, and decreased functional activities of cardiac patients.[22]

Any improvement in treatment outcomes depends on knowing the factors affecting self-care and patients' ability to take care of themselves and manage the outcomes of treatment.[7] Therefore, enhancing self-care awareness and behavior helps patients to assume more control over their daily lives and be able to cope with their social functioning, thereby improving their quality of life.[23] In this study, the researchers tried to study the simultaneous effect of three important variables on the self-care of HF patients, which facilitates the necessary knowledge to design more effective educational programs to improve self-care. Therefore, the study was conducted with the aim of investigating the predictive role of spiritual health, social support, and quality of life in self-care behaviors among patients with HF.

Materials and Methods

Study design and setting

This descriptive-analytical study involved 203 patients with HF referring to the cardiology clinics of Razi, Golestan, and Imam Khomeini hospitals (affiliated to the Ahvaz Jundishapur University of Medical Sciences) Amirul Momenin Hospital (affiliated to the Social Security Organization), Naft Hospital (affiliated to Ministry of Petroleum), and Mehr Private Hospital in Ahvaz. The study was conducted from July to September, 2021.

Study participants and sampling

The participants were selected using the convenience sampling method and based on the following inclusion criteria: ability to read and write and be interviewed, age over 30 years, having an active record in the mentioned centers, and confirmed diagnosis of HF by a specialist doctor. The sample size was calculated assuming a confidence level of 95%, a power of 80%, and a correlation coefficient of 0.196 according to previous studies.[17]

$$n \geq \left(\frac{Z_{1-\alpha/2} + Z_{1-\beta}}{\frac{1}{2}\log_e \frac{1+\gamma}{1-\gamma}} \right)$$

Data collection tool and technique

Data collection was performed in this study using a demographic-clinical questionnaire, the European Heart Failure Self-care Behavior Scale (EHFScBs), the Multidimensional Scale of Perceived Social Support (MSPSS), the 12-Item Short Form Health Survey (SF-12), and Paloutzian and Ellison's Spiritual Well-Being Scale.

The demographic-clinical information questionnaire included 11 questions about age, gender, marital status, employment status, education level, economic status, presence of other comorbidities, duration of illness, health insurance status, and smoking.

EHFScBs: This scale contains 12 questions that evaluate items such as daily weighing, fluid retention, exercise, and the level of communication with the treatment staff. It is scored based on a 5-point Likert scale, from 1: "Totally agree" to 5: "Totally disagree". The score obtained varies from 12 to 60, with lower scores

indicating better self-care. Scores of 12–28, 29–44, and 45–60 represent good, moderate, and poor self-care, respectively.[18] The validity of the Persian version of the questionnaire in HF patients was confirmed in Shojaee *et al*.'s research and its reliability was calculated using Cronbach's alpha method of 0.68.[19]

MSPSS: This self-report scale contains 12 items which are scored based on a five-point Likert scale, from 1: "strongly disagree" to 5: "strongly agree". Higher scores indicate higher perceived social support. The overall score ranges from 12 and 60. A score between 12 and 24 indicates low perceived social support, a score between 25 and 36 represents moderate perceived social support, and a score above 36 characterizes high perceived social support.[13] The validity of this questionnaire was confirmed in the study of Salimi *et al*.'s study. They mentioned Cronbach's alpha coefficient of three dimensions of social support received from family, friends, and important people in life as 0.86%, 0.86%, and 0.82%, respectively.[20]

SF-12: This self-report questionnaire includes 12 questions and the following eight domains: physical activity (2 questions), physical role (2 questions), physical pain (1 question), general health (1 question), vitality (1 question), social activity (1 question), emotional activity (2 questions), and general mental health (2 questions). Different scoring methods have been used to score the items of this questionnaire, and the number in front of each option indicates the score of that option. The range of the quality-of-life score based on this questionnaire is between 12 and 48. A higher score means a better quality of life. A score between 12 and 24 indicates a poor quality of life, a score between 25 and 36 represents a moderate quality of life, and a score between 37 and 48 characterizes a good quality of life.[21] The validity and reliability of the Persian version of the SF-12 were determined by Montazeri *et al*. Cronbach's alpha coefficient for the physical component and mental component were 0.73 and 0.72, respectively.[22]

Paloutzian and Ellison's Spiritual Well-being Scale: This scale contains 20 items whose answers are scored based on a 6-point Likert scale (from strongly agree to strongly disagree). This scale is divided into two domains: religious health and existential health, each of which contains ten items and gets a score of 10–60. The odd items are devoted to religious health, and the even items are related to existential health. The total score of spiritual health is the sum of the scores of these two subgroups, which will be between 20 and 120. In affirmative statements, the answer *strongly agree* gets a score of 6, and the answer *strongly disagree* gets a score of 1. In statements with negative verbs, the answer *strongly agree* gets a score of 1, and the answer *strongly disagree* gets a score of 6. A total score of 20–40 indicates low spiritual health, 41–99 shows moderate spiritual health, and 100–120 represents high spiritual health.[23] In Seyedfatemi *et al*.'s research (2006), the validity of the questionnaire after translation into Farsi was determined through content validity. Reliability was also determined through Cronbach's alpha coefficient of 82%.[24]

Data were analyzed with SPSS 16 statistical software using descriptive tests including frequency and percentage, mean and standard deviation, and analytical tests including Chi-square, independent *t*-test, Pearson correlation coefficient, and regression analysis. The significance level was set at 0.05.

Ethical consideration

This study was approved by the Research Ethics committee of Ahvaz Jundishapur University of Medical Sciences (Ref. ID: IR.AJUMS.REC.1399.941). The participants were briefed on the research objectives, and informed consent was obtained from them before the commencement of the study. Participation in this study was voluntary, and no costs were imposed on the participants. The participants were also assured that the confidentiality of their personal information would be maintained. The study complied with ethical considerations in the use of sources and texts.

Results

According to the findings of the study, the mean and standard deviation of the age of the women and men participating in this study was 63.54 ± 14.03 and 62.34 ± 13.79, respectively, and the results of the *t*-test did not show a significant difference between the two groups in terms of age ($P < 0.544$). Also, the majority of the participants were female (54.2%), had primary education (23.2%), were married (82.8%), and were of poor economic status (44.2%). Also, 40.4% of the patients had a history of illness between 6 and 10 years, 92.1% of them had a history of another chronic disease, and 97% of them had no history of smoking. Also, the highest percentage of patients (24.1%) were workers [Table 1].

The participants' mean scores in spiritual health, perceived social support, and quality of life were 62.3 ± 17.25, 34.38 ± 10.27, and 26.39 ± 7.30, respectively. Spiritual health had a positive and significant relationship with perceived social support ($r = 0.22$, $P < 0.01$) and quality of life ($r = 0.48$, $P < 0.01$) but had a negative and significant relationship with self-care ($r = 0.48$, $P < 0.01$). Also, perceived social support had a positive and significant relationship with quality of life ($r = 0.39$, $P < 0.01$) but a negative and significant relationship with self-care ($r = 0.39$, $P < 0.01$). Quality of life and self-care

also had a negative and significant relationship with each other (r = −0.62, $P < 0.01$) [Table 2].

According to the results of Table 3, the multiple correlation coefficient in the third model, where all predictor variables are entered to predict self-care, has a value of 0.67. The coefficient of determination in the third model is 0.45. In other words, 45% of the variance of the criterion variable (self-care) is explained by the predictor variables (spiritual health, perceived social support, and quality of life). The coefficient of determination of change shows the amount of change at each stage of entering the predictor variables into the model. The F value of change and the significance of F change also show the statistic of the change value and its significance, respectively. The change in the coefficient of determination after entering each predictor variable and in each step of the model is significant ($P < 0.01$). In other words, the amount of variance that each predictor variable brings with its entry is statistically significant in predicting self-care [Table 3].

Table 1: Frequency distribution and percentage of demographic and clinical variables in the studied patients (*n*=203)

Variables	Frequency	Percentage
Sex		
Female	110	54.2
Male	93	45.8
Education		
Illiterate	23	11.3
Elementary	47	23.2
High School	23	11.3
Diploma	33	16.3
Academic Education	24	11.8
Marital Status		
Single	12	5.9
Married	168	82.8
Spouse deceased or divorced	23	11.3
Economic Status		
Poor	90	44.3
Average	64	31.6
Good	49	24.1
The Duration of the Disease		
1–5 Y	59	29.1
6–10 Y	82	40.4
1–20 Y	48	23.6
>20 Y	14	6.9
Comorbidity		
Yes	187	92.1
No	16	7.9
Smoking		
Yes	6	3.0
No	197	97.0
Employment Status		
Housewife	48	23.6
Unemployed	32	15.8
Manual Worker	49	24.1
Self-Employment	16	7.8
Employee	22	10.9
Retired	36	17.8

Analysis of variance was used to determine the significance of the regression. The significance of the F value in each of the three models presented in Table 4 shows the significance of R and R^2 values in Table 3. Therefore, considering the significance of all Fs in all three models, the values of R and R^2 calculated in Table 3 are also significant [Table 4].

Simultaneous regression analysis to determine the effects of each of the predictor variables on self-care showed that in the third and final model, all three predictor variables have a significant effect on the self-care variable [Table 5]. To determine the strongest predictors, stepwise regression analysis was used. According to the results, quality of life ($\beta = -0.45$, $P < 0.001$), spiritual health ($\beta = -0.23$, $P < 0.001$), and perceived social support ($\beta = -0.17$, $P < 0.001$) are the strongest predictors of self-care [Table 6].

Based on the results of the *t*-test and one-way analysis of variance, none of the demographic-clinical variables had a significant relationship with self-care.

Discussion

The present study was conducted to determine the predictive role of spiritual health, social support, and quality of life in self-care behaviors among HF patients. The findings showed that the spiritual health of the studied patients was at an average level and had a significant relationship with self-care. In other words, the higher the spiritual health, the higher the level of self-care behaviors in the studied patients. Heidari *et al*. (2020) reported that spiritual health, social support, and psychological capital play an important role in increasing health-promoting behaviors in people

Table 2: Mean, standard deviation, and correlation coefficients of predictive variables and self-care in the studied patients (*n*=203)

Variables	Mean±standard deviation	Spiritual health (*r*)	Social support (*r*)	Quality of Life (*r*)	Self-care (*r*)
Spiritual health	17.25±62.3	1			
Social support	10.27±34.38	**0.22	1		
Quality of Life	7.30±26.39	**0.48	**0.39	1	
Self-care	10.64±36.24	**-0.48	**-0.39	**-0.62	1

*$P \leq 0.05$, **$P \leq 0.01$

Table 3: Regression analysis to predict self-care in the studied patients (*n*=203)

Model	Multiple correlation coefficient (*R*)	The coefficient of determination (R^2)	Adjusted R^2	Estimated standard error (SE)	Coefficient of change (R^2 Change)	*F* change	Sig. *F* change
1	0.48[a]	0.23	0.22	9.37	0.23	59.12	0.000
2	0.56[b]	0.31	0.31	8.87	0.08	24.43	0.000
3	0.67[c]	0.45	0.44	7.95	0.14	50.10	0.000

[a]Predictor variables: (constant value), spiritual health. [b]Predictor variables: (constant value), spiritual health, perceived social support. [c]Predictor variables: (constant value), spiritual health, perceived social support, quality of life

Table 4: ANOVA results for predicting self-care[a] in the studied patients (*n*=203)

Model	Sum of Squares (SS)	Degrees of freedom (df)	Mean of Square (MS)	*F*	Sig.
1					
Regression	5195.29	1	5195.29	59.12	0.0001
Residual	17663.36	201	87.88		
Total	22858.65	202			
2					
Regression	7118.25	2	3559.12	45.22	0.0001
Residual	15740.40	200	78.79		
Total	22858.65	202			
3					
Regression	10284.01	3	3428.01	54.25	0.0001
Residual	12574.65	199	63.19		
Total	22858.65	202			

[a]Dependent variable: self-care. Model 1. Predictor variables: (constant value), spiritual health. Model 2. Predictor variables: (constant value), spiritual health, perceived social support. Model 3. Predictor variables: (constant value), spiritual health, perceived social support, quality of life

Table 5: Simultaneous regression analysis to determine the effects of each predictor variable on self-care

Model	*B*	SE	β	*t*	Sig.
1					
Constant Value	17.97	2.47	-	7.29	0.0001
Spiritual Health	0.29	0.04	−0.48	−7.69	0.0001
2					
Constant Value	9.88	2.85	-	3.47	0.0001
Spiritual Health	−0.25	0.04	−0.41	−6.84	0.0001
Perceived Social Support	−0.31	0.06	−0.30	−4.94	0.0001
3					
Constant Value	4.43	2.67	-	1.66	0.098
Spiritual Health	−0.14	0.04	−0.23	−3.77	0.0001
Perceived Social Support	−0.17	0.06	−0.17	−2.90	0.004
Quality Of Life	−0.65	0.09	−0.45	−7.08	0.0001

with cardiovascular diseases.[25] According to Rachel *et al*. (2014), people with higher spiritual health are different from others in terms of their belief in health, and they work harder to improve their physical condition.[26] In other words, spirituality can not only instill in them the willingness to perform healthy behaviors but also improve their quality of life and increase their life expectancy.

The perceived social support of the participants in the current study was at an average level and had a significant relationship with self-care. Thus, with the increase in the perceived social support of people, their level of self-care also increased. The available evidence also confirms the role of social support in improving health-promoting behaviors.[18,20] Cheraghi *et al*. also showed that there is a definite relationship between reduced social support and poor prognosis in patients with heart disease.[27] Social support encourages people to participate in social activities, increases the adoption of health behaviors, enhances satisfaction with life, and finally improves the quality of life and the health status of the individual.[28]

The quality of life of the patients in the present study was reported to be at an average level, and a statistically significant relationship was observed between the quality of life and self-care. That is, an increase in the quality of life was associated with increased self-care in the studied patients. The results of Choi *et al*.[29] and Sanders *et al*.[30] also indicate that there is a relationship between self-care behaviors and quality of life in HF patients. The existence of such a significant relationship has also been reported in patients with hypertension.[31] However, Asadi *et al*.[32] reported no significant relationship between self-care and quality of life in the patients they studied. They argued that cultural factors and people's views about how to lead life can affect this result.

According to the findings, compliance with self-care in the participants was at an average level. In many studies, the level of self-care compliance in HF patients has been reported to be moderate or low.[7-9] Mlynarska *et al*. (2018), for example, reported that although the patients they studied had a relatively low ability to do self-care during HF, these patients had the highest capacity in complying

Table 6: The results of step-by-step regression analysis to determine the strongest predictors of self-care

Criterion variable: Self-care predictor variables	*B*	S.E	β	t	Sig.
Constant Value	67.57	2.67	-	25.34	0.0001
Quality of Life	−0.65	0.09	−0.45	−7.08	0.0001
Spiritual Health	−0.14	0.04	−0.23	−3.77	0.0001
Perceived Social Support	−0.17	0.06	−0.17	−2.90	0.004

R=0.67, R^2=0.45, F=54.25, P<0.000

with the recommended medications and low sodium diet in spite of having a low level of capacity in complying with physical activity.[33]

Based on the findings, no statistically significant relationship was found between the following variables and self-care: gender, education level, marital status, economic status, having health insurance, duration of illness, having chronic disease, employment status, smoking, and age. Of course, other studies addressing self-care in HF patients have reported a significant relationship between some demographic variables and self-care. Mansouri *et al*. (2018), for instance, reported that there was a significant relationship between self-care behaviors and education level and age in cardiac patients.[7] According to the findings of Daryasari *et al*., age is an influencing factor regarding the level of self-care of cardiac patients, with younger patients having a better level of self-care. They also stated that marriage can play a role in reducing occupational stress through emotional support and helping to change the way of life.[34] In their study on patients with blood pressure, Hosseinzadeh *et al*. concluded that married people have a higher level of self-care compared with single people,[35] which is not consistent with the results of the present study. Whereas in the current study, no significant relationship was found between economic status and self-care in HF patients, the study by Mohebbi *et al*. showed that economic status can predict dietary compliance in middle-aged women with hypertension.[36] Perhaps the small number of participants is the most important factor contributing to this discrepancy.

In this study, the duration of the disease did not have a significant relationship with self-care behaviors. In Boyde *et al*.'s study, a significant relationship was reported between the duration of disease and self-care in patients with HF. Patients with a longer history of HF seem to show a greater desire for self-care due to receiving more training over the years.[37] In addition, improved self-care behavior may be due to the experience they gain and the change in their attitude which occurs over time.

In the present study, most of the patients were workers, and no significant relationship was found between the type of occupation and self-care behavior. This finding was consistent with the results of Lee *et al*.'s study. Alkady *et al*. found a significant relationship between people's employment and their self-care, with people having a suitable occupation having a more favorable level of self-care and better self-care behaviors compared to other patients.[38,39]

The findings showed that the three variables of spiritual health, social support, and quality of life predict the adoption of self-care behaviors in HF patients. More specifically, 45% of the variance of the criterion variable (self-care) is explained by the predictor variables (spiritual health, perceived social support, and quality of life). In other words, HF patients need social support and spiritual health to cope with the conditions brought about by heart disease and improve their quality of life, because with the right support, these patients can be turned into active members of society and their mental well-being can be improved accordingly. In a systematic review, Mohebbi *et al*. stated that interventions based on health education theories that include intra- and interpersonal variables are associated with improving outcomes such as self-care behavior and adherence to treatment in patients with cardiovascular diseases.[40] These findings confirm that self-care behaviors in HF patients can be influenced by many individual and interpersonal factors.

Limitation and recommendation

The present study is worthwhile in that it investigated the simultaneous effect of three variables. However, it suffered from some limitations. First, the questionnaires used in the present study included many questions and were time-consuming to complete, and this was a factor in reducing the willingness of patients to participate in the study. The researchers minimized this limitation by providing plenty of time to the patients and encouraging them to participate in the present study. The second limitation was that the sample size was small. Maybe this has led to the non-significance of the relationship between demographic-clinical variables and self-care behaviors. Thirdly, self-care behaviors were evaluated by self-report and based on the participants' statements, which may have led to incorrect results in the study. It is suggested that future studies be conducted with a larger sample size and based on the structural equation model, taking into account mediating and environmental variables.

Conclusion

The results showed that promoting spiritual health along with social and family support improves the quality of life and self-care ability in patients with HF. Self-care is a multidimensional behavior that is influenced by several factors, the effects of some of which, such as social support, spiritual health, and quality of life, were examined and confirmed in this study. The findings showed that these variables simultaneously play a greater role in predicting patients' self-care compared to when they are considered alone. It is necessary for planners and providers of health services to take into account multiple predictive factors when developing care programs and designing educational interventions to improve self-care in patients with HF.

Abbreviations

Heart failure (HF), European Heart Failure Self-care Behavior Scale (EHFScBs), Multidimensional Scale of Perceived Social Support (MSPSS), 12-Item Short Form Health Survey (SF-12).

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Conflicts of interest

There are no conflicts of interest.

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