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Self-care in Chinese heart failure patients: Gender-specific correlates

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ABSTRACT

Background: Existing studies have indicated that poor self-care in heart failure (HF) patients may differ according to gender but such studies remain scarce among Chinese HF patients.
Objective: To explore gender difference in correlates of self-care in Chinese HF patients.
Method: A cross-sectional study on Chinese HF patients (n = 127) from cardiac wards of two hospitals in China was conducted. Data on participants' socio-demographic and clinical characteristics, self-care, HF knowledge, social support, and self-care confidence were collected. Correlates of HF self-care were explored using hierarchical multiple regression.
Results: Gender differences were observed in Chinese HF patients, who generally performed poorly in self-care. In males, self-care maintenance was associated with HF knowledge while self-care management was associated with social support. In females, maintenance was associated with self-care confidence while management was associated with both self-care confidence and HF knowledge.
Conclusion: Correlates of self-care differed between two genders in Chinese HF patients. These gender-specific factors should be considered when planning self-care intervention or educating HF patients.

Introduction

Heart failure (HF) has become a public health issue that affects an estimated 26 million sufferers worldwide[1] and 4.5 million people in China.[2] With treatment advancements, aging populations and increasing prevalence of risk factors such as coronary heart disease, hypertension, and diabetes, HF prevalence has been projected to rise.[3] HF is a serious health problem with high rehospitalization and mortality rates Studies have reported that about 33% of patients readmit to hospital within 90 days[3] and 50% of patients die within five years post-index diagnosis.[4,5] In China, 1.9% and 10.8% in-hospital mortality rates were reported for chronic and acute HF patients respectively.[6] This highlights a substantial disease burden of HF on individuals, families, and society.

Self-care is a recommended non-pharmacological approach towards HF management. Adequate self-care is associated with reduced rehospitalizations and improved survival.[7,8] According to the situation-specific theory of HF self-care, self-care is a naturalistic decision-making process by which patients choose suitable behaviors to maintain physiologic stability (self-care maintenance) and manage symptoms (self-care management).[9] However, self-care in patients with HF is consistently reported to be poor.[10–12] Jaarsma et al. (2013) investigated the self-care behaviors of 5964 HF patients from 15 countries and found that these patients performed poorly in exercise and weight monitoring.[11] Particularly, when compared to European and American samples, Hong Kong Chinese reported poorer self-care behavior on exercise, weight monitoring, and sodium restriction.[11] Similarly, a study in mainland China demonstrated low scores in self-care maintenance (mean: 48.4) and management (mean: 54.3) measured by the Heart Failure Self-Care Index.[13] These scores are far below the cutoff points of 70 that is used to judge adequate self-care.[14] Chinese culture may partially explain the poor self-care in Chinese HF patients. In China, as influenced by Confucianism, Taosim, and Buddhism philosophies, Chinese people tend to hold the attitudes of 'fatalist', 'letting nature take its course', and 'people are born to suffer' toward life and health.[15,16] Therefore, they may view any efforts in delaying disease progression as futile and consequently are less likely to take actions such as restricting salt or fluid intake to prevent deterioration in HF, resulting in inadequate self-care.[15,16] This may also suggest the necessity of understanding factors that influence self-care among HF patients in a specific cultural context.

Gender has been widely investigated for its impact on HF self-care but results have been inconsistent. While one study reported significantly better self-care in American males than females,[17] others

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found no gender difference in HF self-care[18–20] While differences could be due to different instruments used on different populations, conflicting results could be investigated by examining the association between common determinants (e.g., HF knowledge, self-care confidence) and self-care according to gender.[17,20] For example, HF management knowledge has been shown to influence self-care in males and not females; whereas self-care confidence determines female's and not males' self-care.[20] However, most of these studies were conducted in Western countries, and limited studies could be found in China. This leaves gender-specific correlates of self-care in Chinese HF patients unknown. Therefore, this study aimed to: 1) investigate whether there was a gender difference in HF self-care (including both self-care maintenance and management); and 2) explore gender-specific correlates of HF self-care in Chinese patients. Findings of this study would improve our understandings on the gender difference in HF self-care and the correlates in the Chinese context.

Material and methods

Study design

This was a cross-sectional study with a convenience sample.

Settings and participants

Participants were recruited from cardiac wards of two university-affiliated hospitals in Changsha, China, from August 2013 to January 2014. In both hospitals, nurses provided HF patients with brief information regarding self-care (e.g., keeping a healthy lifestyle, quitting smoking, following the treatment regimen) and no written materials were offered.

Patients were included if they were: 1) 18 years old or above, 2) with an established HF diagnosis for at least six months, as indicated in their medical records and confirmed with the physician, 3) able to read Chinese, and 4) able to give consent. Patients with cognitive impairment, known history of psychiatric illnesses, life-threatening diseases, or concurrently involved in other studies were excluded. One hundred and thirty-three patients were eligible and invited to participate in this study. Six patients rejected with reasons including disinterest, time concern and lack of family support. Finally, 127 (95.5%) patients consented to participate and were recruited. The sample size was calculated based on prior study.[20] Considering an alpha of 0.05, power of 80%, 10 predictors, and an expected R^2 of 0.31 for the total sample, 0.26 for male, and 0.35 for female, the sample size needed was 63, 73, and 57 for the total sample, male, and female, respectively.

Measures and instruments

Data on socio-demographic and clinical characteristics were collected via patients' interviews and medical records review. The socio-demographic and clinical variables of interest included age, gender, education level, and marital status, duration of living with HF, number of hospitalizations in the past year, the New York Heart Association (NYHA) class, and etiology of HF. The interested correlates of HF self-care in this study included HF knowledge, social support, and self-care confidence.

Heart failure self-care

Heart failure self-care was measured using the Chinese version of Self-care of Heart Failure Index (C-SCHFI), which consists of three subscales namely self-care maintenance, self-care management, and self-care confidence.[21] Self-care maintenance and management subscales were used to measure self-care. The Chinese version was translated from the revised 22-item English version.[14] The self-care maintenance subscale contains ten items to evaluate patients' performance on each self-care behavior; the self-care management subscale contains six items that assess patients' abilities in symptom recognition and timely treatment initiation. Each subscale has a standardized score ranging from 0–100, with higher scores indicating better self-care. Both subscales are reliable and valid, with a Cronbach's alpha of 0.66 for self-care maintenance and 0.74 for self-care management in Chinese HF patients.[21]

Heart failure knowledge

Heart failure knowledge was measured by a Chinese heart failure knowledge test (C—HFKT) developed by our research team.[22] The C—HFKT was based on prior heart failure knowledge tools[23,24] and the knowledge needs of Chinese HF patients.[25] This test contains 15 questions and assesses five aspects of knowledge including general HF knowledge, risk factors, signs and symptoms, medication, and self-management. Each question is answered with 'yes', 'no', or 'unsure'. One point is given for a correct answer; a wrong answer or 'unsure' receive no point. The total score ranges from 0–15, with higher scores indicating better HF knowledge. In the current sample, Cronbach's alpha of the C—HFKT was 0.742.

Social support

The Chinese version of the Medical Outcome Social Support Survey (MOS-SSS-C) was used to quantify the patients' social support. The MOS-SSS is a multidimensional scale that measures perceived social support from four different aspects including tangible support, informational and emotional support, positive social interaction, and affectionate support.[26] This scale contains 20 items, with 19 measuring the four aspects of social support and one additional item assessing the size of social network. The total score of MOS-SSS-C ranges from 0–100, with a higher score indicating better social support. The MOS-SSS-C demonstrates satisfactory reliability, with a Cronbach's alpha of 0.98 and test-retest reliability of 0.84 for the whole scale.[27]

Self-care confidence

Self-care confidence was measured by the self-care confidence subscale of the Chinese version of SCHFI (C-SCHFI).[21] This subscale assesses patients' confidence in complying with treatment regimens and initiating self-management. There are six items, and each item is rated on a four-point Likert scale from 1 to 4. This subscale has a standard score ranging from 0–100, with higher scores reflecting higher levels of self-care confidence. A satisfactory internal consistency of this subscale in Chinese HF patients has been reported (Cronbach's alpha: 0.84).[21]

Data collection

Ethical approval was obtained from the ethics committee of the study hospitals. After admitting to the cardiac ward, patients were screened for HF diagnosis by firstly reviewing their medical records and then confirming the diagnosis with the physician by a senior nurse. The potential participants were then referred to the researcher for further eligibility assessment according to the inclusion and exclusion criteria. For those who were eligible, the researcher explained the aims and procedures of the study to each participant and then invited her/him to participate in this study. Anonymity and confidentiality were assured. After obtaining the written consent, each participant was asked to complete a set of questionnaires independently and then give them back to the researcher after completion. All data were collected by the same researcher to ensure the consistency of the study.

Data analysis

SPSS version 25.0 was used for data analysis. Data were presented using descriptive statistics such as means (SD) and percentages as appropriate. Independent t-test, Chi-square tests, or Mann-Whitney

U tests were used as appropriate to compare differences in all variables between male and female participants. Hierarchical multiple regression was used to explore correlates of self-care in the total sample, in male, and in female groups. Variables of HF knowledge, social support, and self-confidence were entered into block 1 to determine the impact of these modifiable factors on self-care. Socio-demographic and clinical factors were entered into block 2 to examine their contribution to self-care. A stepwise model (criteria for entry: 0.05, removal: 0.10) was applied because it is considered being helpful in developing a set of variables correlated with and predicting dependent variable,[28] retaining the significant ones in the final regression model obtained, and maximizing prediction accuracy by retaining or eliminating variable according to specific statistical criteria.[29] All statistical tests performed were two-sided, and a significance level was set at $p < 0.05$.

Results

Socio-demographic and clinical characteristics

A total number of 127 patients with HF were recruited, with 78 (61.4%) being male participants. A majority (79.5%) of the participants were married, 77.2% had an educational level of below high school. Regarding etiology of HF, coronary heart disease (44.1%) was the major cause of HF in this sample, followed by dilated cardiomyopathy (25.2%) and heart valves disease (18.9%). The average length of living with HF was 38.24 (41.10) months, and the mean number of hospitalization in the past year was 3.54 (3.11). In terms of NYHA class, approximately 60% of participants had NYHA class III, 28.3% for class IV, and 12.6% for class II. No significant differences in socio-demographic and clinical characteristics between male and female were found except for educational level. There were more male participants reporting an education level of high school or above than that in females ($\chi^2 = 5.078$, $p = 0.024$).

Table 1 shows the details of the socio-demographic and clinical characteristics of participants.

Correlates of HF self-care

The average scores on self-maintenance and self-care management were 38.89 and 35.78 for male, 41.02 and 36.33 for female, respectively (Table 1). These scores were all below the cutoff point of 70, indicating inadequate self-care in both males and females. Results of multiple regression showed that HF knowledge was significantly associated with both self-care maintenance and management in Chinese HF patients (both $p < 0.05$). Self-confidence was correlated with self-care maintenance only ($p < 0.05$) and social support was related to self-care management only ($p < 0.05$). Table 2 presents the correlates of HF self-care in the whole sample.

Gender-specific correlates of HF self-care

HF knowledge, social support, self-care confidence, and self-care did not significantly differ between males and females (all $p < 0.05$) (Table 1). Results of regression analysis demonstrated that there were gender differences in the correlates of self-care (Table 3). HF knowledge was associated with self-care maintenance and management in males ($p < 0.05$), but it was related only with self-care management in females ($p < 0.05$). Self-care confidence was related to both aspects of self-care in females ($p < 0.05$), while social support was associated with self-care management in males ($p < 0.05$).

Discussion

This study examined gender differences in self-care and its correlates in Chinese HF patients. The results of this study provide insights into self-care in Chinese patients with HF. First, Chinese HF patients performed poorly on self-care, and the self-care in men and women did not significantly differ. Second, important modifiable factors including HF knowledge, self-care confidence, and social support were identified. These factors are important targets for self-care intervention. Third, there were gender differences in factors affected men and women's self-care. These findings improve our understanding of gender-specific correlates of HF self-care in the Chinese context.

HF self-care and gender difference

Suboptimal self-care in HF patients is consistently reported.[11] Likewise, the current study demonstrated inadequate self-care maintenance (mean: 38.89) and management (mean: 35.78) in Chinese HF patients, and the self-care scores are even much lower than that in

Table 1
Socio-demographic and clinical characteristics of participants and stratified by gender

Variables	Total sample	Male ($n = 78$)	Female ($n = 49$)	t/χ^2	p
Age (mean, SD)	64.92 (12.34)	64.45 (13.14)	65.67 (11.04)	−0.543	0.588
Marital status n (%)					
Married	101 (79.5)	65 (83.3)	36 (73.5)	1.798	0.180
Single/divorced/widowed	26 (20.5)	13 (16.7)	13 (26.5)		
Education level n (%)				5.078	0.024
Below high school	98 (77.2)	55 (70.5)	43 (87.8)		
High school and above	29 (22.8)	23 (29.5)	6 (12.8)		
Etiology n (%)				7.785	0.051
Coronary heart disease	56 (44.1)	38 (48.7)	18 (36.7)		
Heart valves disease	24 (18.9)	10 (12.8)	14 (28.6)		
Hypertension	15 (11.8)	7 (9.0)	8 (16.3)		
Dilated cardiomyopathy	32 (25.2)	23 (29.5)	9 (18.4)		
Length of living with HF (month; mean, SD)	38.24 (41.10)	34.64 (41.80)	43.96 (39.71)	−1.247	0.215
No. of hospitalizations in past year (mean, SD)	3.54 (3.11)	3.64 (2.94)	3.37 (3.38)	0.464	0.643
NYHA class n (%)				0.508	0.776
II	16 (12.6)	11 (14.1)	5 (10.2)		
III	75 (59.1)	46 (59.0)	29 (59.2)		
IV	36 (28.3)	21 (26.9)	15 (30.6)		
Heart failure knowledge (mean, SD)	5.54 (3.16)	5.72 (3.17)	5.24 (3.16)	0.819	0.473
Social support (mean, SD)	63.96 (13.26)	63.31 (12.79)	65.0 (14.05)	−0.70	0.485
Self-care confidence (mean, SD)	49.69 (18.42)	52.14 (17.78)	45.80 (18.93)	1.906	0.059
Self-care maintenance (mean, SD)	39.71 (13.17)	38.89 (13.45)	41.02 (12.73)	−0.887	0.377
Self-care management (mean, SD)	35.98 (15.35)	35.78 (15.58)	36.33 (15.13)	−0.198	0.843

Table 2
Correlates of HF self-care in the whole sample

Self-care	Significant variables entered in the final model	Standardized Beta	95%CI	t	p
Self-care maintenance	HF knowledge	0.191	0.045, 1.547	2.162	0.038
	Self-confidence	0.269	0.049, 0.336	2.666	0.009
Self-care management	HF knowledge	0.312	0.669, 2.363	3.546	0.001
	Social support	0.232	0.018, 0.447	2.150	0.034
	Length of living with HF	0.228	0.016, 0.155	2.430	0.017
	NYHA class III (reference to class II)	0.363	3.469, 19.125	2.859	0.005
	NYHA class IV(reference to class II)	0.298	1.608, 18.598	2.357	0.020

Western HF patients.[10,30] In an Italian HF population, the mean scores for self-care maintenance and management were 55.26 and 53.18, respectively.[10] In an American HF sample, self-care maintenance and management scores were reported as 66.8 and 67.4, respectively.[30] Culture plays an important role in understanding self-care performance in HF patients. As influenced by Confucianism and Buddhism, Chinese people believe that if they get sick, then it is their fates to be sick; they also hold an attitude that suffering is the way to a completed life. Previous studies also reported attitudes of 'fatalist' and 'let it be' with regard to life and health among Chinese HF patients.[15,16] These believes or attitudes then determined their self-care behaviors of not following dietary advice despite their knowledge of the importance of dietary management.[15,16] Additionally, the perceived role of sick held by patients and families may be also attributed to their poor self-care, as they believed that a sick person should be protected and cared by others, and avoid activities as much as possible.[31] These highlight culturally specific challenges in performing self-care in HF patients, which need to be considered when designing self-care intervention or providing nursing care for HF patients.

Gender differences in HF self-care have been frequently examined; however, the results are inconclusive.[10,19,32] The current study did not find any significant differences in HF self-care between male and female participants. Our results support previous studies either in Western[32,33] or in Asian countries.[34] In our study, both males and females received brief and general information regarding self-care, which was, however, not enough for them to execute self-care. Consequently, both males and females performed poorly in self-care. Unlike our study, a study involving 1192 Italian HF patients demonstrated significant difference in HF self-care between males and females.[35] In a cross-culture study, a gender difference in self-care was found in American sample ($n = 587$) but not in Australian ($n = 1, 095$) and Thailand ($n = 400$) samples.[17] Such inconsistency may be attributed to the varied populations and sample size.

Correlates of HF self-care and gender differences

In the current study, we identified several modifiable correlates of self-care in Chinese patients with HF, including HF knowledge, self-confidence, and social support; we also found a gender difference in the correlates of self-care. Consistent with previous studies,[36,37] the current study demonstrated significant associations between HF knowledge and self-care. In male patients, HF knowledge affected both aspects of self-care; whereas, in female patients, HF knowledge was associated with self-care management only. Similarly, Heo et al. found that HF knowledge was associated with self-care in men but not in women.[20] In the current study, male patients were more likely to have a higher education level than females, thus, they may more capable in managing their HF through learning.

The relationship between HF knowledge and self-care is not linear, and studies have reported some additional factors (e.g., emotions) moderate the relation between knowledge and self-care.[36,38] In the current sample, self-care confidence affected both aspects of self-care in women but not in men. It is possible that self-care confidence mediates the relation between knowledge and self-care in female patients, as there are evidence that women are more likely to be affected by emotions or other psychological factors than the factor of information when making decisions including these pertaining to self-care.[39] However, whether the mediating role of self-care confidence in the relation between HF knowledge and self-care needs to be further investigated.

Similar to previous findings that self-care confidence affects self-care,[40] we also found such relationship but in female participants. The self-care confidence was not associated with self-care in male participants in the current study. Consistently, a previous study in American HF patients also reported a positive relationship between self-care confidence and self-care in women but not in men.[20] These findings may reflect a more important role of self-care confidence in determining self-care in females than in males. The difference in decision-making between the two genders as mentioned above may offer some explanations. This may also imply that self-care interventions for female patients should incorporate self-care confidence boosting strategies.

Social support could influence self-care by assisting patients with decision-making processes to manage their conditions; however, there is little consensus regarding whether social support actually

Table 3
Gender-specific correlates of HF self-care

Self-care	Significant variables entered in the final model	Standardized Beta	95%CI	t	p
Self-care maintenance					
Male	HF knowledge	0.235	0.006, 1.986	2.009	0.049
Female	Self-care confidence	0.419	0.015, 0.549	2.141	0.039
Self-care management					
Male	HF knowledge	0.295	0.340, 2.553	2.611	0.011
	Social support	0.233	0.005, 0.563	2.031	0.046
	Length of living with HF	0.381	0.048, 0.236	3.101	0.004
	NYHA class III (reference to class II)	0.437	3.624, 23.909	2.712	0.009
Female	HF knowledge	0.365	0.268, 3.225	2.398	0.022
	Self-care confidence	0.562	0.180, 0.719	3.384	0.002
	NYHA class III(reference to class II)	0.494	2.115, 32.319	2.174	0.037
	NYHA class IV(reference to class II)	0.530	1.850, 31.630	2.314	0.027

predicts self-care.[41] In our study, social support was correlated with self-care in males rather than in females. Types of support that enhance self-care may differ between men and women. Men tend to receive more tangible support which facilitates their execution of self-care practice; while women report more emotional support but less tangible support, which may impede their execution of self-care.[42] However, we did not explore the effect of specific types of social support on self-care in the current study, and future studies are recommended to explore this area.

Limitations

Several limitations should be acknowledged in the current study. Firstly, due to the cross-sectional design, no inferences about causal relationships could be made. Thus, longitudinal or interventional studies are needed to examine the causality of the identified correlates for self-care. Secondly, the small sample size, especially the relatively small number of female participants, may limit the power to identify true correlates of self-care. Thirdly, our focus on Chinese HF patients may limit the generalization of the findings into other non-Chinese populations due to the influence of culture. Finally, the use of the self-developed C—HFKT tool, the reliability, and validity of which were not fully examined despite its acceptable internal consistency in the current sample, might result in inaccurate estimation of patients' HF knowledge level and its correlation with self-care.

Implications for future research and practice

This study has important implications for nursing research and practice. With regard to implications for research, further research with large sample size is warranted to confirm the findings generated from the current study. Additionally, the modifiable correlates of self-care identified in this study could provide targets for developing self-care interventions. Moreover, future study should further examine the reliability and validity of C—HFKT, as so to provide a validated tool to assess e patients' HF knowledge.

Regarding implications for practice, assessing patients' HF knowledge, identifying and educating those with poor knowledge, are important for both male and female patients. Furthermore, nurses should consider these gender-specific determinants and target these factors to improve self-care when conducting patient education. Specifically, improving confidence is of particularly important for female patients to facilitate their practice of self-care, while providing support may be helpful for male patients to enhance their self-care.

Conclusion

This study showed that there were gender differences in several modifiable correlates of self-care in Chinese HF patients. For female patients self-care confidence is more likely to affect self-care, while social support plays an important role in determining self-care among male patients. The findings of this study provide insights into understanding self-care and the planning of tailored self-care intervention for HF patients.

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Declarations of interest

None.

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