



Psychometric Evaluation of the Traditional Chinese Version of the Self-Care of Heart Failure Index Version 7.2

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Background: The Self-Care of Heart Failure Index (SCHFI) is a widely used instrument used to measure self-care in both research and clinical settings. The lack of a psychometric evaluation of the traditional Chinese version of the SCHFI (SCHFI-C) might limit its utilization in non-Mainland Chinese populations such as Hong Kong, Macau, and Taiwan.

Objective: This study aimed to evaluate the psychometric properties of the SCHFI-C v.7.2. **Methods:** Participants included 365 adults with heart failure. Breslin's method of translation was used to translate the SCHFI v.7.2 into traditional Chinese. Exploratory factor analysis was conducted to examine the dimensionality structure of each scale. Then, composite reliability was calculated to assess the reliability of 3 scales. Construct validity was examined by hypothesis testing and known-group comparisons. **Results:** The results of exploratory factor analysis suggest its multidimensionality of each scale. More specifically, the findings indicated a unique internal structure of the self-care maintenance ("lifestyle-related behaviors" and "consulting behaviors") and self-care management ("self-reliance behaviors" and "help-seeking behaviors") scales. The composite reliability of 3 scales were 0.81, 0.88, and 0.82, respectively, reaching adequate level. As for construct validity, the significant associations between the 3 SCHFI domains and self-care confidence as well as significant group difference among patients of different ages and educational backgrounds supported good construct validity. **Conclusions:** This study provides evidence of the reliability and validity of the SCHFI-C v.7.2. The traditional SCHFI-C v.7.2 can serve as a valid and reliable outcome measure to evaluate the effects of self-care–promoting interventions.

KEY WORDS: composite reliability, dimensionality structure, heart failure, psychometric evaluation, self-care

Heart failure (HF) is a complex clinical syndrome characterized by elevated intracardiac pressure and/or inadequate cardiac output resulting from structural and/or functional cardiac abnormality.¹ Global population aging, together with the advanced treatment of various cardiovascular diseases, have ballooned the incidence of HF, rendering it a global pandemic.² Patients with HF experience heavy symptom burden, which undermines their functional capacity and health-related quality of life.³ The progressively deteriorating cardiac

function also results in frequent cardiac decompensation requiring repeated hospital admissions and early mortality.⁴ The disease burden to the healthcare system is hence enormous, and the estimated worldwide economic expenditure of HF was reported to be 346.17 billion US dollars in 2017.²

Current European Society of Cardiology guidelines advocate incorporating self-care as an integral component for HF management.⁵ Self-care is defined as a dynamic cognitive-behavioral process of adhering to pharmacological and nonpharmacological behavior, proactive

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surveillance for signs and symptoms, early recognition, and responding to cues of early disease deterioration.⁶ A substantial body of evidence has identified the significant predictive roles of effective self-care on better health-related quality of life and lower HF-related hospitalization and mortality among this clinical cohort.⁷ Self-care is thereby regarded as an important behavioral outcome indicator of an effective HF management model. A robust and valid instrument that accurately and comprehensively captures self-care would be vital, not only to guide the design of concrete content specific to HF but also to sensitively evaluate the effects of self-care-promoting interventions.

The Self-Care of Heart Failure Index (SCHFI) is a widely used instrument measuring self-care. It is used in both research and clinical settings and is currently available in 22 languages (<https://self-care-measures.com/available-self-care-measures/self-care-of-heart-failure-index-2/>). Underpinned by the situation-specific theory of HF self-care, the SCHFI provides a comprehensive measure of different domains of self-care. According to the most updated version of the SCHFI, self-care is defined as a naturalistic decision-making process entailing 3 separate but interrelated concepts: self-care maintenance, symptom perception, and self-care management.⁸ Self-care maintenance refers to the behaviors required to maintain disease stability. Symptom perception is a domain that was newly added to capture the active self-monitoring behaviors required to proactively recognize and correctly interpret bodily changes. This self-care domain is regarded as the prerequisite of effective self-care management, which captures behavioral responses to the recognized symptoms. These 3 domains in the most updated version of SCHFI v.7.2 best define self-care as a perceptual-cognitive process requiring persistent health behavioral changes, effective decision making, and proactive responses to changes in bodily cues.

To date, the psychometric properties of the SCHFI v.7.2 have been reported in American,⁸ Italian,⁹ Polish,¹⁰ Korean,¹¹ and simplified Chinese¹² versions. The original American version has optimal reliability and predictive validity, and structural analysis revealed a multidimensional structure for each scale.⁸ Although the psychometric qualities of other language versions converged with that of the original version, there were variations in how the items within each scale are related to one another.^{9–11} Differences in the sociocultural context and healthcare system for disease management were reported as attributing to such psychometric uniqueness of the different language versions of the SCHFI.^{9,11}

Our team translated the SCHFI v.7.2 to traditional Chinese version, and the backward-translated version was validated by the original author. A simplified Chinese version would be relevant to the population in Mainland China. However, we sought to provide a traditional Chinese version that matches with the linguistic characteristic

of other Chinese populations in Asian regions such as Hong Kong, Macau, and Taiwan. The semantic difference between the 2 Chinese versions in word choices, vocabulary usage, and sentence structure greatly limit the transferability of the psychometric properties of these 2 language versions.¹³ Indeed, as compared with the Chinese population in Mainland China, those residing in other parts of Asia are more influenced by a mixed Eastern and Western value system and cultural practices. The resulting influence on health orientation and illness behaviors may also shape their self-care behaviors in different ways. Hence, it was necessary to validate the traditional Chinese version of the SCHFI (SCHFI-C) v.7.2. The aim of this study was to evaluate the psychometric properties of the traditional SCHFI-C v.7.2.

Methods

Translation and Validation Plan

Breslin's method of translation was used to devise the traditional SCHFI-C v.7.2. The author (D.S.-f.Y.) translated the original English version to traditional Chinese, and 2 research nurses who were blinded to the original version conducted the independent backward translation. These nurses compared their versions with each other and resolved the inconsistency. Translation errors were detected by comparing the consensuses' backward-translated version with the original version. Problematic content went through the previously mentioned forward-backward translation process again until all errors were resolved. The author of the original SCHFI validated the final backward-translated version.

As for the validation plan, we examined both the reliability and validity of the traditional SCHFI-C v.7.2. Given the multidimensionality of the 3 scales,¹⁴ factor analysis was first conducted to explore their internal structure. Then, composite reliability indices were computed according to the identified structure for each scale.¹⁵ As for validity, construct validity was examined by hypothesis testing and known-group comparison. On the basis of social cognitive theory,¹⁶ construct validity was investigated by examining the hypothesized relationship between self-care including self-care maintenance, self-care management, and symptom perception with self-care self-efficacy. Known-group comparison was supported by substantial evidence indicating the positive relationship between self-care and younger age, better education level, and fewer hospitalizations in the past year.¹⁷

Participants and Settings

This was a secondary analysis of the baseline data obtained from 2 studies with authors investigating the effects of a self-care empowerment program and a survey of the self-care of patients with HF. Consecutive samples were recruited from the cardiac units of 3 regional hospitals

in Hong Kong from November 2016 to February 2019, with the criteria of (1) Chinese ethnicity, (2) a diagnosis of HF for at least 6 months as recorded in the hospital record, (3) presenting with symptoms (ie, New York Heart Association classes II–IV), (4) community-dwelling, and (5) communicable. The final sample was composed of 365 patients, which was considered adequate for detecting a small effect size for the proposed hypotheses and for exploratory factor analysis (EFA), following the rule of thumb of 1:5 item-to-participant ratio.¹⁸ The studies complied with the Declaration of Helsinki and were approved by the concerned ethics committee.

Instruments

The Traditional Chinese Version of the Self-Care of Heart Failure Index v.7.2

The traditional SCHFI-C v.7.2 consists of 29 items divided into 3 scales measuring self-care maintenance (10 items), symptom perception (11 items), and self-care management (8 items). Each item is rated by Likert-type response options. The self-care maintenance scale measures the frequency of behaviors to maintain health and physiological stability of HF. The symptom perception scale assesses behaviors to monitor and interpret changes in signs and symptoms of HF, with 2 items assessing how quickly symptoms, if any, are recognized and related to HF. As for the 8-item self-care management scale, 7 of which ask respondents how likely they are to recognize a change in health and taken actions to control symptoms and reverse an illness exacerbation. The last item assesses how effective the respondent feels the action was in improving the symptom. Because this last item was concerning self-evaluation on symptom management, which is conceptually different from the other self-care management items, it was excluded from psychometric evaluation. For each scale, the raw score was transformed to the 0-to-100 scale as recommended by the original version for psychometric analysis.

The Traditional Chinese Version of the Self-Care Self-Efficacy Scale

The Self-Care Self-Efficacy scale is a 10-item scale assessing confidence in self-care. It was used to examine the construct validity of the 3 SCHFI scales. Each item is rated on a 5-point Likert scale, and the total score is transformed to 0 to 100, with higher scores indicating higher self-efficacy. The Cronbach α for the Chinese version of the Self-Care Self-Efficacy scale is 0.89, and with measurement equivalence with the original and other language versions.¹⁹

Statistical Analysis

Data analysis was performed by SPSS 23 and R 4.10. Descriptive statistics were used to summarize participants' characteristics and the results of various measurements.

Dimensionality structure was examined by using EFA. Factorability of the data was examined based on the criteria of Kaiser-Meyer-Olkin value of >0.50 and a significant Bartlett test of sphericity to indicate adequate sampling and presence of correlation between variables, respectively. Principal component analysis with promax rotation was used because of the expected intercorrelation between the identified factors.²⁰

Reliability of the scales was assessed by composite reliability, which is a model-based internal consistency coefficient, and with consideration of the multidimensionality structure of the scale.^{14,21} A value of 0.7 or greater is considered adequate.²²

Construct validity was tested by using Pearson's correlation coefficient to examine the hypothesized relationship between each SCHFI v.7.2 scale and the Self-Care Self-Efficacy scale. For known-group comparison, an independent t test was used to compare the self-care scores of patients in different age groups, with different education levels, and with different hospitalizations in the past year, hypothesizing that younger patients with better education and fewer hospitalizations would have better self-care behavior.¹⁷

Results

Sample Characteristics

Table 1 summarizes the sample characteristics. The mean (SD) age of the patients was 66.6 (10.6) years, and over 60% were male. Most of the patients (74.8%) had a spouse, and 10.7% had not received formal education. As for the clinical characteristics, more than half had been given a diagnosis of HF at least 2 years prior, with about one-quarter in New York Heart Association class III and 57.7% with impaired left ventricular ejection fraction (ie, $\leq 40\%$). The Charlson Comorbidity Index was low, with 75.6% presenting with mild disease burden. The average SCHFI v. 7.2 scores on self-care maintenance, symptom perception, and self-care management ranged from 41.75 to 59.18, which was lower than the cutoff score representing adequate self-care (ie, >70).⁸ The mean (SD) of self-care confidence was 69.01 (21.00).

Factorial Validity

Exploratory factor analysis was conducted to determine the dimensionality of the 3 scales in the traditional SCHFI-C v.7.2. The Kaiser-Meyer-Olkin value and Bartlett's test indicated the data were factorable for all scales.

For the self-care maintenance scale, parallel analysis revealed a 2-factor structure, explaining 36% variance of the total item variance. The rotated factor solution using promax is presented in Table 2. Six items referring to lifestyle modification and preventive health concerning exercise, diet, and action to prevent getting sick

TABLE 1 Demographic and Clinical Characteristics of the Participants (N = 365)

Variables	Value ^a
Age, y	66.6 ± 10.6
Gender	
Male	236 (64.7%)
Female	129 (35.3%)
Educational level	
Without formal education	39 (10.7%)
Primary school	114 (31.2%)
Secondary 1–3	82 (22.5%)
Secondary 4–7	76 (20.8%)
University: undergraduate	17 (4.7%)
University: postgraduate	33 (9.0%)
Presence of spouse	
No	92 (25.2%)
Yes	273 (74.8%)
Time since HF diagnosis, y	
<1	65 (18.0%)
1–2	96 (26.6%)
>2	200 (55.4%)
Etiology of HF	
Coronary artery disease	163 (44.7%)
Dilated cardiomyopathy	94 (25.8%)
Valvular heart disease	90 (24.7%)
Atrial fibrillation	141 (38.6%)
Hypertension	198 (54.2%)
NYHA class	
II	277 (76.3%)
III	86 (23.7%)
HF-related hospitalization last year	
0–1	308 (84.8%)
>1	55 (15.2%)
Charlson comorbidity index	2.02 ± 1.32
Mild (1–2)	276 (75.5%)
Moderate (3–4)	68 (18.7%)
Severe (≥5)	21 (5.8%)
LVEF	42.29 ± 14.77
HFrEF	173 (57.7%)
HFmrEF	34 (11.3%)
HFpEF	93 (31.0%)
Hemoglobin	13.61 ± 7.88
Blood urea nitrogen	9.77 ± 11.84
Serum creatinine	109.62 ± 75.05
Score of self-care maintenance	59.18 ± 16.13
Score of symptom perception	54.22 ± 19.72
Score of self-care management	41.72 ± 15.33
Score of self-care confidence	69.01 ± 21.00

Abbreviations: HF, heart failure; HFrEF, heart failure with reduced ejection fraction; HFmrEF, Heart Failure with mid-rang ejection fraction; HFpEF, heart failure with preserved ejection fraction; LVEF, left ventricular ejection fraction; NYHA, New York Heart Association.

^aMean ± SD or frequency (percentage).

loaded onto 1 factor, and the other 4 items concerning clinical management of HF such as taking medication and seeking medical care loaded onto another factor. The extracted 2 factors were therefore named as “lifestyle-related behaviors” and “consulting behaviors,” respectively. All except 3 items (items 1, 7, and 9) had factor loadings above 0.3.

As for the symptom perception scale, the parallel analysis indicated a 2-factor structure, explaining 42%

variance of the total item variance. As presented in Table 3, 9 items that refer to behaviors to monitor and interpret symptoms and signs loaded onto 1 factor, and 2 items related to how quickly patients recognize these symptoms and signs loaded on the other factor. Therefore, the 2 factors were labeled as “symptom monitoring” and “symptom recognition,” respectively. All items had factor loadings above 0.3.

As for the self-care management scale, the parallel analysis suggested a 2-factor structure, explaining 42% variance of the total item variance (Table 4). One of the factors comprises 5 items that refer to the behaviors taken by the patients to limit symptoms such as reduced salt and fluid intake, reduced activity, and taking medication, and seek understanding about symptom deterioration. The 2 other items about help-seeking from the professional and informal social network loaded on the other factor. These 2 factors are, hence, labeled “self-reliance behavior” and “help-seeking behavior,” respectively. All items except one (item 28) had factor loadings above 0.3.

Reliability

In view of the multidimensional structure identified for the 3 scales, we further computed the composite reliability coefficient of each scale, with consideration of the multidimensional structure of the scale. The composite reliability coefficients for self-care maintenance, symptom perception, and self-care management were 0.81, 0.88, and 0.82, respectively, suggesting adequate internal coherence of these scales.

Construct Validity

The scales of self-care maintenance ($r = 0.321$, $P < .001$), symptom perception ($r = 0.478$, $P < .001$), and self-care management ($r = 0.457$, $P < .001$) demonstrated significant correlations with self-care confidence. In addition, comparisons were made between known groups of patients of different age groups, educational background, and history of hospital admission in the past year. The results showed that older patients (65 years or older) had significantly poorer self-care maintenance ($t = 4.249$, $P < .001$), and those with low education attainment (ie, received primary school education or lower) reported poorer symptom perception ($t = 4.668$, $P < .001$) and symptom management ($t = 3.605$, $P < .001$).

Discussion

This study showed that the traditional SCHFI-C v.7.2 is a reliable and valid instrument for assessing self-care in the Chinese population with HF. The results of EFA suggest its multidimensionality in measuring the respective self-care domain. More specifically, the findings indicated a unique internal structure of the self-care

TABLE 2 Factor Loadings of Self-care Maintenance Subscale Based on Principal Component Analysis
Extraction With Promax Rotation

	Component	
	1	2
SCHFI 1: Try to avoid getting sick	0.18	−0.14
SCHFI 2: Get some exercise	0.34	−0.15
SCHFI 3: Eat a low-salt diet	0.74	0.02
SCHFI 6: Order low-salt items when eating out	0.82	0.01
SCHFI 7: Make sure to get a flu shot annually	0.27	0.01
SCHFI 8: Ask for low-salt foods when visiting family and friends	0.74	−0.12
SCHFI 4: See your healthcare provider for routine healthcare	−0.18	0.85
SCHFI 5: Take prescribed medicines without missing a dose	0.04	0.48
SCHFI 9: Use a system or method to help you remember to take your medicines	0.19	0.27
SCHFI 10: Ask your healthcare provider about your medicines	0.21	0.63

Abbreviation: SCHFI, Self-Care of Heart Failure Index.

maintenance and self-care management scales. The resultant reliability testing based on composite reliability suggested the adequate internal coherence of the 3 scales. As for validity, the significant associations between the 3 SCHFI domains and the theoretically linked construct of self-care confidence suggested their good construct validity. The result is further confirmed by the ability of these scales to detect the known difference in self-care among patients of different ages and educational levels. The overall psychometric testing supported the future use of the traditional SCHFI-C v.7.2 and provides insights on how the sociocultural context shapes the self-care behaviors of this clinical cohort.

Referring to the SCHFI cutoff score of <70, indicating inadequate self-care, the Chinese patients with HF in this study had poor self-care maintenance, symptom perception, and self-care management. Among these domains, self-care management was the poorest. The results were coherent with other studies that indicated that self-care management was more challenging than self-care maintenance, as management requires higher level cognitive-perceptual skills to attribute the symp-

toms to HF decompensation and take proactive action to reverse the deterioration.^{8,23} Indeed, the rather low educational level (>30% has primary education) and short HF experience (about 18% has HF for <1 year) may also add challenge for the patients to engage in this process.

For the dimensionality, this study identified unique factorial structures of self-care maintenance and self-care management scales compared with other versions. For self-care maintenance, the items loaded onto 2 dimensions: “lifestyle-related behaviors” and “consulting behaviors.” Such findings were quite different from other versions where 2 dimensions relating to consulting (exercise, disease prevention behaviors, and medicine taking) and dietary (salt and liquid control) behaviors were identified.^{9–12,23} The unique factorial structure of the traditional Chinese version may be explained by the therapeutic relationship between healthcare professionals and patients in Chinese, which is characterized by the higher statutory power held by the professionals.²⁴ It is possible that the self-care maintenance behaviors involving more engagement of healthcare professionals (eg, taking medication, medical

TABLE 3 Factor Loadings of the Symptom Perception Subscale Based on Principal Component Analysis
Extraction With Promax Rotation

	Component	
	1	2
SCHFI 11: Monitor your weight daily	0.41	−0.15
SCHFI 12: Pay attention to changes in how you feel	0.68	0.09
SCHFI 13: Look for medication side effects	0.45	0.10
SCHFI 14: Notice whether you tire more than usual doing normal activities	0.73	−0.12
SCHFI 15: Ask your healthcare provider how you're doing	0.47	0.05
SCHFI 16: Monitor closely for symptoms	0.78	0.02
SCHFI 17: Check your ankles for swelling	0.50	0.07
SCHFI 18: Check for shortness of breath with activity such as bathing and dressing	0.66	−0.07
SCHFI 19: Keep a record of symptoms	0.33	0.05
SCHFI 20: How quickly did you recognize that you had symptoms	−0.04	0.90
SCHFI 21: How quickly did you know that the symptom was due to heart failure	0.02	0.86

Abbreviation: SCHFI, Self-Care of Heart Failure Index.

TABLE 4 Factor Loadings of the Self-care Management Subscale Based on Principal Component Analysis Extraction With Promax Rotation

	Component	
	1	2
SCHFI 22: Further limit the salt you eat that day	0.67	0.15
SCHFI 23: Reduce your fluid intake	0.61	0.15
SCHFI 24: Take a medicine	0.74	−0.45
SCHFI 27: Try to figure out why you have symptoms	0.61	0.10
SCHFI 28: Limit your activity until you feel better	0.13	0.10
SCHFI 25: Call your healthcare provider for guidance	0.05	0.66
SCHFI 26: Ask a family member or friend for advice	−0.10	0.86

Abbreviation: SCHFI, Self-Care of Heart Failure Index.

care seeking, information inquiry) may be perceived as more “top-down” advice from those holding higher social authority. Such advice is likely to gain more trust from the patients and be labeled as “mandatory work.”²⁴ On the other hand, self-care maintenance relating to lifestyle modification may be related to more self-disciplinary activities for staying well. This is especially true, because the very overloaded health service renders patient education by healthcare professionals on lifestyle modification as minimal.^{24,25} It was not unexpected that this factorial structure was not identified in the simplified Chinese version. As compared with Mainland China, Hong Kong has a more powerful health professional–patient relationship, which is built on patients' deep respect and trust for healthcare professionals.²⁶ Moreover, because older patients, especially those with lower education background, relied more on physicians' suggestions, the much higher average age and poor educational level of the samples recruited in this study may also explain the unique factorial structure.²⁴

The traditional Chinese version was also different from the other language versions by identifying suboptimal factor loading (ie, <0.3) of the 3 items including avoiding sickness, getting a flu shot annually, and using a system for remembering medications. The cultural and contextual factors may explain such findings. First, older adults in Hong Kong are influenced by strong Confucian familism; patients may hence regard it as a cultural norm to keep themselves in good health and prevent burdening other family members.²⁷ Second, the local government has launched the free flu shot scheme for adults aged 50 years and placed strong advocacy for the uptake. As such, the patients may perceive these behaviors as the more generic health promotion behaviors rather than HF-specific self-care maintenance, therefore explaining the low factor loadings. As for the medication reminder system, the distribution of the ratings that biased toward the poor performance might explain the low factor loading of this item.

The internal structure of self-care management of the traditional SCHFI-C v.7.2 is also unique from the

other language versions. Different from the original and simplified Chinese versions that identified “caregiver-recommended” (representing behaviors advised by healthcare professionals for disease deterioration) and “problem-solving” (self-directed immediate response to symptom deterioration) behaviors, the internal structure of the traditional Chinese version of self-care management showed 2 dimensions labeled as “self-reliance behaviors” (ie, behaviors that are taken by the patients on their own in responding to deteriorated symptoms) and “help-seeking behaviors” (ie, solicit support from social network or healthcare providers). These 2 dimensions may reflect the unique enactment of collective harmony in Hong Kong. As a Chinese society, older people have a strong value of collective harmony that they would put others' interest above their own.²⁵ Help-seeking behaviors from families and communities may be regarded as less desirable, especially in the context of the fast-paced living in Hong Kong. Patients will, therefore, regard the items of “self-reliance behaviors” as the “first-line response” to deteriorated symptoms and the “help-seeking behaviors” as the last resort of self-care management to prevent violating the collective harmony. Nevertheless, this factorial structure was not found in the simplified Chinese version. The stronger family bonding and cohabitation of more extended family in Mainland China may render care seeking from families and communities more acceptable and feasible. In addition, different from the healthcare system in Mainland China, Hong Kong has a highly subsidized public hospital system and affordable primary medical care in the community (https://www.healthbureau.gov.hk/beStrong/files/consultation/appendixb_eng.pdf). The 2 systems complement each other, and the high accessibility of health service may prompt the patients to seek professional help once the disease deteriorates. This argument is also supported by the fact that the 28-day readmission rate for HF reached 50% in 2021.

For the symptom perception scale, the results of item analysis and composite reliability also suggested its multifactorial structure. Exploratory factor analysis identified its 2 dimensions, namely, “monitoring behaviors”

What's New and Important

- The traditional SCHFI-C v.7.2 can serve as a valid and reliable measure of self-care among Chinese patients with HF.
- The self-care maintenance and self-care management subscales have more unique internal structures in the Chinese population, and this may be relating to the more unique health professional–patient relationship and collective culture in the Chinese society.
- The suboptimal self-care management among the Chinese population urges for strategies to promote patients' decision making and behavioral response to early signs of HF exacerbation.

and “symptom recognition.” The results converge with the other language versions,^{8–10,12} reflecting behaviors that require a different level of cognitive resource. Whereas monitoring behaviors involves more routine activities, which can be achieved by the support of explicit methods (eg, weighing scale, log book), symptom recognition requests that patients take action in responding to the more insidious and spontaneous onset of signs and symptoms.⁸ The difference in the nature of illness behaviors and demand on cognitive engagement may explain this 2-factor structure. The similar factorial structure among different versions may imply that patients with HF, despite coming from different cultural backgrounds, have the same approach to monitoring and recognizing symptoms.

This study provides evidence of the construct validity of the traditional SCHFI-C v.7.2 by demonstrating a significant correlation between self-care behaviors and self-care efficacy. Underpinned by the social cognitive theory, this finding adds evidence to suggest that the SCHFI is conceptually relevant to measure self-care in patients with HF. With substantial evidence to indicate better self-care in younger and better educated patients,¹⁷ the results of known-group comparison add further evidence to suggest good construct validity of the SCHFI. However, the SCHFI did not differentiate the patients with different episodes of previous hospitalization in the past year. It is possible that the associated disease exacerbation may provide the patients with “experiential learning” about the process of HF-related symptom deterioration. The encounter with the healthcare system may also offer a potential platform for self-care education.

Implications

This study provided several implications in research and clinical areas. As for research perspective, the traditional SCHFI-C v.7.2 was confirmed to be a reliable and valid instrument to measure patients' self-care behavior. Given the predictive role of self-care on patients' prognosis, it can be used in clinical screening to identify patients with poor

self-care and initiate self-care–promoting intervention early. Concerning nursing practice, our findings indicated the inadequate self-care behaviors among this clinical cohort, especially for the self-care management domain. As self-care management is of great importance to cope with early recognized symptoms and avoid HF exacerbation, strategies specific to promoting patients' behavioral response should be incorporated into nursing practice.

Limitations

There are several limitations of this study. First, consecutive sampling from 3 regional hospitals in Hong Kong may limit the generalizability of the results to patients with HF from other clinical settings, such as the community. Second, in the factorial analysis, 2 dimensions relating to “symptom recognition” and “help-seeking behavior” were identified with only 2 indicators, which violated the criteria of a minimum of 3 indicators per factor and might lead to problems of empirical underidentification of this model. However, these 2 factors were retained to ensure conceptual adequacy of the scale, especially because these behaviors are crucial for patients with HF to identify early and respond in a timely manner to HF exacerbation. Third, the use of a cross-sectional design and secondary data analysis also limited our ability to evaluate test-retest reliability. Finally, as health and illness behaviors are shaped by culture and healthcare context, the lack of content validation by the end users may weaken content validity. Future study may address this limitation.

Conclusion

This study provides evidence of the reliability and validity of the traditional SCHFI-C v.7.2. The finding suggests satisfactory multidimensional reliability, factorial validity, and construct validity of this instrument. The traditional SCHFI-C v.7.2 can serve as a valid and reliable outcome measure to evaluate the effects of self-care–promoting interventions.

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