

Symptom Experience, Symptom Management Strategies, and Health Related Quality of Life among People with Heart Failure

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Abstract: Heart failure is a chronic condition in which people experience multiple symptoms and use numerous symptom management strategies, but the effectiveness of these is varied, affecting health-related quality of life. This descriptive, correlational study aimed to examine the predictability of health-related quality of life using symptom experience (prevalence, frequency, severity, and distress), symptom management strategies, and selected variables (age, employment status, and comorbid condition) among people with heart failure. One hundred and forty people with heart failure were recruited using purposive sampling from the outpatient departments of three general hospitals in Myanmar. Data were collected using four self-administered questionnaires: a Personal Information Questionnaire, the Minnesota Living with Heart Failure Questionnaire, the Memorial Symptom Assessment Scale-Heart Failure, and the Symptom Management Strategies-Heart Failure. Data were analyzed using descriptive statistics, Spearman's correlation and hierarchical multiple regression.

Lack of energy was ranked first in almost all dimensions of symptom experience. The participants used an average of 18.53 symptom management strategies of which the most effective strategy was "taking the prescribed drugs to excrete extra water," and their health-related quality of life was reported at a moderate level. The predictors of health-related quality of life were symptom experience, symptom management strategies, age, employment status, and comorbid condition, which explained 54.3% of the variance, and the symptom severity dimension was the strongest predictor. The findings highlight that heart failure nursing intervention should focus on reducing symptom experience, increased use of effective symptom management strategies, and prevention of comorbidities to improve health-related quality of life.

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Introduction

Heart failure occurs in at least 26 million people worldwide, accounting for 1%–2% of all hospitalizations in the Western countries,¹ and there is a relatively higher prevalence in some Southeast Asian countries.² It has been ranked as the sixth leading cause of mortality in Myanmar.³ Only 50% have a chance of five-year

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survival, which is worse than some types of cancer, such as breast cancer (77.7%).⁴ Many symptoms, including shortness of breath and difficulty in breathing, occur due to impaired pumping ability of the heart to pass a sufficient amount of blood to the vessels. People with heart failure sometimes have to seek emergency medical attention due primarily to exacerbation of symptoms, which impact on their health-related quality of life (HRQOL).⁵⁻¹⁰ Medical management of heart failure aims to reduce the symptoms and improve quality of life and survival.¹¹

People with heart failure apply various symptom management strategies daily, such as dietary changes and getting rest.¹² Although previous studies on symptom management strategies are limited, significant relationships were found between self-care management in controlling symptoms by people with heart failure, such as reduction of a salty diet, and their HRQOL.¹³ Moreover, HRQOL varies based on certain demographic and clinical characteristics, including age,^{7,9,14} employment status,^{7,15} and comorbid condition.^{6,13,16} Limited research has been done to predict HRQOL among Myanmar people with heart failure. Thus, this study of symptom experiences, symptom management strategies and effectiveness, HRQOL, and predictable factors of this was needed to develop an effective intervention to reduce symptom experiences and improve HRQOL among Myanmar with heart failure.

Conceptual Framework and Review of Literature

The Theory of Symptom Management (TSM) was used as the conceptual framework of this study.¹⁷⁻¹⁹ The TSM proposes three concepts: symptom experience, symptom management strategies, and symptom status outcomes, which should be considered within the three domains of nursing science, those of the person, health and illness, and the environment, for effective symptom management.¹⁷⁻¹⁹

Symptoms are defined as “subjective experience reflecting changes in a person’s bio-psychosocial function, sensation, or cognition.”^{18,p.669} Symptom experience is a multidimensional concept comprising symptom perception, symptom evaluation, and response to the symptoms. Perception of symptoms occurs when an individual recognizes any changes in usual feeling or functioning, and the meaning of such changes is evaluated by judging the cause, severity, treatability and impact of those symptoms on daily livings. Even though the same symptoms occur, the evaluation of these may be varied individually. Responses to symptoms can be seen physiologically, psychologically, socio-culturally and/ or behaviorally such as palpitations and distress.¹⁷⁻¹⁹

Symptom management strategies are “the efforts to avert, delay or minimize the symptom experience.”^{19,p.144} The theory asserted that even if the frequency and severity of the symptoms could not be changed, distress due to the symptoms can be relieved by symptom management strategies, administered by the health care provider, family member, or the patients themselves.¹⁹ The desired outcomes of symptom management include improved symptom status of less frequency, severity, and distress leading to better functional and/ or emotional status, enhanced self-care, decreased morbidity, reduced costs, comorbidity, mortality, and improved quality of life. Regarding nursing science, the person domain includes demographic, psychological, sociological, and physiological characteristics. Risk factors, health status, disease and injury are involved in the health and illness domain, while the environment domain comprises physical, social, and cultural characteristics.¹⁸

People with heart failure experience typical symptoms, such as shortness of breath,¹ as well as those evolved from comorbidities and inadvertent side effects of prescribed medications.²⁰ Many existing studies have identified symptom experience in a particular dimension,^{5,10,21} such as symptom prevalence,^{10,21} although some have identified all dimensions.^{9,22} The number of reported symptoms varies from one to

26.^{5,10,21,22} Shortness of breath or dyspnea is the most prevalent symptom.^{9,21,22} Other common symptoms are lack of energy, difficulty sleeping, feeling drowsy, dry mouth, edema, difficulty breathing when lying flat, fatigue, numbness, and feeling bloated.^{9,10,21,22} However, the ranking of some symptoms are different across various symptom dimensions.^{9,22} Therefore, this study assessed the symptom prevalence, symptom frequency, symptom severity, and symptom distress to try to form a complete picture of symptom experience.¹⁷⁻¹⁹

As heart failure is chronic, people use various symptom management strategies. There is limited information concerning typical strategies,²² but some previous studies on “self-care strategies,” “self-care maintenance,” and “self-care management” to relieve or respond to symptoms^{12,13,23,24} have identified the symptom management strategies used by people with heart failure, but none of them studied the effectiveness of these. Various strategies were reported such as taking a rest, taking prescribed medication, breathing slowly and deeply, reducing salt intake, and raising the head of bed.^{11,22,23,24} The highest percentage of people with heart failure (95.5%) took the prescribed drugs, but their adherence to dietary restriction was the lowest (45.5%) after discharge from hospital.²⁵ Thus this study identified symptom management strategies, including effectiveness.

The symptom status outcome of this study was HRQOL, defined as “the subjective perception of the overall effect and outcome of heart failure, and its treatment on an individual’s physical, psychological, and social well-being.”^{26,p.84} HRQOL was reported differently in existing studies, such as at a poor level,^{8,14,27} moderate level,^{7,28} or good level,²⁹ according to the cut-off scores of the Minnesota Living with Heart Failure Questionnaire (MLHFQ).³⁰

A strong negative association was found between HRQOL and symptom experience.^{5-9,31} Although symptom management strategies have not been studied significantly, self-care management of heart failure symptoms has been reported as having a significant relationship

with HRQOL.¹³ Regarding the nursing domain, previous studies found that some demographic and clinical characteristics of people with heart failure are associated with their HRQOL, including age,^{7,9,14} employment status,^{7,15} and comorbid condition.^{6,13,16} Although some studies on heart failure have identified variance of HRQOL using one of the two concepts, symptom experience or symptom management strategies, and some demographic or clinical characteristics, there has been limited study on prediction using both concepts with selected variables until recently in Myanmar.

Study Aims

To 1) describe symptom experience including symptom prevalence, symptom frequency, symptom severity and symptom distress, symptom management strategies, and HRQOL; and 2) determine the predictability of symptom experience, symptom management strategies, and selected demographic and clinical characteristics (age, employment status, and comorbid condition) on HRQOL among Myanmar people with heart failure.

Methods

Design: A descriptive, correlational design was used.

Sample and setting: The sample size was determined using the statistical table developed by Knofczynski and Mundfrom³² for good prediction of outcomes using multiple linear regression. Based on previous studies,^{7-9,13} the coefficient of determination (R^2) was calculated as 0.40. The sample size was determined as 140, which was the nearest recommended table number for the eight predictors of this study: symptom prevalence, symptom frequency, symptom severity, symptom distress, symptom management strategies, age, employment status, and comorbid condition.

One hundred and forty people with heart failure were recruited proportionally from three specialist

outpatient departments (cardiac medical units) of three tertiary hospitals in two different cities of Myanmar: Yangon and Mandalay. This figure was based on the number of people visiting each setting, 54 from Yangon General Hospital, 43 from North Okkalapa General Hospital, and 43 from Mandalay General Hospital.

Purposive sampling was used with the inclusion criteria of 1) being 18 years or older; 2) no cognitive impairment if the age was ≥ 60 years, screened by the General Practitioner Assessment of Cognition (GPCOG) Questionnaire; 3) one month after discharge from hospital with the diagnosis of heart failure; 4) having the New York Heart Association (NYHA) functional class of II-IV; 5) being in a stable condition to answer the study questionnaire, such as no dyspnea and stable vital signs approved by a cardiologist; and 6) being able to read and write in Myanmar (Burmese) language. Exclusion criteria were 1) being in an acute emergency condition, such as having appendicitis or a hyperthyroid condition; 2) being pregnant; 3) having a concomitant terminal illness such as cancer or chronic renal failure; and 4) having a plan for elective cardiac surgery.

Instrumentation: This study used five instruments: one for screening cognitive function and four to measure the study variables. Permission to use and translate the instruments into Myanmar was obtained from the original developers. Instrument translation and adaptation from the original English version to Myanmar was done according to the guidelines suggested by the World Health Organization.³³ Experts were requested to rate the relevancy of the contents of each instrument. Research instruments were also pretested among 30 people with heart failure in the medical unit of Yangon General Hospital, making sure that they were clear and understandable.

*The General Practitioner Assessment of Cognition (GPCOG) Questionnaire*³⁴ was used to screen the cognitive function of the participants aged ≥ 60 years by interviewing, and those with intact cognitive function (obtaining a score of 9) participated in the study.

The Personal Information Questionnaire (PIQ) (24 items) was developed by the primary investigator (PI) consisting of two parts: part-I demographic data (12 items), which was a self-administered questionnaire including age and employment status; and part-II clinical data (12 items), including comorbid condition(s), to be completed by PI reviewing the medical records.

The *Minnesota Living with Heart Failure Questionnaire (MLHFQ)*, developed by Rector,³⁵ was used to measure HRQOL, and has 21 items asking about the perception of HRQOL during the previous month with a 6-point Likert scale ranging from 0 (no impairment) to 5 (very much impairment). Total scores range from 0-105, including the physical dimension (0-40), the emotional dimension (0-25), and the social dimension and the overall impact of treatments (0-40), where the higher scores indicate poorer HRQOL.³⁵ Total scores are categorized into good (0-< 24), moderate (24-45), and poor (> 45).³⁰ The CVI was 0.8, and the Cronbach's alpha was 0.8 in both the pretest and the main study.

The *Memorial Symptom Assessment Scale-Heart Failure (MSAS-HF) Questionnaire*, modified by Zambroski et al.⁹ for people with heart failure, was used to measure symptom experience. It was originally developed by Portenoy et al.³⁶ for people with cancer. There are 32 items asking about the symptoms occurring during the previous week (7 days) in terms of symptom prevalence, symptom severity, and symptom distress, while symptom frequency measured 26 symptoms only because the other 6 symptoms could not be counted in number, such as weight loss. The symptom prevalence scored as 1 for Yes and 0 for No, while the other dimensions are measured with a 4-point Likert scale ranging from 1 (rarely) to 4 (almost constantly) for symptom frequency, and 1 (mild) to 4 (very severe) for symptom severity. Symptom distress is assessed with a 5-point Likert scale ranging from 0 (not at all) to 4 (very much). To make the analysis easier, the symptom distress scores are converted to 0.8 (not at all), 1.6 (a little bit), 2.4 (somewhat),

3.2 (quite a bit), and 4.0 (very much).⁹ Higher scores indicate worse symptom experience. The CVI was 0.8 in this study. The reliability values in the pretest and the main study were a Kuder–Richardson’s reliability (KR–20) of 0.72 and 0.68 for symptom prevalence, Cronbach’s alpha coefficients of 0.74 and 0.68 for symptom frequency, 0.70 and 0.70 for symptom severity, and 0.78 and 0.70 for symptom distress.

The *Symptom Management Strategies–Heart Failure (SMS–HF) Questionnaire*, developed by PI for this study through a literature review, uses 41 items to measure those symptom management strategies applied over a two–week period. It includes pharmacological strategies (8 items), and non–pharmacological strategies (33 items) comprising physical (28 items) and cognitive–behavioral strategies (5 items). The scale includes three parts: 1) a Yes/No response regarding the use of SMS–HF (Use); 2) the space to write the symptoms to be relieved or prevented; and 3) a 4–point Likert scale on effectiveness, SMSHF (Effectiveness), ranging from 1 (uninterpretable) to 2 (worsened), 3 (relieved but remaining), and 4 (getting rid of symptoms), where the ratings of 3 and 4 are considered as effective. Content validity was calculated by requesting five medical and nursing experts specialized in cardiology to judge the relevance of the content. The item–level content validity (I–CVI) range was 0.8 to 1, and the scale–level CVI (SCVI) was 0.9. The reliability values in the pretest and the main study were a KR–20 of 0.70 and 0.74 for the SMS–HF (Use), and Cronbach’s alpha coefficient of 0.70 and 0.72 for the SMS–HF (Effectiveness) scale.

Ethical considerations: Ethical approval was granted from the Institutional Review Board (IRB) of the Faculty of Nursing, Mahidol University, Thailand (IRB–NS2018/36.0405) and the Ethics Review Committee (ERC) of the Ministry of Health and Sports, Myanmar (Ethics/DMR/2018/088). Permission was obtained from authoritative personnel of three tertiary hospitals and the Department of Medical Services, Ministry of Health and Sports, Myanmar.

The potential participants were explained the objective and procedure of data collection and informed that they still had the right to receive standard care from the hospital even if they refused to join the study. Informed consents were obtained by getting the participants’ signature before collecting the data. All of the data were kept concealed in a locked file by PI using code numbers instead of their names to maintain anonymity and confidentiality. They were informed that the research reports will be presented at the medical and nursing conferences and in journals without identifying them.

Data collection: Data were collected during routine follow–up visits of 140 participants at the cardiac outpatient departments of three general hospitals in Myanmar from July 2018 to September 2018. First, the head nurse in each study setting was given an explanation of the study and was requested to identify potential participants that met the inclusion criteria by reviewing medical records. The PI requested potential participants to read the information sheet, and obtained their written informed consent. Cognitive function was screened using the GPCOG for the participants aged ≥ 60 years, and those who did not pass the screening test (score < 9) were referred to their medical doctors or nurses for further assessment regarding impaired cognitive function.

Secondly, the approval of a responsible cardiologist was obtained for each participant to ensure stable clinical conditions. It took 30 to 45 minutes to complete the four self–administered questionnaires, and the PI checked the completeness of the data immediately after completion of the questionnaire and asked participants about any missing data. In terms of clinical data, the PIQ–Part II (12 items) was recorded from the medical records.

Data analysis: Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 18 (Software License Download@ Mahidol) after the data screening. Descriptive statistics were used to analyze the demographic and clinical characteristics

as well as the main variables of the study in terms of frequency, percentage, mean, and standard deviations. A preliminary analysis was done to check the assumptions of the multiple regression, including normality, linearity, homoscedasticity, multicollinearity, and autocorrelation. Spearman’s rank test was used to examine the correlation between HRQOL and other study variables. Hierarchical multiple regression was used to predict the HRQOL using symptom prevalence, frequency, severity, distress, and management strategies, as well as age, employment status, and comorbid condition. Statistical significance was set at $p \leq .05$. Categorical variables, two dummies (unemployed, employed), were coded for employment status by setting “retired” as a reference category, while a dummy for both cardiac and non-cardiac related comorbid conditions was created for co-morbid condition with “cardiac-related comorbid condition only” as a reference.

Based on the conceptual framework of the study, age, employment status, and comorbid condition were entered into the model first. The total number of

symptom prevalence, the mean scores of symptom frequency, symptom severity, and symptom distress were entered into the second model. In the third step, the total number of effective symptom management strategies was entered.

Results

Demographic and clinical characteristics: As presented in **Table 1**, the ages ranged from 19 to 89 years, where 51% were ≤ 60 years. Only 30% of participants were employed, while 34.3% and 35.7% were unemployed and retired respectively. All had at least one comorbid condition and up to seven, where the majority had both cardiac and non-cardiac related comorbid conditions. The most common cardiac related comorbid conditions were hypertension and coronary artery disease/ischemic heart disease, while the non-cardiac related comorbid condition of diabetes mellitus was also common.

Table 1 Demographic and clinical characteristics of the participants (n = 140)

Demographic characteristics	n	%	Clinical characteristics	n	%
Age (year)			NYHA Class		
Mean (SD) = 59.35 (13.97)			Class II	70	50.0
Range = 70 (19-89)			Class III	66	47.1
Median = 60			Class IV	4	2.9
19-60 years	71	51.0	LVEF (%)		
61-89 years	69	49.0	Mean(SD) = 36.64 (12.94)		
			Range = 58 (11-69)		
Gender			Comorbid condition^c		
Male	68	49.0	Mean (SD) = 3.21 (1.12)		
Female	72	51.0	Range = 6 (1-7)		
Marital status			Cardiac-related comorbid conditions^c		
Single	11	8.0	Hypertension	102	72.9
Married	95	68.0	CAD/IHD	79	56.4
Separated/Divorced/Window	34	24.0	Hyperlipidemia	45	32.1
Occupation			Dilated cardiomyopathy	37	26.4
None	17	12.0	Valvular heart disease	33	23.6
Housewife	31	22.0	Atrial fibrillation (AF)	24	17.1
Government servant	28	20.0	Non-cardiac-related comorbid conditions^c		
Self-employed	64	46.0	Diabetes mellitus	55	39.3
Employment status			Fatty liver	13	9.3
Unemployed	48	34.3	Hyperuricemia	12	8.6
Employed	42	30.0			

Table 1 Demographic and clinical characteristics of the participants (n=140) (Cont.)

Demographic characteristics	n	%	Clinical characteristics	n	%
Retired /resigned	50	35.7	Chest infection	12	8.6
Health information^a	129	92.1	Obesity	12	8.6
Healthcare providers	116	89.9	Glomerulonephritis	9	6.4
Media	105	81.4	COPD	7	5.0
Neighbors/relatives	35	27.1	Arthritis	5	3.6
Body Mass Index (kg/m²)^b			Prolapsed intervertebral disc	2	1.4
Underweight (<18.5 kg/m ²)	5	3.0	Anemia	2	1.4
Normal (18.5-22.9 kg/m ²)	52	37.0	Skin infection	1	0.7
Overweight (23-27.5 kg/m ²)	71	51.0	Obstructive sleep apnea	1	0.7
Obese (>27.5 kg/m ²)	12	9.0	Hypothyroidism	1	0.7
Duration with heart failure			Hepatitis B/C infection	1	0.7
Up to 1year	70	50.0	Gallstones	1	0.7
Over1year - 5years and above	70	50.0	Having both cardiac and noncardiac related comorbid conditions	86	61.4

CAD = Coronary artery disease, IHD = Ischemic heart disease

^aEach participant reported more than one source of health education

^bAccording to the Asian BMI standard classification (WHO Expert Consultation, 2004)

^cMore than one comorbid condition could occur in one participant

Symptom experience: The participants reported an average of 8.93 ± 3.25 symptoms, ranging from 3 to 20. The most prevalent symptom was shortness of breath, while lack of energy was found as the most frequent, most severe, and most distressing symptom. The top-ranking symptoms are shown in **Table 2**.

Table 2 Symptom experience of the participants (n = 140)

Symptoms	Prevalence n (%)	Frequency Mean (SD)	Severity Mean (SD)	Distress Mean (SD)
Symptom prevalence [Mean (SD) = 8.93 (3.25) Range = 17 (3-20), Median = 8]				
Shortness of breath	128(91.4)¹	1.70 (0.77) ⁴	1.65 (0.80) ²	1.55 (0.98) ²
Lack of energy	125(89.3) ²	2.05 (0.95)¹	1.86 (0.95)¹	1.74 (1.13)¹
Dry mouth	123(87.9) ³	1.82 (0.90) ²	1.40 (0.86) ⁴	1.42 (0.98) ³
Lack of appetite	106(75.7) ⁴	1.73 (1.13) ³	1.46 (0.96) ³	1.16 (0.91) ⁶
Feeling bloated	91(65.0) ⁵	1.39 (1.15) ⁵	0.93 (0.81) ⁶	1.20 (1.19) ⁵
Feeling irritable	90(64.3) ⁶	1.10 (0.98) ⁷	0.93 (0.81) ⁶	0.99 (1.07) ⁷
Cough	73(52.1) ⁷	0.99 (1.04) ⁸	0.61(0.66) ¹¹	0.75(0.95) ¹¹
Worrying	68(48.6) ⁸	1.12 (1.25) ⁶	0.62(0.72) ¹⁰	0.83 (1.07) ⁹
Sweats	55(39.3) ⁹	0.79 (1.12) ⁹	0.70(0.93) ⁸	0.82(1.16) ¹⁰
Feeling drowsy	54(38.6) ¹⁰	0.79 (1.09) ¹⁰	0.73(0.99) ⁷	0.89 (1.29) ⁸
Other pain (arms, legs/joints = 66.7%, neck, upper/lower back = 52%, abdomen = 8.3%)	48(34.3) ¹¹	0.77 (1.13) ¹¹	0.94 (1.49) ⁵	1.22 (1.75) ⁴
Difficulty concentrating	47(33.6) ¹²	0.67(1.00) ¹²	0.69(1.05) ⁹	0.57(1.00) ¹²

¹⁻¹² = ranking of symptom prevalence, frequency, severity, and distress

Highest-ranked symptoms are **bolded** in each domain of symptom experience.

Symptom Experience, Symptom Management Strategies, and Health Related Quality of Life

Symptom management strategies: As shown in Table 3, the participants used 8 to 34 symptom management strategies, among which an average of 14.28 ± 4.72 , was perceived as effective in relieving or getting rid of their symptoms. All of them applied the pharmacological management strategies of taking the prescribed drug(s) “for stabilizing heart.” The majority also used

nonpharmacological symptom management strategies (physical) such as “keeping regular appointments” with the healthcare provider and “eating foods and meals prepared by reducing salt.” Over 50% used the nonpharmacological symptom management strategy (cognitive-behavioral) of “adopting a wait and see approach” before seeking healthcare.

Table 3 Ranking of symptom management strategies and their effectiveness (n = 140)

Symptom management strategies (SMS)	SMS			Effectiveness		
	n	%	Rank	n	%	Rank
Total number of SMS [Mean (SD) = 18.53 (5.02), Range = 26 (8-34)]						
Total number of effective SMS [Mean (SD) = 14.28 (4.72), Range = 3 (25-28)]						
Pharmacological SMS						
Taking the prescribed drug(s) for stabilizing heart	140	100.0	1	120	85.7	2
Taking the prescribed drugs to excrete extra water	139	99.3	2	132	95.0	1
Taking the prescribed drug(s) to control blood pressure	133	95.0	3	113	85.0	3
Using a system (pill box, reminders) to remember to take the drugs	88	62.9	4	72	81.8	4
Using traditional/indigenous/ alternative medicines	83	59.3	5	55	66.3	5
Drinking herbal tea/ coffee/ drinks	10	12.1				
Herbal application	65	78.4				
Taking herbal products	21	25.3				
Non-pharmacological SMS (physical)						
Keeping regular appointments	122	87.1	1	100	82.0	12
Eating foods and meal prepared by reducing salt	116	82.9	2	88	75.9	15
Modifying environment to decrease temperature	105	75.0	3	91	86.7	7
Asking for help with some activities if required	98	70.0	4	87	88.8	4
Reducing some activities that are hard for me	95	67.9	5	70	73.7	18
Sitting up or semi-Fowler’s position	31	22.1	22	27	87.1	5
Doing formal exercise or physical activity	24	17.1	24	22	91.7	2
Using an adjustable bed	10	7.1	27	10	100.0	1
Using helping machines for household works /daily activities	9	6.4	28	8	89.0	3
Non-pharmacological SMS (cognitive-behavioral)						
Adopting a wait and see approach	80	57.1	1	55	68.8	4
Trying to stay calm if the symptoms occurred	77	55.0	2	59	76.6	2
Express feelings with others (clergy, monk, psychologists, family and /or friends)	63	45.0	3	44	69.8	3
Distraction from the sufferings such as watching television, going to the monastery/temple	61	43.6	4	40	65.6	5
Receiving complementary interventions such as massage/ acupuncture /sauna/yoga/meditation	55	39.3	5	43	78.9	1

Note: One participant might use more than one symptom management strategy.

HRQOL: It was reported at a moderate level on average. The physical dimension was the most affected dimension, followed by the social and overall dimension, and emotional dimension (**Table 4**).

Table 4 Health-related quality of life of the participants (n = 140)

Health-related quality of life	Mean	SD	Score	n	Percent
Total score of HRQOL	39.89	12.78	17-73		
Good			17-23	10	7.1
Moderate			24-45	91	65.0
Poor			46-73	39	27.9
Physical dimension	18.08	6.12	4-36		
Emotional dimension	7.84	4.14	0-22		
Social dimension and overall impact of treatments	13.98	4.88	5-28		

Prediction of HRQOL: Preliminary analysis identified that the assumptions of normality, linearity, homoscedasticity, multicollinearity, and autocorrelation were not violated. As shown in **Table 5**, multicollinearity was not problematic among the predictors. Spearman's rank correlation analysis revealed that the degree of correlation between each pair of predictors was low as the correlation coefficients were not greater than 0.355. In addition, all predictors, except symptom frequency and employment status, were significantly correlated with HRQOL.

Table 5 Correlation between study variables (n = 140)

Variables	1	2	3	4	5	6	7	8	9
1 Age ^a	1.000								
2 Employment status ^b	.172*	1.000							
3 Comorbid condition ^c	-.092	-.091	1.000						
4 Symptom prevalence ^a	-.053	.130	.092	1.000					
5 Symptom frequency ^a	.010	.073	.093	.069	1.000				
6 Symptom severity ^a	-.145	-.064	.029	.027	.103	1.000			
7 Symptom distress ^a	-.098	-.042	.171*	.355*	.176*	.093	1.000		
8 Symptom management strategies ^a	.072	.054	-.113	.080	-.068	-.105	-.020	1.000	
9 Health-related quality of life ^a	-.476*	.044	.330*	.308*	.158	.262*	.340*	-.336*	1.000

^aAnalyzed using Spearman's rank test

^bunemployed, employed (retired as reference)

^cboth cardiac and non-cardiac-related comorbid conditions (cardiac-related comorbid condition only as reference)

*Correlation is significant at the 0.05 level (2-tailed)

Hierarchical multiple regression was done by entering the variables based on the conceptual framework of the study. In the first step, age, employment status (unemployed, employed), and comorbid condition (both cardiac and non-cardiac related comorbid conditions) accounted for 35.7% of the variance in HRQOL. In the second step, the addition of symptom experience

(symptom prevalence, symptom frequency, symptom severity, and symptom distress) to the model explained an additional 11.8% of the variability in HRQOL. All of the predictors could jointly explain 47.5%. In the final step (step 3), the total number of effective symptom management strategies was entered into the full model and explained an additional 6.9% of

the variance in HRQOL. The full model with eight predictors (symptom prevalence, symptom frequency, symptom severity, symptom distress, and symptom management strategies together with age, employment status, and comorbid condition) accounted for 54.3%

of the variance in HRQOL as shown in **Table 6**. The strongest predictors were symptom severity and symptom distress. However, the contributions of employment status and symptom frequency were found to be “not significant” in the final model.

Table 6 Results of hierarchical regression analysis predicting HRQOL (n = 140)

Model	R	R ²	R ² _{Change}	b	SE (B)	t	p
Step 1							
(Constant)				59.69	5.55		
Age				-.40	.08	-5.22	.000
Employment status							
Retired*							
Unemployed				-3.80	2.13	-1.78	.077
Employed				1.86	2.61	.71	.478
Comorbid condition							
Cardiac-related only*							
Both cardiac//non-cardiac	.598	.357	.357	7.60	1.84	4.12	.000
R = .598, R ² = .357, R ² Adjust = .338, R ² _{Change} = .357, Overall F = 18.74, p = < .001							
Step 2							
(Constant)				27.83	8.71	3.20	.002
Age				-.38	.07	-5.46	.000
Employment status							
Retired*							
Unemployed				-3.44	1.98	-1.74	.084
Employed				.87	2.41	.36	.720
Comorbid condition							
Cardiac related only*							
Both cardiac//non-cardiac				6.11	1.73	3.54	.001
Symptom experience							
Symptom prevalence				.54	.27	2.02	.046
Symptom frequency				2.25	2.40	.94	.350
Symptom severity				6.78	2.62	2.59	.011
Symptom distress	.689	.475	.118	5.51	1.87	2.94	.004
R = .689, R ² = .475, R ² Adjust = .443, R ² _{Change} = .118, Overall F = 14.80, p = < .001							
Step 3 (Full model)							
(Constant)				37.58	8.45	4.45	.000
Age				-.37	.07	-5.61	.000
Employment status							
Retired*							
Unemployed				-3.71	1.85	-2.00	.047
Employed				.20	2.26	.09	.930

Table 6 Results of hierarchical regression analysis predicting HRQOL (n = 140) (Cont.)

Model	R	R ²	R ² _{Change}	b	SE (B)	t	p
Comorbid condition							
Cardiac-related only*							
Both cardiac and non-cardiac				4.92	1.64	3.00	.003
Symptom experience							
Symptom prevalence				.70	.25	2.78	.006
Symptom frequency				2.75	2.25	1.22	.223
Symptom severity				5.83	2.46	2.37	.019
Symptom distress				5.57	1.75	3.21	.002
Symptom management strategies	.737	.543	.069	-.73	.17	-4.42	.000

R = .737, R² = .543, R² Adjusted = .512,
R²_{Change} = .069, Overall F = 17.18, p < .001

*Reference group

Discussion

Symptom experience: The average 8.93±3.25 symptoms reported in this study were similar to those of a previous study that identified an average of 9.1 ± 0.9 symptoms,⁵ but some previous studies have reported relatively higher symptoms such as 13.93±4.41.²² The inconsistent findings might have derived from the diverse clinical characteristics of the participants across the studies, including the NYHA functional class and comorbid conditions. Lack of energy remained unchanged as the first-ranked symptom in the frequency, severity, as well as distress dimensions in this study. Consistent with prior findings,^{9,21,22} shortness of breath was reported as the first ranked prevalent symptom, while the other top-ranked prevalent symptoms were lack of energy, dry mouth, lack of appetite, and feeling bloated. However, other symptoms were ranked differently across the dimensions, for example, shortness of breath was reported as the most prevalent symptom, but was just the fourth-ranked one in terms of the frequency dimension. The findings support the TSM, which describes symptom experience as multidimensional,¹⁷⁻¹⁹ and thus assessment of symptom perception only is not sufficient to capture the complete picture.

Symptom management strategies: Various strategies comprised an average of 19 in this study.

This finding supports the TSM, which states that people with chronic conditions have to take responsibility for managing their symptoms.¹⁸ However, only 14 strategies on average were perceived as effective in relieving symptoms. The results could be used in refining the contents of health education for people with heart failure.

Almost all of them used the strategy of “taking prescribed drug(s)” which is congruent with a prior finding.²⁵ However, the majority used “eating foods and meals prepared by reducing salt” in contrast to a previous finding of lowest adherence to dietary restrictions.²⁵ Consistent with previous findings,³⁷ more than half of participants (57.14%) used a “wait and see approach” before seeking healthcare in this study. The reason might be the expectation of subsiding symptoms over time. Another reason may stem from financial concern about uncontrollable healthcare costs because the health insurance system has not been well developed in Myanmar.³⁸ Accordingly, 59.29% of the participants used traditional or indigenous medicines that are available in local community settings at relatively cheaper prices than medicines prescribed by a medical doctor. Consistent with prior findings, one strategy could be used to manage many symptoms but sometimes many strategies were used to relieve one symptom.²² Some strategies were less likely to be used but were

rated as effective such as “using an adjustable bed.” This strategy was applied by 10% of participants who reported this as being effective. The reason for less popularity of this strategy may depend on the expense and accessibility of such a bed. These findings should be considered when developing a symptom management program for the people with heart failure.

HRQOL: Congruent with previous findings,^{7,28} the participants perceived their HRQOL at a moderate level on average in this study. However, it was reported differently in some studies, such as good,²⁹ or poor level.^{8,14,27} Functional status may also account for such incongruent findings; for example the patients with NYHA functional class II may be more comfortable than those with NYHA class III or IV. In addition, crosscultural differences should be considered as pointed out by some previous studies that identified the differences in the rating of HRQOL for example between Serbian and German elderly people with heart failure.³⁹

Prediction of HRQOL: In accordance with prior studies,^{5-9,14,16} this study revealed that decreased symptom experience, including symptom prevalence, symptom frequency, symptom severity, and symptom distress, increased use of effective symptom management strategies together with increased age, unemployed, and lacking coexisting cardiac and non-cardiac comorbid conditions can improve HRQOL, and they jointly predicted 54.3% of the variability in the HRQOL among people with heart failure.

The current findings showed rather increased prediction of HRQOL compared to other studies, for example⁷ 45% of the total variance in HRQOL was explained by anxiety, age, employment status, and physical symptom status. However, more variance was explained in some studies,^{8,9,31} among which functional status, general health perception, social support, and symptom status explained 56% of HRQOL in a study.⁸ Explained variance can be varied according to the selected predictors.

Among various dimensions of symptom experience, symptom severity was the strongest predictor of HRQOL, whereas symptom frequency was not a significant predictor in this study. A possible reason is that the most frequent symptoms might not always be distressful and may not contribute enough to predicting the HRQOL. Another reason might be the measurement scale of symptom frequency, ranging from 1 (rarely) to 4 (almost constantly), where the participants' ratings could be diverse because the definition of frequency could vary among individuals. The results might be different if a more specific scale had been used.

In this study, the application of increased effective symptom management strategies showed better HRQOL, which was opposite that of a previous study in which fewer self-care management strategies for relieving symptoms could improve HRQOL.¹² Inconsistent findings might have resulted from the difference in counting the strategies as previous studies did not consider the effectiveness of the strategies. However, this study counted the effective symptom management strategies only in predicting HRQOL, which could be quite meaningful in terms of applying those strategies in everyday life.

The findings suggest that older people with heart failure perceived better HRQOL, and this concurred with previous studies.^{7,9,14} This does make sense because in general young people are physically active, and thus they might perceive the functional limitations derived from their symptoms as greatly affecting their lives.

Employment status was not seen to significantly contribute to predicting HRQOL in this study, but some previous studies have shown that it was significantly associated with HRQOL.^{7,15} The incongruent findings might have come from different classifications of employment status among the studies, such as worked and unworked,⁷ or civil/private employee, householder, pensioner, and other professionals,¹⁵ in previous studies, but the current study categorized the participants as unemployed, employed, and retired. Another reason

is the factors affecting employment status such as work position and job stress. Employed participants who require a great deal of physical activities in their work will probably stop working earlier than those doing light physical activities. Moreover, job stress could adversely affect HRQOL even in the general population,⁴⁰ and should be considered in future studies on employment status. In sum, more studies are needed by adjusting the above-mentioned factors to be able to conclude if the employment status of people with heart failure is significant in predicting HRQOL.

People having both cardiac and non-cardiac related comorbid conditions reported significantly lower HRQOL than those with cardiac-related ones in this study. Although previous studies did not categorize the comorbidities specifically, they identified that an increased number of comorbidities contributed to lower HRQOL.¹²

Overall, the empirical findings are congruent with the theoretical orientation of the TSM, which states that symptom management strategies, considering various dimensions of symptom experience in the context of nursing domains, could improve symptom status outcome,¹⁷⁻¹⁹ which is HRQOL in the present study.

Limitations

This study was conducted at three tertiary hospitals, where the cardiologist-led healthcare team delivers standardized heart failure care. Thus, generalization of the findings to other settings is limited. As participants in this study experienced many symptoms simultaneously, symptom clusters should be studied in the future.

Conclusions and Implications for Nursing Practice

This study highlighted that people with heart failure suffer many symptoms, among which their rankings across various symptom dimensions were

somewhat different. The most effective symptom management strategies were taking the prescribed drugs to excrete extra fluid, using an adjustable bed, and receiving complementary interventions such as massage. The HRQOL was perceived at a moderate level, and its variance was significantly explained by symptom experience and symptom management strategies, together with age, employment status, and comorbid condition.

Based on the findings, symptom severity and distress should be assessed in clinical nursing practice to evaluate symptom experience of people with heart failure. Effective symptom management strategies should be communicated by nurses to people with heart failure as some strategies are useful only for a few individuals. Symptom management programs need to be targeted to improve the HRQOL by decreasing symptom severity and distress, giving health education on the increased use of effective symptom management strategies, and the prevention of comorbid conditions in heart failure. Nursing has an important role in the design and implementation of such strategies.

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ประสบการณ์อาการ กลยุทธ์การจัดการกับอาการ และคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพของผู้ที่มีภาวะหัวใจล้มเหลว

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บทคัดย่อ: ภาวะหัวใจล้มเหลวเป็นภาวะเรื้อรัง ที่บุคคลจะมีประสบการณ์อาการหลายอาการ และใช้กลยุทธ์การจัดการอาการมากมาย แต่ประสิทธิภาพของการจัดการอาการนั้นหลากหลาย ซึ่งส่งผลต่อคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ การศึกษาเชิงบรรยายความสัมพันธ์นี้มีวัตถุประสงค์เพื่อศึกษาความสามารถในการทำนายคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ ของประสบการณ์อาการ (ความชุก ความถี่ ความรุนแรงและความลำบาก) กลยุทธ์การจัดการอาการและตัวแปรที่เลือก (อายุ สถานะการทำงาน และภาวะโรคร่วม) ในผู้ที่มีภาวะหัวใจล้มเหลว

บุคคลที่เป็นโรคหัวใจล้มเหลวจำนวนหนึ่งร้อยสี่สิบคน ได้รับการคัดเลือกโดยใช้การสุ่มตัวอย่างแบบเจาะจงจากแผนกผู้ป่วยนอกของโรงพยาบาลทั่วไปสามแห่งในประเทศเมียนมาร์ การรวบรวมข้อมูลใช้แบบสอบถามที่ตอบด้วยตนเอง จำนวน 4 แบบสอบถาม ได้แก่ แบบสอบถามข้อมูลส่วนบุคคล แบบสอบถาม Minnesota Living with Heart Failure แบบประเมินอาการ The Memorial Symptom Assessment Scale-Heart Failure และกลยุทธ์การจัดการอาการ -ภาวะหัวใจล้มเหลว วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา สหสัมพันธ์ของสเปียร์แมนและการถดถอยพหุคูณแบบลำดับขั้น

ประสบการณ์อาการ “การขาดพลังงาน” ได้รับการจัดลำดับเป็นอันดับแรกในเกือบทุกมิติของประสบการณ์อาการ กลุ่มตัวอย่างใช้กลยุทธ์การจัดการอาการโดยเฉลี่ย 18.53 ซึ่งเป็นกลยุทธ์ที่ใช้ได้ผลดีที่สุดคือ “การรับประทานยาเพื่อขับถ่ายน้ำส่วนเกิน” และคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพอยู่ในระดับปานกลาง ปัจจัยทำนายคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ ได้แก่ ประสบการณ์อาการ กลยุทธ์การจัดการอาการ อายุ สถานะการทำงาน และภาวะโรคร่วม ซึ่งอธิบายความแปรปรวนได้ 54.3% และปัจจัยความรุนแรงของอาการเป็นตัวทำนายที่ดีที่สุด ดังนั้นการพยาบาลสำหรับบุคคลที่มีภาวะหัวใจล้มเหลวควรมุ่งเน้นไปที่การลดประสบการณ์ของอาการ เพิ่มการใช้กลยุทธ์การจัดการอาการที่มีประสิทธิภาพเพิ่มขึ้น และการป้องกันโรคร่วม เพื่อพัฒนาคุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ

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คำสำคัญ: หัวใจล้มเหลว คุณภาพชีวิตที่เกี่ยวข้องกับสุขภาพ ประสบการณ์อาการ กลยุทธ์การจัดการอาการ

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