Knowledge, Attitude, Self-care Practice and Health-related Quality of Life (HRQoL) among Heart Failure Patients in a Malaysian Tertiary Hospital

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Abstract Heart failure (HF) has been associated with poor morbidity and survival despite advancement in its medical therapy. Poor knowledge, self-care practice and adherence to therapies which lead to poor disease outcomes have been previously reported. However, knowledge, attitude, self-care practice and HRQoL of Malaysian HF population have yet been described. This baseline information is crucial in designing educational programs aimed at improving adherence to therapies hence optimizing clinical outcomes. This single-centred, cross-sectional study utilizing self-administered, validated questionnaire involving 125 randomly selected HF patients found that most study subjects have moderate knowledge, attitude and self-care practice with good HRQoL. Weak and inverse correlations were found between age and knowledge and attitude scores. Subjects with NYHA Class I had significantly poorer knowledge level compared to those in other classes and female subjects had significantly better attitude compared to male subjects. Knowledge score was also found to be weakly but significantly correlated to attitude and self-care practice scores suggesting that improving knowledge among these patients can improve attitude and self-care practice. This study supports the need for continuous and individualized educational programs to improve knowledge hence attitude and self-care practice among these patients.

Keywords: heart failure, knowledge, attitude, self-care practice, HRQoL

1. Introduction

Heart failure (HF) is a chronic cardiovascular disease with heavy burden on the health care systems with frequent emergency department visits, hospital admissions and relatively high mortality despite advancement on disease management [1]. Globally, it is estimated that about 26 million adults are living with HF and in Southeast Asia, around 9 million people have been diagnosed with HF with a reported prevalence of 6.7 % in Malaysia [2,3].

Knowledge on disease and its management is an important prerequisite for an individual to implement behavioral changes toward the control of chronic diseases [4]. A systematic review of literature published between 1999 and 2014 reported that the average prevalence of low health literacy among HF patients was 39 % and ranged from 17.5 % to 97 % [5]. Similarly, poor self-care practice and health-related quality of life (HRQoL) in HF population have also been described previously although information on attitude towards the disease and its management is still scarce [6,7]. In addition, data on these

psychometric characteristics among local Malaysian HF population is still limited.

2. Materials and methods

This was a cross-sectional study involving randomly selected 125 subjects aimed to assess knowledge, attitude self-care practice and HRQoL among local HF patients. The inclusion criteria include patients diagnosed with HF of any cause and New York Heart Association (NYHA) Class undergoing follow-up at cardiology out-patient of a tertiary hospital which also acts as one of the cardiac referral centers for the country between June – August 2018. The exclusion criteria include those with documented dementia or any other psychological disorders that prevents participation in the survey, those with incomplete medical record e.g. HF-related clinical backgrounds and those who were illiterate or with significant language barrier hence unable to complete self-administered questionnaires in Malay or English.

Data collection was conducted through self-administered survey utilizing a newly developed and validation

bilingual (Malay and English) KAPQ-HF, a psychometric tool to measure knowledge, attitude, self-care practice and HRQoL [8]. The questionnaire consisted of 11 items in the knowledge domain employing single best answer (SBA) questions while Likert Scale was used for the attitude (7 items), self-care (8 items) and HRQoL (12 items) domains. KAPQ-HF took approximately 15 minutes to complete. Scoring system and classifications for all the 4 domains was also adopted from the same study.

Data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 24.0 software. All collected data was coded into variables and normality of continuous variables were checked. Since all numerical data was normality distributed, mean and standard deviation (SD) were used to describe the numerical variables while categorical data was described in frequency and percentage (%). Knowledge, attitude, self-care practice and HRQoL scores were compared according to various characteristics using independent t-test and ANOVA while correlation between the scores and continuous variables were tested using Pearson correlation test. Ethical approval to conduct the study was received from the Malaysian Research Ethics Committee (MREC) prior to the commencement of the study (NMRR-17-2858-38901).

3. Results & Discussion

3.1. Sociodemographic and Clinical Background of Study Subjects

The mean (SD) age of the study subjects was 54.96 (10.423) years and ranged from 26 to 83 years (Table 1). Majority of the study subjects were male (76%) with secondary education as the highest education attainment (60%) and no fixed monthly income (62.4%). The mean (SD) baseline ejection fraction (EF) and duration of HF since diagnosis were 35.98 (12.942) % and 45.44 (33.097) months respectively. Most of the subjects were in NYHA class II at baseline (49.6%).

3.2. Knowledge on HF and Its Management

As illustrated in Table 2, the mean (SD) knowledge score on HF and its management among subjects in this study was 5.67 (2.031) with most subjects classified as having either moderate (46.4%) or poor (44.8%) knowledge.

Analysis of knowledge score according to various sociodemographic and clinical background of the study subjects is shown in Table 3. Knowledge score was found to be weakly and inversely correlated to age suggesting that knowledge decreases as age increases (r = -0.246, P = 0.006). Comparison of mean knowledge score between genders found that female subjects had almost significantly higher knowledge score compared to male subjects (mean (SD) score 6.233 (1.633) versus 5.495 (2.118); P = 0.05). Knowledge score was also found to be weakly but significantly correlated with BMI (r = 0.255, P = 0.004) and post-hoc analysis using Bonferroni test revealed that patients with baseline NYHA Class I have significantly lower knowledge scores as compared to those with higher NYHA classes (P = 0.013). There were no significant correlation or differences in knowledge scores in other sociodemographic and clinical characteristics.

Table 1. Sociodemographic and Clinical Background of Study Subjects

Characteristic	Frequency	Percentage (%)	Mean (SD)
		(N = 125)	
Age			54.96 (10.423) Range 26 – 83
Gender			
Male	95	76.0	
Female	30	24.0	
Highest education attainment			
Primary education or less	26	20.8	
Secondary education	75	60.0	
Tertiary education	24	19.2	
Gross monthly income			
No fixed income	78	62.4	
< RM 2500	28	22.4	
≥ RM 2500	19	15.6	
Baseline EF (%)			35.98 (12.942)
Baseline NYHA Class			
I	16	12.8	
II	62	49.6	
III - IV	47	37.6	
Duration of HF (months)			33.097)

Table 2. Knowledge on HF and its management among study subjects

Characteristic	Frequency	Percentage (%)	Mean (SD)
		(N = 125)	
Knowledge score			5.67 (2.031)
Poor (0 – 5)	56	44.8	
Moderate (6 – 8)	58	46.4	
Good (9 – 11)	11	8.8	

Table 3. Analysis of Knowledge Score According to Sociodemographic and Clinical Characteristics of Study Subjects

Characteristic	N	Mean knowledge score (SD)	Mean diff. (95% CI)[b]	F-stat[c]	r[a]	P-value*
Age	125				- 0.246	**0.006**
Gender						
Male	95	5.495 (2.118)	- 0.738			0.05
Female	30	6.233 (1.633)	(-1.476, -0.001)			
Highest education attainment						
Primary education or less	26	5.346 (1.598)		0.423		0.656
Secondary education	75	5.747 (2.212)				
Tertiary education	24	5.792 (1.888)				
Gross monthly income						
No fixed income	78	5.680 (2.009)		0.961		
< RM 2500	28	5.321 (2.074)				0.386
≥ RM 2500	19	6.158 (2.062)				
Baseline EF (%)					- 0.045	0.615
Baseline NYHA Class						
I	16	4.313 (2.272)		4.518		**0.013**
II	62	5.774 (1.859)				
III - IV	47	6.000 (2.022)				
Duration of HF (months)					- 0.036	0.689

[a] Pearson correlation test
b Independent t-test
[c] One-way ANOVA
* P-value < 0.05 shows statistical significance.

3.3. Attitude towards HF and Its Management

The mean (SD) attitude score was 26.352 (2.175) with the majority of the study subjects were found to have moderate attitude towards HF and its management (Table 4).

Analysis of attitude score according to sociodemographic and clinical characteristics is as summarised in Table 5.

Similar to knowledge score, attitude score was also found to be weakly, inversely but significantly correlated to age ($r = - 0.202$, $P = 0.024$). Female subjects were also found to have statistically better attitude towards HF compared to male subjects (mean (SD) score 27.033 (2.157) versus 26.137 (2.147); $P = 0.049$). No significant differences or correlation were seen in other sociodemographic and clinical characteristics.

Table 4. Attitude towards HF and its management among study subjects

Characteristic	Frequency	Percentage (%)	Mean (SD)
		(N = 125)	
Attitude score			26.352 (2.175)
Poor (1 – 17)	0	0.0	
Moderate (18 – 27)	91	72.8	
Good (28 – 35)	34	27.2	

Table 5. Analysis of Attitude Score According to Sociodemographic and Clinical Characteristics of Study Subjects

Characteristic	N	Mean attitude score (SD)	Mean diff. (95% CI)[b]	F-stat[c]	r[a]	P-value*
Age	125				- 0.202	**0.024**
Gender						
Male	95	26.137 (2.147)	- 0.896			**0.049**
Female	30	(- 1.787, - 0.055)	(- 1.787, - 0.055)			
Highest education attainment						
Primary education or less	26	26.038 (1.886)		0.671		0.513
Secondary education	75	26.333 (2.244)				
Tertiary education	24	26.352 (2.175)				
Gross monthly income						
No fixed income	78	26.051 (1.973)		2.022		
< RM 2500	28	26.821 (2.554)				0.137
≥ RM 2500	19	26.895 (2.258)				
Baseline EF (%)					- 0.009	0.921
Baseline NYHA Class						
I	16	25.750 (2.206)		0.975		0.380
II	62	26.307 (2.959)				
III - IV	47	26.617 (1.939)				
Duration of HF (months)					- 0.149	0.097

[a] Pearson correlation test, [b] Independent t-test, [c] One-way ANOVA, * P-value < 0.05 shows statistical significance.

3.4. Self-care Practice among Study Subjects

The mean (SD) self-care practice score among study subjects was 13.4 (3.561) with most subjects have moderate self-care practice (54.4 %) although a sizeable number of subjects have poor self-care practice (25.6 %) as demonstrated in Table 6.

Table 7 shows statistically significant inverse weak correlation between self-care practice score with duration of HF from first diagnosis (r = -0.317, P < 0.001). This result suggested that the longer the patients have HF, the poorer their self-care practice. Self-care practice analysis according to other characteristics showed no significant findings.

3.5. HRQoL among Study Subjects

Table 8 demonstrates that the mean (SD) HRQoL score measured was 30.161 (17.661) % and majority of the patients had good HRQoL (59.2%).

Analysis of HRQoL score according to different sociodemographic and clinical characteristics found no statistically significant findings (Table 9).

3.6. Correlation between Knowledge, Attitude, Self-care Practice and HRQoL

This study revealed weak correlation between knowledge score and attitude score (r = 0.222, P = 0.013) and between knowledge score and self-care practice score (r = 0.357, P < 0.001). In other words, increasing knowledge among HF patients improves their attitude towards HF and self-care practice. No significant correlations were found between attitude score and self-care practice as well as between HRQoL with other psychometric characteristics.

Table 6.0 Self-care Practice Among Study Subjects

Characteristic	Frequency	Percentage (%)	Mean (SD)
		(N = 125)	
Self-care practice score			13.4 (3.561)
Poor (0 – 10)	32	25.6	
Moderate (11 – 16)	68	54.4	
Good (17 – 21)	25	20.0	

Table 7. Analysis of Self-care Score According to Sociodemographic and Clinical Characteristics of Study Subjects

Characteristic	N	Mean self-care score (SD)	Mean diff. (95% CI)[b]	F-stat[c]	r[a]	P-value*
Age	125				- 0.077	0.395
Gender						
Male	95	13.1789 (3.725)	- 0.921			0.218
Female	30	14.100 (2.928)	(- 2.394, - 2.235)			
Highest education attainment						
Primary education or less	26	14.077 (3.058)		0.614		0.543
Secondary education	75	13.267 (3.677)				
Tertiary education	24	13.083 (3.741)				
Gross monthly income						
No fixed income	78	13.628 (3.377)		0.801		
< RM 2500	28	13.392 (4.148)				0.451
≥ RM 2500	19	12.474 (3.560)				
Baseline EF (%)					- 0.090	0.317
Baseline NYHA Class						
I	16	13.125 (4.096)			0.812	0.446
II	62	13.807 (3.463)				
III - IV	47	12.957 (3.514)				
Duration of HF (months)					- 0.317	**<0.001**

[a] Pearson correlation test, [b] Independent t-test, [c] One-way ANOVA, * P-value < 0.05 shows statistical significance.

Table 8. HRQoL Among Study Subjects

Characteristic	Frequency	Percentage (%)	Mean (SD)
		(N = 125)	
HRQoL score (%)			30.161 (17.661)
Good (0 – 22)	74	59.2	
Moderate (23 – 43)	26	20.8	
Poor (44 – 100)	25	20.0	

Table 9. HRQoL Score According to Sociodemographic and Clinical Characteristics of Study Subjects

Characteristic	N	Mean self-care score (SD)	Mean diff. (95% CI)[b]	F-stat[c]	r[a]	P-value*
Age	125				0.045	0.617
Gender						
Male	95	23.021 (20.670)	-7.501			0.092
Female	30	30.522 (22.485)	(-16.253, 1.251)			
Highest education attainment						
Primary education or less	26	32.821 (23.532)		2.849		0.062
Secondary education	75	23.862 (21.416)				
Tertiary education	24	19.153 (15.908)				
Gross monthly income						
No fixed income	78	27.222 (22.138)		1.528		
< RM 2500	28	22.429 (21.717)				0.221
≥ RM 2500	19	18.491 (15.397)				
Baseline EF (%)					0.072	0.422
Baseline NYHA Class						
I	16	18.813 (20.416)		0.783		0.459
II	62	25.124 (21.409)				
III - IV	47	24.821 (21.272)				
Duration of HF (months)					- 0.081	0.367

[a] Pearson correlation test, [b] Independent t-test, [c] One-way ANOVA, * P-value < 0.05 shows statistical significance.

Table 10. Correlation Between Knowledge, Attitude, Self-care Practice and HRQoL

Characteristic	Knowledge score	Attitude score	Self-care practice score
Knowledge score		0.222[a] (0.013)*	
Attitude score			0.136 (0.131)
Self-care practice score	0.357[a] (<0.001)*		
HRQoL	0.123 (0.171)	- 0.04 (0.968)	0.02 (0.827)

[a] Pearson correlation test, * P-value < 0.05 shows statistical significance.

4. Discussion

The relatively young age and majority male subjects recruited in this study were similar to previous report [9]. Higher prevalence of risk factors such as hypertension, tobacco smoking, physical inactivity (> 50% in Malaysia) and raised blood glucose have been suggested as key factors for this earlier onset of HF among Southeast Asian populations [3]. This study also revealed that majority of the study subjects came from the low-income group where most had no fixed income or earning below the national average monthly income of RM 2500, supported by only secondary education as the highest education attainment [10]. Among identified reasons for higher HF in lower socioeconomic population were limited access to healthcare including transportation issues, unaffordability of drug regimens, greater co-morbidity precipitating cardiac decompensation and fewer contacts with primary care health care providers [11]. Therefore, tackling the socioeconomic disparity that exist in this HF population may be able to help reduce health inequalities, hence producing better clinical outcomes.

In this study, the biggest proportion of subjects (46.4%) were found to have moderate knowledge on HF and its management. Although the results were better than those reported by other studies, more effort to improve HF-related knowledge among our local HF population should be done since improving knowledge through educational interventions have been proven to improve

clinical outcomes [12,13,14,15]. This study also found weak and inverse but statistically significant correlation between knowledge score and age (r = - 0.246, P = 0.006). Low knowledge in HF was found to be associated with low health literacy (the ability to obtain, understand and apply health-related information) which is common in aging patients due to decline in cognitive functions [16]. Decline in physical functions which include vision impairment and hearing difficulties may also prevent them from effectively capturing information during consultations with healthcare providers [17]. This study also found that those in NYHA Class I have statistically lower knowledge score compared to other classes. Even though no significant correlation was found between knowledge score and EF, better knowledge in patients with higher NYHA classes seen in this study suggests that information-seeking activities increase when HF symptoms become more pronounced and deterioration in physical functions occur. Patients in higher NYHA class may also have received more information during their follow-ups since knowledge on chronic diseases has been found to be strongly associated with regular follow-ups [4].

This study positively revealed that none of the study subjects have negative attitude towards HF with majority was reported to have moderate attitude. Attitude score was also found to be weakly and inversely correlated with age (r = - 0.202, P = 0.024). This result was supported by a study conducted on 201 subjects in Poland where young patients tend to believe that HF is curable, while the old

and those with severe HF were more skeptical [18]. The course of the disease, particularly when experiencing rehospitalisations may be the cause of more negative attitude towards HF among older patients. Attitude score among women in this study was also found to be statistically higher than in men. This result is in line with the higher mean knowledge score among women than in men in this study although the difference was statistically insignificant. Improving attitude towards HF through the improvement of knowledge by providing patient education is important to improve patients' confidence in taking care of themselves. Patients with negative attitude towards their disease are often in denial and do not find the need to take actions to improve their health [19].

Although majority of the study subjects exhibited moderate self-care practice, one-fourth (25.6%) of the subjects still have poor self-care practice. Therefore, strategies to tackle this problem must be put in place speedily since the ability to voluntarily execute and maintain daily self-care practices is essential in achieving positive clinical outcomes and HRQoL [20]. Self-care in HF is complex and multi-faceted, and as such, requires a multidimensional, multidisciplinary interventional approaches. Interventions such as patient education should be practical and flexible enough to be individualized according to patients' needs. It is interested to note that although this study did not show significant correlation between age and self-care practice score, significant inverse weak correlation was seen between self-care practice with duration of HF ($r = -0.317$, $P < 0.001$). No other studies have addressed the relationship between self-care practice with duration of disease so far. However, this trend can probably be explained due to gradual decline in motivation and perceived benefits over time. Motivation has been recognized as one of the factors affecting self-care practice which include motivation to return to previous physical health status and preventing or alleviating symptoms, having the desire for remaining independent, motivation from supporting family members, and motivation to avoid irritating and burdening family members [21]. Therefore, educational programs which identify appropriate individualized motivations should be conducted at regular intervals to ensure good self-care practice is sustained among HF patients.

This study also found weak and significant correlation between knowledge score and self-care practice score ($r = 0.357$, $P < 0.001$) and between knowledge score and attitude score ($r = 0.222$, $P = 0.013$). These results suggest that any efforts to improve HF-related knowledge may be able to improve self-care practice and can positively shape patients' attitudes towards their disease. Knowledge and understanding are important for HF patients, as part of their daily self-care, to recall what symptoms to look for, understand the meaning of symptoms, identify what events that may have led to symptoms, apply an appropriate symptom response and estimate how that response is likely to play out. This relationship between knowledge with attitude and self-care practice is highly influenced by cognitive abilities since lack of understanding instead of just lack in knowledge have been found to contribute to poor self-care [22]. Previous studies have demonstrated the association between attitude with medication adherence and self-care practice with improvement of symptoms among HF patients [14, 23].

5. Conclusion

This study found that in general, majority of the study subjects have good HRQoL but only moderate knowledge, attitude and self-care practice. In addition, significant although weak correlations found between knowledge and attitude and self-care practice support the need of establishing continuous individualized educational programs in order to improve these psychometric characteristics.

Acknowledgements

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