Perceived quality of life in patients with heart failure: a cross-sectional study among adults in Kingdom of Bahrain

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Abstract

Purpose – The aim of this study is to assess the perceived quality of life of Bahraini patients with heart failure.
Design/methodology/approach – A sample of 250 patients aged 18 years and older was recruited using a cross-sectional design. Minnesota Living with Heart Failure Questionnaire version three was employed to obtain data from participants on their socio-demographic characteristics and their perceived quality of life.
Findings – The mean age of patients was 69.0 ± 8.1 years and 78% were males. Almost half of the patients with third/fourth degree heart failure had difficulties in earning a living (48.4%) since they had long periods of hospital stays (49.2%). The quality of life is inversely proportional to the age of the patients with third/fourth degree heart failure ($p < 0.001$). Most of the patients had a poor quality of life (74.8%); about 21.6% had a moderate quality of life, while only few patients (3.6%) had a good quality of life.
Originality/value – The quality of life among Bahraini patients diagnosed with third/fourth degree heart failure is generally poor. Further, advanced age, low level of education, not currently married and low income were shown to be associated with poor quality of life. A need exists to include a quality of life assessment tool as part of the management of these patients.
Keywords Heart failure, Quality of life, Patients, Nurses
Paper type Research paper

Introduction

Heart failure is a chronic disorder caused by a structural or functional impairment in the ability of the heart ventricle to fill or eject the blood effectively (Paz *et al.*, 2019). The overall prevalence of heart failure raises with age, particularly after the age of 64. The disease affects at least 26 million people worldwide and the rate is increasing as it is expected to increase by 46% by the year 2030. In China there are 4.2 million people with heart failure, with an estimated prevalence of 1.3%, around 1 million patients in Japan and 6.2 million in the USA (Savarese & Lund, 2017). A similar situation is observed in the Middle Eastern countries with a total number of 931,135 in Egypt, 320,933 in Saudi Arabia and 93,865 in United Arab Emirates. The total annual estimated cost of treatments in these countries is $US1.92bn.

Inpatient admissions were the major cost driver ranging from 25 to 56% (AlHabeeb *et al.*, 2018).

Heart failure affects patients' physical, social, psychological, emotional and spiritual health. In addition, the symptoms associated with the diseases have a negative impact on the quality of life, including fatigue, shortness of breath, insomnia and anxiety. Nursing interventions to improve the quality of life for patients with heart failure are defensible and are an integral component of the heart failure treatment plan which aims to maximize life expectancy, improve quality of life and prevent disease progression and hospital readmissions (Zhang, Gilmour, Liu, & Ota, 2020). Thus, the role of the nurses as well as their knowledge and understanding of the concepts behind heart failure and the quality of life are vital so that patients would have a better life and have the ability to cope and maintain with their normal daily life activities (Sanad, 2017).

Establishing factors associated with changes in the quality of life among patients with heart failure is essential to early identify patients in need of long-term health services and develop appropriate strategies to improve the quality of their lives. Demographic characteristics such as age, gender and educational level were found to influence the quality of life of patients with heart failure (Polikandrioti *et al.*, 2019). Other reported factors include culture, social support and marital status (AbuRuz & Alaloul, 2018).

Although heart failure disorder is common worldwide including the Arab world, published literature provide little information on the effect of this condition on patients' quality of life, with a similar situation in Bahrain. This study was conducted to assess the perceived quality of life of Bahraini patients with heart failure by using the assessment tool of Minnesota Living with Heart Failure version three. In addition, factors that contribute to the quality of life among such patients are explored.

Method

Design and setting
A cross-sectional study design was used to conduct this study at the two Coronary Care Units in Salmanya Medical Complex (the main public hospital in the Kingdom of Bahrain).

Participants
The Epi-Info programme version 10 was used to estimate the sample size based on the following parameters: population size of 535, confidence coefficient of 97%, expected frequency of 50% and acceptable error of 55. This calculated the minimum sample size as 250 patients. All Bahraini patients aged 18 and above who were admitted to the Coronary Care Units and diagnosed with stage third or fourth stage heart failure were eligible to participate in the study. Patients with stage 1 or stage 2 heart failure have little impact on their quality of lives and were not included in this study. In addition, patients with major medical conditions such as degenerative diseases, cancer, those with organ failures and patients with major psychiatric disorders were also excluded from the study since it would be difficult to rule out the effect of these conditions on the quality of life of patients with heart failure.

Measurement tool
Quality of life was assessed using the Minnesota Living with Heart Failure Questionnaire (MLHFQ) version three (Bilbao, Escobar, García-Perez, Navarro, & Quirós, 2016). The tool consisted of two parts. The first part included five questions on patients' socio-demographic data such as age, gender, marital status, level of education and monthly income. The second part consisted of 21 questions which covered the three dimensions; general dimension (eight questions, score ranged from 0 to 40) physical dimension (eight questions, score ranged from

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0 to 40) and the emotional dimension (five questions, score ranged from 0 to 25). All questions were rated using a six-point Likert scale ranging from 0 to 5 (0 = not applicable, 1 = very little, 2 = little, 3 = moderate, 4 = much and 5 = very much). Then, the total score of MLHFQ ranged from 0 to 105 was calculated by adding up the scores of all questions, with higher scores indicating greater impairment in quality of life. A total score of less than 24 represented good quality of life, a score between 24 and 45 is a moderate quality of life, while a score of more than 45 indicates poor quality of life. Furthermore, the overall score of each dimension, physical and emotional dimensions, was calculated and categorized into three levels good, moderate and poor. These categories represented the level of functioning in each dimension. For the physical dimension, a score of less than 9 is good physical functioning, a score between 9 and 17 is moderate and a score above 17 indicated poor physical functioning. For the emotional dimension, scores of less than 6, between 6 and 11 and above 11 indicated good, moderate and poor emotional levels, respectively (Behlouli *et al.*, 2009).

Validation of the tool
The original tool was in English language and was translated to Arabic language following Mapi Linguistic Validation Guidance of a Clinical Outcome Assessment. The validation of the translated tool required four faces. Phase one is forward translation, and phase two is backward translation. The tool was rigorously revised and underwent forward and backward translation by Arabic and English experts in translating the research tool to validate the questionnaire and make sure it would not lose its objectivity. Moreover, the tool was submitted to a panel of nine experts in medical–surgical–nursing field to validate the accuracy of the translation from nursing perspective; the item–content validity index was 0.95. Phase three is a pilot study which was conducted on 25 patients (10%) diagnosed with heart failure to test the feasibility, clarity and applicability of the tool. Approximately 15 min was required to complete the questionnaire. The tool was found to be clear by the patients, and no modifications or adjustments were needed. The last phase was the proofreading to detect any typing, spelling or grammatical errors. Furthermore, the internal consistency was excellent (Cronbach's alpha = 0.983).

Ethical consideration
Official approvals were obtained from the Research Committee at College of Health and Sport Sciences and Research at University of Bahrain as well as the Ethical Committee Board at Ministry of Health, Kingdom of Bahrain. A license agreement from university of Minnesota was obtained to use the study tool. In addition, translation agreement from Mapi Research Trust to use and translate the tool, following Mapi Linguistic Validation Guidance of a Clinical Outcome Assessment was attained.

The patients who met the inclusion criteria were approached and the aim of the study was explained to them. The patients were assured of their right to refuse, participate or withdraw at any time from the study. Written informed consent was obtained from the patients who agreed to participate. Confidentiality of the obtained data along with patients' privacy and anonymity were respected.

Statistical analysis
The Statistical Packages for Social Sciences (SPSS), version 26, was utilized for data analysis. Descriptive statistics was used to produce numbers, percentages, means and standard deviations of patients' demographic characteristics while continuous variables such as MLHFQ version three, manual guidelines were employed to create the database for analysis according to the instructions. Mean scores along with their standard deviations were calculated

for the quality of life questions. Comparison was done between the quality of life and the socio-demographic data such as age, gender, educational level, marital status and monthly income. *T*-test was used to determine whether there is a significant difference in means between two independent groups such as gender, while ANOVA test was used to determine whether there is a significant difference in the means between more than two independent groups such as educational level, marital status and monthly income. The associations between the quality of life among Bahraini patients with heart failure and socio-demographic characteristics were assessed using Kruskal Wallis test. Chi-square test was used to determine whether there is a significant relationship between two categorical variables such as gender. All the statistical analyses were considered significant at $p < 0.05$.

Results

Table 1 presents the socio-demographic characteristics of the participants. A total of 250 patients with heart failure diagnosed with stage three or four participated in this study. The mean age of all participants was 69.0 ± 8.1 years and the majority 195 (78%) were males. More than half (56%) of the participants had primary education, 21% of them were university-graduates and only (2%) had a higher education degree. Of the participants,

Socio-demographic characteristics	*n* (%)
Gender	
Male	195 (78)
Female	55 (22)
Age in years	
<60 years	47 (18.8)
60–70 years	88 (35.2)
>70 years	115 (46)
Mean ± SD	69.0 ± 8.1
Education level	
Illiterate	18 (7.2)
Primary	140 (56)
Intermediate	23 (9.2)
Secondary	12 (4.8)
University	52 (20.8)
Higher education	5 (2)
Social status	
Single	6 (2.4)
Married	207 (82.8)
Divorced	7 (2.8)
Widowed	30 (12)
Number of children	
1–3	51 (20.9)
4–6	160 (65.6)
>6	33 (13.5)
Mean ± SD	4.8 ± 1.7
Monthly income	
<500 BD	180 (72)
500–1,000 BD	51 (20.4)
>1,000 BD	19 (7.6)
Note(s): BD, Bahraini Dinars	

Table 1.
Distribution of the socio-demographic characteristics of the participants (total = 250)

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17.2% were not currently married, and had a monthly income of less than 500 Bahraini Dinars (72%).

Table 2 shows that heart failure affected the quality of life of the participants and at least moderately prevented them from living as they wanted during the past four weeks in all dimensions (means more than 2.5). The only exception was the impact of the heart failure on the costs of the medical care. The impact of the heart failure on participants' general dimension was more evident by making recreational times, working to earn a living difficult and staying in hospital (mean score: 3.47 ± 1.34, 3.55 ± 1.04 and 3.27 ± 1.30, respectively). Additionally, the mean scores of all the components of the emotional dimension were above 3. Among the questions in the emotional dimension, the question about the effect of heart failure on patients' worries had the highest mean score (3.43 ± 1.32) while the lowest mean score was for the impact of heart failure on the patients' concentration (3.05 ± 1.33). Difficulties in going to places away from home, working around the house and walking about or climbing stairs attained the highest mean scores (3.61 ± 1.16, 3.58 ± 1.12 and 3.54 ± 1.18, respectively).

The overall mean score obtained in the physical dimension was highest in the general dimension (Table 3) with a score for the quality of life of 21.4 ± 7.5 (median = 24). In comparison the emotional dimension had a mean score of 16.1 ± 6.3 (median = 18).

Dimensions (items range from 0 to 5)	Mean ± SD
General dimension	
1. Causing swelling in your ankles or legs?	3.09 ± 1.20
8. Making your working to earn a living difficult?	3.47 ± 1.34
9. Making your recreational pastimes, sports or hobbies difficult?	3.55 ± 1.04
10. Making your sexual activities difficult?	2.82 ± 1.29
11. Making you eat less of the foods you like?	2.75 ± 1.12
14. Making you stay in a hospital?	3.27 ± 1.30
15. Costing you money for medical care?	0.00 ± 0.00
16. Giving you side effects from treatments?	2.41 ± 1.38
Emotional dimension	
17. Making you feel you are a burden to your family or friends?	3.20 ± 1.35
18. Making you feel a loss of self-control in your life?	3.39 ± 1.32
19. Making you worry?	3.43 ± 1.32
20. Making it difficult for you to concentrate or remember things?	3.05 ± 1.33
21. Making you feel depressed?	3.07 ± 1.34
Physical dimension	
2. Making you sit or lie down to rest during the day?	3.41 ± 1.24
3. Making your walking about or climbing stairs difficult?	3.54 ± 1.18
4. Making your working around the house or yard difficult?	3.58 ± 1.12
5. Making your going places away from home difficult?	3.61 ± 1.16
6. Making your sleeping well at night difficult?	3.35 ± 1.13
7. Making your relating to or doing things with your friends or family difficult?	3.34 ± 1.27
12. Making you short of breath?	3.50 ± 1.12
13. Making you tired, fatigued or low on energy?	3.48 ± 1.24

Table 2.
Means and standard deviations for the quality of life according to, general, emotional and physical dimensions

Quality of life dimensions	Mean ± SD	Median
General dimension score (Range: 0–40)	21.4 ± 7.5	24
Emotional dimension score (Range: 0–25)	16.1 ± 6.3	18
Physical dimension score (Range: 0–40)	27.8 ± 8.8	32
Total score (Range: 0–105)	65.3 ± 21.9	75

Table 3.
Levels of quality of life among patients with heart failure

Table 4 shows that there are significant differences between physical and dimensions subscale score and socio-demographic data. Emotional and physical dimension scores were proportionally associated with age ($p < 0.001$). Participants aged less than 60 had lower emotional and physical scores in comparison to those aged more than 60. The overall quality of life score was 31.7 ± 13.7 among <60 years patients, 67.7 ± 19.9 among 60–70 years old patients and 77.2 ± 7.8 among >70 years old patients ($p < 0.001$). For the education level, there was an inverse relationship between the education level and the mean scores ($p < 0.001$). Further, patients who were illiterate had worse quality of life compared to those who are educated. This significant difference was seen in both men and women. Single patients had the lowest score in the overall quality of life, followed by married and divorced patients (29.3, 63.9 and 78, respectively) in all dimensions ($p < 0.001$). Patients with heart failure who have lower income levels had a poor quality of life compared to those with higher income levels ($p < 0.001$).

Table 5 shows that most of the patients had a poor quality of life (74.8%); about 21.6% had a moderate quality of life, while only 3.6% had a good quality of life. Highly significant associations between quality of life levels and all socio-demographic characteristics

	Emotional dimension score Mean ± SD	Physical dimension score Mean ± SD	Quality of life score Mean ± SD
Gender			
Male	15.9 ± 6.3	27.5 ± 8.7	64.4 ± 21.9
Female	17.1 ± 6.1	28.8 ± 9.1	68.6 ± 21.9
p-value1	0.198	0.364	0.212
Age			
<60 years	6.8 ± 3.9	15.0 ± 6.0	31.7 ± 13.7
60–70 years	16.7 ± 5.6	28.6 ± 8.3	67.7 ± 19.9
>70 years	19.5 ± 2.7	32.4 ± 3.5	77.2 ± 7.8
p-value2	<0.001	<0.001	<0.001
Education level			
Illiterate	20.6 ± 1.6	32.9 ± 2.4	79.1 ± 3.1
Primary	19.4 ± 2.8	32.6 ± 2.8	77.7 ± 6.7
Intermediate	19.0 ± 1.8	32.7 ± 2.1	76.1 ± 4.5
Secondary	13.4 ± 6.2	21.7 ± 10.5	51.8 ± 22.8
University or higher		6.1 ± 1.9	
p-value2	<0.001	<0.001	<0.001
Social status			
Single	6.3 ± 2.2	12.7 ± 1.5	29.3 ± 3.3
Married	15.8 ± 6.3	27.3 ± 8.9	63.9 ± 22.4
Divorced	19.7 ± 4.2	32.4 ± 5.2	78 ± 10.5
Widowed		19.9 ± 3.6	
p-value3	<0.001	<0.001	<0.001
Number of children			
1–3	11.3 ± 7.0	20.6 ± 9.5	46.9 ± 24.4
4–6	17.6 ± 5.3	30.0 ± 7.2	70.5 ± 18.0
>6	18.4 ± 4.2	31.1 ± 6.2	75.3 ± 13.5
p-value2	<0.001	<0.001	<0.001
Monthly income			
<500 BD	19.6 ± 2.3	32.9 ± 2.1	78.1 ± 4.7
500–1,000 BD	7.6 ± 4.1	16.3 ± 5.0	35.2 ± 13.3
>1,000 BD			
Note(s): BD, Bahraini Dinars			

Table 4.
Association between socio-demographic characteristics and quality of life

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	Good n (%)	Quality of life levels Moderate n (%)	Poor n (%)	p-value
Number of patients	9 (3.6)	54 (21.6)	187 (74.8)	
Gender				
Male	6 (3.1)	45 (23.1)	144 (73.8)	0.432
Female	3 (5.5)	9 (16.4)	43 (78.2)	
Age				
<60 years	8 (17)	34 (72.3)	5 (10.6)	<0.001
60–70 years	1 (1.1)	17 (19.3)	70 (79.5)	
>70 years	0 (0)	3 (2.6)	112 (97.4)	
Education level				
Illiterate	0 (0)	0 (0)	18 (100)	<0.001
Primary	0 (0)	2 (1.4)	138 (98.6)	
Intermediate	0 (0)	0 (0)	23 (100)	
Secondary or below	0 (0)	7 (58.3)	5 (41.7)	
University or higher	9 (15.8)	45 (78.9)	3 (5.3)	
Social status				
Single	0 (0)	6 (100)	0 (0)	<0.001
Married	9 (4.3)	48 (23.2)	150 (72.5)	
Divorced	0 (0)	0 (0)	7 (100)	
Widowed	0 (0)	0 (0)	30 (100)	
Number of children				
1–3	7 (13.7)	23 (45.1)	21 (41.2)	<0.001
4–6	2 (1.3)	22 (13.8)	136 (85)	
>6	0 (0)	3 (9.1)	30 (90.9)	
Monthly income				
<500 BD	0 (0)	0 (0)	180 (100)	<0.001
500–1,000 BD	0 (0)	44 (86.3)	7 (13.7)	
>1,000 BD	9 (47.4)	10 (52.6)	0 (0)	
Note(s): BD, Bahraini Dinars				

Table 5.
Association between
socio-demographical
characteristics and
quality of life levels

($p < 0.001$) were found except for gender of the participants. The quality of life is inversely proportional to the age of the patients with third/fourth degree heart failure ($p < 0.001$), i.e. as age increases, the quality of life becomes worse. Similarly, there is a significant difference in quality of life and the education of the patients. The lower the education, the lower is the quality of life ($p < 0.001$), with illiterate patients having a poor quality of life. In contrast, 78.9% of university graduates and those with higher educational levels had a moderate quality of life, 15.8% had a good quality of life and only 5.3% had a poor quality of life. In addition, a positive relationship was also found between the monthly income and the quality of life; patients at higher income had better quality of life in all dimensions ($p < 0.001$). Social support appears to be an important factor in maintaining a good quality of life, with all divorced and widowed patients having a significantly poor quality of life ($p < 0.001$). The number of children for the heart failure patients showed an inverse relationship with a quality of life ($p < 0.001$).

Discussion
The findings of this study revealed that most of the patients with third/fourth degree heart failure in Bahrain had a poor quality of life. These results are consistent with previous

published reports from other populations. For example, a large multi-national study in Europe conducted by Fonseca *et al.* (2021) revealed that patients with heart failure had a significantly reduced quality of life. Adebayo, Olunuga, Durodola, and Ogah (2017) review further supported the association between heart failure and poor quality of life in Nigeria. Interestingly, a study conducted by Juenger *et al.* (2002) showed that quality of life among patients with heart failure is worse compared to patients with other chronic diseases like chronic hepatitis C and major depression, but similar to patients on chronic haemodialysis.

In line with other studies, this study demonstrated that heart failure affects the physical, emotional and the general aspects of the patients' life. Mental health disorders such as anxiety and depression are common among patients with heart failure. However, these disorders frequently remain underdiagnosed. Clinically significant depression presents in at least 1 in 5 patients with heart failure (Rutledge, Reis, Linke, Greenberg, & Mills, 2006). Likewise, Aggelopoulou *et al.* (2017) concluded that patients with heart failure suffer from high levels of anxiety and depression.

In addition, the impact of heart failure on patient's physical functioning was obvious in multiple studies. In a study among 1128 patients with heart failure, Dunlay *et al.* (2015) concluded that physical disability is common in patients with heart failure and can progress over time. Likewise, a large review done by Fuentes-Abolafio *et al.* (2020) involved 44 observational studies with a total of 22,598 patients with heart failure and revealed a strong relationship between physical performance and prognosis in patients with heart failure. These findings are in accordance with the results of this study which showed that around 70% of the patients determined that their physical activities were very much or at least much affected by their cardiac condition.

As heart failure is a chronic disease that worsens over time and requires continuous medical management, the costs of heart failure are high and expected to increase substantially in the next years. Consequently, heart failure exerts a financial burden on health system, patients and caregivers. In this study, all patients reported no financial burden of heart failure evidenced by as there was no impact of the disease by costing money for medical care (0.00 ± 0.00). This finding can be attributed to the fact that governments of Bahrain provide free-of-charge health service to Bahrainis through governmental hospitals.

Although the results of this study showed that there were no differences in the quality of life among males and females diagnosed with heart failure, such sex differences in the quality of life were reported in the literature. Multiple studies from different regions in the world found that females had significantly worse quality of life compared to males. For instance, a systematic review of 29 studies conducted by Baert *et al.* (2018) found a significant relationship between patients' sex and quality of life in five studies; four studies showed that females had a lower quality of life, while only one study showed the opposite.

Multiple studies demonstrated that older age had a significant relationship with all areas of quality of life as shown in this study. For instance, Tarekegn, Gezie, Birhan, and Ewnetu (2021) concluded that patients over 60 years of age had worse mental health, physical health, social relationships and environmental health. Pelegrino, Dantas, and Clark (2011) and AbuRuz, Alaloul, Saifan, Masa'Deh, and Abusalem (2016) found a negative significant relationship between age and quality of life. In both studies, it was found that the older the patients the lower the quality of life. However, multiple studies contradict the research findings compared to old patients, young patients were found to have worse quality of life (Baert *et al.*, 2018; Tromp *et al.*, 2019).

Patients with heart failure who were not currently married (single, divorced, widow) had a worse quality of life compared to those who are married ($p < 0.001$). This demonstrates the importance of family and social support in the maintenance of a good quality of life. Similar observation was found by Schultz *et al.* (2017) where widowed patients had higher cardiovascular events and heart failure complications compared to married patients.

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A strong linear association was shown between patients' monthly income and the quality of life. Patients with higher income had better quality of life compared to those in lower income categories all dimensions ($p < 0.001$). Similarly, a study conducted by Teng *et al.* (2021) found that higher income was associated with better quality of life in all domains (e.g. physical, social and symptom domains) compared with lower income. Additionally, Tarekegn *et al.* (2021) reported that lower income and lower education level were associated with poorer quality of life. Asimakopoulou *et al.* (2019) found that the older the age of the patient and the lower levels of education, the lower the quality of life of patients with heart failure. Similar association was also found in this research. Highly educated patients had higher quality of life, when compared to less educated and illiterate patients with heart failure ($p < 0.001$). Considering the low quality of life among most patients with heart failure, periodic quality of life assessment using appropriate tools is recommended (Moradi *et al.*, 2020).

The study involved an adequate sample size and assessed multiple relevant variables. However, several limitations have to be considered. One limitation of this study is that it was conducted during COVID-19 pandemic period, which was a drawback because of difficulties in reaching the patients. Another limitation was that variables such as severity of the heart failure and comorbidities could not be assessed.

In conclusion, the quality of life among Bahraini patients diagnosed with third/fourth degree heart failure is generally poor. Advanced age, lower education, being divorced or widowed and low income are predictors of poor quality of life. Thus, periodic quality of life assessment should be part of the management plan of patients with heart failure. In addition, future studies are needed to address the potential role of nurses in improving the management outcomes and the quality of life in such patients.

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