

Health-Related Quality Of Life Among Patients With Advanced Heart Failure In Jeddah, Saudi Arabia

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Abstract

Background: Heart failure (HF) is increasing globally due to an aging population. It impacts patients' health-related quality of life (HRQoL).

Objectives: This study aimed to investigate HRQoL among patients with advanced HF and to identify its associated factors.

Methods: A cross-sectional study design was conducted on patients with advanced HF in Jeddah, Saudi Arabia. RAND 36-Item Health Survey 1.0 Questionnaire was used to assess HRQoL. The physical Components Summary (PCS) and mental Components summary (MCS) among the studied patients were assessed. Accordingly, the correlation between patients' general characteristics and PCS and MCS were evaluated and predictors for PCS and MCS were determined.

Results: Among 102 patients with advanced HF, 64.7% were females and 54.9% were less than 40 years old. The median scores for all eight domains of SF-36 were ≥ 50 . Regarding the PCS, about 7.8%, 40.2%, 37.3% and 25.5% of patients were scored as Q1, Q2, Q3 and Q4 respectively. However, considering the MCS, about 5.9%, 29.4%, 35.3% and 18.6% had a score of Q1, Q2, Q3 and Q4 respectively. Significant positive correlations were found regarding the PCS with age, marital status, living arrangement, BMI, smoking habit, and the need for hospital treatment. However, age and the need for hospital treatment, showed significant positive correlations with the MCS.

Conclusion: This study emphasizes the significance of assessing and addressing HRQoL in patients with advanced HF. By identifying the factors associated with HRQoL, healthcare providers can develop targeted interventions and support systems to improve the well-being of these patients.

Keywords: Heart failure, Short Form-36, Health Related Quality of Life, Saudi Arabia.

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I. Introduction

Heart failure (HF) is a rapidly expanding emerging public health concern that has negative implications for health-related quality of life (HRQoL). (Alharbi et al., 2022a). HF was defined as a complex clinical condition with cardinal symptoms and/or indicators caused by functional and/or anatomical defects in the heart. (Roger, 2021). This syndrome affects approximately 1% to 2% of adults worldwide. HF has been identified as a global pandemic, with an estimated 64.3 million individuals suffering with HF in 2017. (James et al., 2018). Because of the aging population, the prevalence of HF is expected to increase; (Yan et al., 2023) reducing the quality of life (QoL) of patients (Alharbi et al., 2022a) (AbuRuz et al., 2015; Alharbi et al., 2022b) and increasing the economic burden for both individuals and public health (Taylor et al., 2019).

In Saudi Arabia, the estimated prevalence of HF in 2012 was 1.2% among a total population of approximately 29 million. Additionally, around 20% of patients admitted for acute coronary syndrome were diagnosed with HF (AbuRuz et al., 2015). A study on the global burden of disease indicated that the age-standardized rate of heart failure per 100,000 population in Saudi Arabia increased by 20.97% from 1990 to 2019 (Yan et al., 2023). A national multicenter survey conducted in Saudi Arabia found that the average age of patients with acute and chronic HF was ten years younger compared to industrialized countries such as Japan, the United States, and European countries. (AlHabib et al., 2011). This earlier onset of HF among the Saudi population can be linked to the growth in cardiovascular disease risk factors, including hypertension, diabetes mellitus, obesity, smoking, and the adoption of a high-calorie Western diet. (Alharbi et al., 2022a) (AlHabib et al., 2011).

As heart failure progresses to more advanced stages, its symptoms become increasingly debilitating, affecting various aspects of patients' lives. Physical functioning, psychological well-being, emotional state,

cognitive function, intimate relationships, lifestyle status, usual role activities, social contact, and support are all disrupted by the limitations imposed by heart failure (Ventoulis et al., 2024). This profound negative impact on HRQoL is evident as patients experience a loss of physical autonomy and psychological distress, which hinders social interaction and imposes lifelong restrictions on daily activities (Salyer et al., 2019). Several studies have identified numerous characteristics linked with reduced HRQoL in HF, including gender, age, marital status, social support, geographic location or ethnicity, left ventricular ejection fraction, duration of HF, psychological status, and comorbidities (Ventoulis et al., 2024) (Jarab et al., 2023) (Heo et al., 2009) (Heo et al., 2009; Jarab et al., 2023; Ventoulis et al., 2024).

Prior research conducted in different regions of the Kingdom of Saudi Arabia, such as the eastern (AbuRuz et al., 2015) and central (Alharbi et al., 2022a) (Alharbi et al., 2022b) regions, has shown that physical and mental component summary scores and overall poor quality of life were affected in patients with HF. Therefore, this study was conducted in Jeddah, located in the western region of Saudi Arabia, with the aim to investigate HRQoL among patients with advanced HF and to identify the factors associated with it. Unraveling these characteristics is crucial for delivering individualized therapy, close monitoring, and increased care to HF patients, resulting in lower hospitalization rates, cheaper medical expenditures, and improved overall well-being.

II. Subjects And Methods

Study design and setting: A cross-sectional study design was conducted using an online anonymous questionnaire distributed through commonly used social media platforms [Instagram, Facebook, and Twitter].

Study population: Patients with advanced HF in Jeddah, Saudi Arabia. Participants were selected using a combination of convenience and snowball sampling methods from December to February 2024.

Sample size: To determine the minimum required sample size, G*power software (version 3.1, Franz Faul, Universitat Kiel, Germany) (Erdfelder et al., 2009) was utilized. Based on an effect size of 0.5 (AbuRuz et al., 2015) with an alpha error of 5% and a power of 80%, the minimum sample size required was calculated to be 102 participants.

Data collection: A self-administered questionnaire was established and uploaded to Google Forms and distributed using social media platforms [Instagram, Facebook, and Twitter]. The first part was about demographic information like age, sex, marital status, living arrangements, employment status, education, and monthly income. In addition, health-related data such as smoking habits, Body Mass Index (BMI), and frequency of taking treatment from the hospital were evaluated.

To measure patient HRQoL, the RAND 36-Item Health Survey 1.0 Questionnaire in Arabic version (Coons et al., 1998) of the 36-item Short Form (SF-36) Health Survey was used. This tool is a validated, self-report questionnaire.

The instrument consists of 36 items categorized into two composite measures, reflecting physical and mental components, across eight domains (Thomas, 2023) (Gandek et al., 2004) (Ware & Sherbourne, 1992): physical functioning (PF), role limitations due to physical functioning (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional health (RE), and general mental health (MH). Each item is rated on a scale from 0 to 100, indicating the spectrum from the poorest to the best quality of life.

The physical component summary (PCS) score is the sum of four domains: PF (10 items), RP (four items), BP (two items), and GH (five items). The mental component summary (MCS) score is obtained by combining RE (three items), VT (four items), SF (two items), and MH (five items). Furthermore, one item without a scale examines the respondent's present health status in relation to the previous year. (Ware & Sherbourne, 1992).

Coons et al. translated the instrument into Arabic and reported satisfactory reliability (Coons et al., 1998). Participants were categorized into four groups based on their HRQoL scores: scores from 0 to less than 25, scores from 25 to less than 50, scores from 50 to less than 75, and scores from 75 to 100 (Alharbi et al., 2022b) (AbuRuz et al., 2015) (Brazier et al., 1992).

Data analysis: Data entry and analysis were carried on using IBM SPSS Statistics for Windows (Version 27.0). Categorical data were presented as numbers and percentages. For numerical data, mean, standard deviation, median, interquartile range, minimum and maximum were used. To measure correlation between HRQoL domains and other demographic and health related variables, we performed Spearman's rank correlation coefficient. We developed stepwise linear regression model to identify predictors of HRQoL. Statistical significance was set at $P < 0.05$.

Ethical Considerations: Approval for this study was obtained from Dr. Soliman Fakeeh Hospital (DSFH) Committee (522/ IRB /2023). The research adhered to international ethical guidelines, including the Helsinki Guidelines and their subsequent amendments. Participants were informed about the research's goals before the beginning of the study.

III. Results

General characters of the studied patients

Around two-thirds of the studied patients were female (64.7%), whereas, (54.9%) of the patients belonging to age categories below 40 years old and about half were married (45.1%). Regarding living arrangements, the majority (70.6%) resided with a family member. Half of the patients 50% were university graduates, nearly half of the patients (48.0%) were employed, and 34.3% reported an income of less than 3000 Saudi Riyal. The patients' body mass index was also recorded, with 48.0% falling within the normal range, 37.3% categorized as overweight, and 14.7% classified as obese. Regarding smoking habits, 21.6% were current smokers. With regards to the frequency of hospital visits for treatment, 27.5% of patients never sought treatment from the hospital, while 52.0% had less frequent visits (1-3 times per month), and 20.6% had frequent visits (≥ 1 time per week) (Table 1).

Assesment of the PCS and the MCS among the studied patients

The study assessed the Physical Component Summary and Mental Component Summary domains of the SF-36 Quality of Life among the examined patients. The median scores for the PCS and the MCS were 61.2 and 51.5, respectively. (Figure 1). The median scores for the eight domains assessed by the SF-36 are displayed in detail in (Table 2). Regarding the PCS, about 7.8%, 40.2% , 37.3% and 25.5% of patients were scored as Q1, Q2,Q3 and Q4 respectively. However, considering the MCS, about 5.9%, 29.4% , 35.3% and 18.6% had a score of Q1, Q2,Q3 and Q4 respectively (Figure 2).

The correlation between patients' general characteristics and the PCS and the MCS

Regarding the PCS, significant positive correlations were found with age, marital status, living arrangement, BMI, smoking habit, and the need for hospital treatment.

For the MCS, we observed a significant positive correlation with age and the need for hospital treatment (Table 3).

Predictors of the the PCS and the MCS affecting patients quality of life

For the Physical Component Summary, older age, being unmarried, and a greater need for hospital treatment are associated with a lower physical quality of life. Regarding the Mental Component Summary, a greater need for hospital treatment is associated with lower mental quality of life as shown in (Table 4).

IV. Discussion

HF is a chronic multifactorial clinical syndrome that exhibits detrimental effects on quality of life (Alharbi et al., 2022b). HRQoL encompasses physical, psychological, and social dimensions, all of which are incorporated in the SF-36 health survey (Thomas, 2023) (Gandek et al., 2004) (Ware & Sherbourne, 1992). In assessing HRQoL among patients with advanced HF in Jeddah, the current study found higher scores across almost all of the SF-36 domains compared to previous studies in Saudi Arabia's Eastern region (AbuRuz et al., 2015) and Jordon(Hayeah et al., 2017). Another study in the Qassim region of Saudi Arabia reported higher figures of QoL among patients with HF except for the role of the physical functioning domain (Alharbi et al., 2022a). The observed differences in QoL among patients with HF across different regions, reflect a combination of sociocultural influences and possibly even differences in patient populations. On the other hand, studies in Ethiopia (Ewnetu Tarekegn et al., 2021) and Brazil (De Sousa et al., 2017) found that patients with congestive HF had a lower QoL in all domains, especially in the physical health domain and overall QoL. The Global Congestive Heart Failure Study of 23,000 Patients from 40 Countries found similar regional disparities in QoL among patients with HF.. The study found that Africa and Eastern Europe exhibited the worst HRQoL ratings. However, the regions with the highest self-rated HRQoL were Middle East, Western Europe and South Asia (Johansson et al., 2021) Methodological variations, differences in the presence of comorbidities, social support, duration of HF, adherence to treatment compliance, and in health quality should be also considered in explaining these differences.

On examining SF-36 domains, social functioning, and bodily pain exhibited the highest scores in patients with HF consistently, as noted in previous studies across various regions in Saudi Arabia (Alharbi et al., 2022b) (AbuRuz et al., 2015). Another study among Arab patients with HF revealed that patients had severe disruptive discomfort and exhaustion, interference with social activities, impaired psychological status, and restrictions in doing regular tasks. (Alaloul et al., 2017). These results imply that patients with HF s often struggle with physical and emotional constraints in their everyday lives, thereby positively influencing their HRQoL (Heo et al., 2009). Moreover, the presence of personal attendants and supportive family members, motivated by both religious and sociocultural factors, may significantly contribute to this phenomenon among patients in Saudi Arabia (AbuRuz et al., 2015).

The findings of the current study indicate that among patients with advanced HF, the median score for the mental component summary was lower compared to that of the physical component summary. However, despite this difference, both MCS and PCS scores exceeded those reported in a prior Saudi Arabian study (AbuRuz et al., 2015) as well as a meta-analysis comprising 14 studies (Moradi et al., 2020). Interestingly, these results are consistent with other studies conducted within the Arab region, where the physical domain of QoL was higher than the mental domain (Alharbi et al., 2022b) (Hayeah et al., 2017). These findings underscore the complexity of assessing QoL among HF patients and the multifaceted nature of their experiences.

The present study identified several factors that were associated with QoL among patients with HF. Older age, being unmarried, and a higher need for hospital treatment have been identified as factors that contribute to a lower physical QoL. The frequent necessity of hospital treatment was also found to be a relevant predictor of low mental QoL. Similarly, Alaloul et al (Alaloul et al., 2017) found that older age was associated with lower PCS scores. In another study by Wenn et al. (Wenn et al., 2022), being married was found to be associated with high overall QoL scores among cardiac patients. (Hayeah et al., 2017). This could be explained by the evidence that social support and the presence of a stable relationship may have a positive impact on the QoL of HF patients (AbuRuz et al., 2015) (Ewnetu Tarekegn et al., 2021). Moreover, a greater need for hospitalization was associated with reduced daily living activities and hence QoL among patients with HF (Dunlay et al., 2015). These findings emphasize the importance of considering these factors when assessing and addressing the QoL of patients with HF.

V. Conclusion

Analysis of HRQoL among patients with HF using the SF-36 questionnaire revealed median scores surpassing 50 across all eight assessed domains. Particularly noteworthy were the high scores observed in social functioning and bodily pain. Moreover, the median score for the physical component summary exceeded that of the mental component summary. Factors such as older age, being unmarried, and a heightened need for hospital treatment were associated with lower HRQoL among HF patients. These findings highlight the importance of considering sociodemographic characteristics and providing a comprehensive approach to improving the QoL of cardiac patients. By assessing and addressing HRQoL, healthcare professionals can better understand the impact of the disease on patients' lives and tailor interventions to improve their well-being. This may involve optimizing medical therapy, providing psychosocial support, and implementing strategies to minimize hospitalizations. A theoretical and practical approach that considers the identified factors can contribute to enhancing the HRQoL of patients with HF and improving their overall quality of life.

VI. Strengths And Limitations

The study utilized a validated and commonly employed questionnaire, specifically the Arabic version of the 36-item SF-36, known as the RAND 36-Item Health Survey, to assess the quality of life among patients with HF. Additionally, the study's focus on evaluating the quality of life among patients with advanced HF in Jeddah, Saudi Arabia, offers valuable insights into the well-being of this particular population. Nevertheless, it's crucial to acknowledge the limitations of this study. Primarily, the utilization of a cross-sectional design constrains the capacity to establish causal relationships between variables. Additionally, the reliance on self-reporting through subjective participant responses introduces the potential for response biases, such as over- or underreporting of HRQoL. Furthermore, the study did not account for the duration since the diagnosis of HF, which can influence HRQoL scores. Moreover, it is necessary to consider the generalizability of the findings, as they may be limited to the specific population and context of the study.

Consent for publication: Not Applicable.

Data Availability: All data are available upon request from the corresponding author.

Competing Interests: The authors declare no conflicts of interest.

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Table 1. General characteristics of the studied patients

General characteristics		n102 (%)
Sex	Males	36 (35.3)
	Females	66 (64.7)
Age categories (Years)	<40	56 (54.9)
	40-65	30 (29.4)
	>65	16 (15.7)
Marital status	Married	30 (29.4)
	Single	46 (45.1)
	Widow	7 (6.9)
	Divorced	19 (18.6)
Living arrangement	With family member	72 (70.6)
	With friends	7 (6.9)
	Alone	23 (22.5)
Education	≤Secondary	13 (12.7)
	University graduate	51 (50.0)
	Diploma	24 (23.5)
	Postgraduate	14 (13.7)
Employment	Yes	49 (48.0)
	No	53 (52.0)
Income (Saudi Riyal)	<3000	35 (34.3)
	3000-5000	27 (26.5)
	>5000-10000	21 (20.6)
	>10000	19 (18.6)
Body Mass Index (BMI) kg/m ²	Normal weight(18.5-24.9)	49 (48.0)
	Overweight (25-39.9)	38 (37.3)
	Obese (≥40)	15 (14.7)
Smoking habit	Non-smoker	58 (56.9)
	Passive Smoker	5 (4.9)
	Ex-smoker	17 (16.7)
	Current Smoker	22 (21.6)
Frequency of taking treatment from the hospital	Never	28 (27.5)
	Less frequent (1-3/month)	53 (52.0)
	Frequent (≥1/week)	21 (20.6)

Table 2. Scores of the SF-36 Quality of Life Domains among the studied patients

Subscale	Mean±SD	Median (25-75 IQ)	Possible range	Actual range
Physical functioning	56.1±32.9	55 (30-85)	0-100	0-100
Bodily pain	66.2±26.5	67.5 (47-87)	0-100	0-100
Role limitations due to physical health problems	54.6±50.0	50 (0-100)	0-100	0-100
Role limitations due to personal or emotional problems	48.6±41.6	50 (0-100)	0-100	0-100
Emotional well-being	55.1±19.9	50 (43.7-65)	0-100	10-100
Social functioning	60.4±20.3	62.5(50-75)	0-100	0-100
Energy/fatigue	50.1±20.9	50 (35-65)	0-100	10-95
General health perceptions	57.6±22.7	60 (50-70)	0-100	0-100
Physical Component Summary (PCS)	58.6±22.9	61.2(40.6-75)	0-100	3.7-100
Mental Component Summary (MCS)	53.5±19.5	51.5(39.8-70.9)	0-100	11.8-95

Table 3.

The correlation between the general characteristics of patients and the Physical Component Summary and Mental Component Summary of the SF-36 Quality of Life Domains.

	Age	Marital status	Living arrangement	BMI	Smoking habit	Need of hospital treatment
PCS	rho=0.25 p=0.010*	rho=0.21 p=0.034*	rho=0.25 p=0.010*	rho=0.31 p=0.001*	rho=0.21 p=0.032*	rho=0.63 p<0.001*
MCS				rho=0.23 p=0.021*		rho=0.43 p<0.001*

Table 4. Stepwise linear regression was employed to identify predictors of the Physical Component Summary and Mental Component Summary of the SF-36 Quality of Life Domains among the participants under study.

	Unstandardized Coefficients		t	Sig.	ANOVA p-value
	B	Std. Error			
Physical Component Summary Predictors					
Age	-8.56	2.16	-3.963-	0.000*	F=35.08

Marital status	-3.20	1.55	-2.057-	0.042*	p< 0.001* R ² =0.518
Need to hospital treatment	-19.84	2.36	-8.410-	0.000*	
(Constant)	117.67	6.22	18.915	0.000*	
Mental Component Summary Predictors					
Need to hospital treatment	-12.49-	2.52	4.95	< 0.001*	F=24.50 p< 0.001* R ² =0.444
Constant	77.70	5.77	15.02	< 0.001*	

Figures

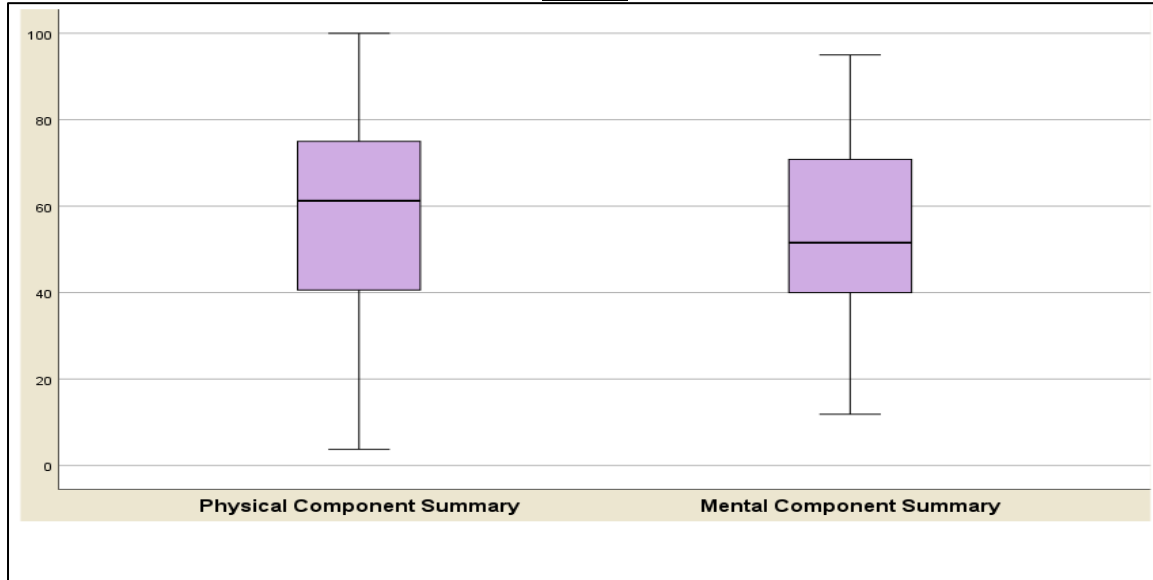


Figure 1. Box plots depicting the Physical Component Summary and Mental Component Summary of the SF-36 Quality of Life Domains among the participants under study.

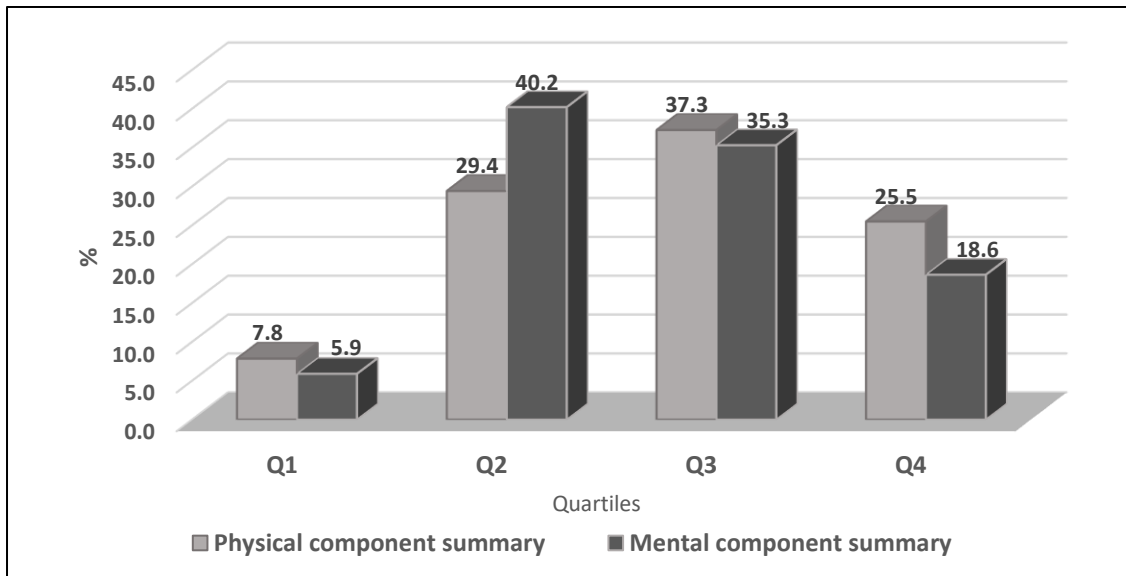


Figure 2. The distribution of participants across four quartiles based on the Physical Component Summary and Mental Component Summary of the SF-36 Quality of Life Domains.