Hindawi
Nursing Forum
Volume 2023, Article ID 6657164, 9 pages
https://doi.org/10.1155/2023/6657164

Research Article

Quality of Life and Its Predictors among Patients with Selected Chronic Diseases

Mohammad Al Qadire,[1,2] **Fatima ALHosni**,[1] **Laila Al-Daken**,[1] **Ma'en Aljezawi**,[1,2] **Omar Al Omari**,[1] **and Atika Khalaf**[3]

[1]*College of Nursing, Sultan Qaboos University, P.O. Box 66, PC 123, Muscat, Oman*
[2]*Faculty of Nursing, Al Al-Bayt University, P.O. Box 130040, Mafraq 25113, Jordan*
[3]*Faculty of Health Sciences, Kristianstad University, SE-291 88 Kristianstad, Sweden*

Correspondence should be addressed to Atika Khalaf; atika.khalaf@hkr.se

Received 20 March 2023; Revised 20 May 2023; Accepted 22 June 2023; Published 28 June 2023

Academic Editor: Foroozan Atashzadeh-Shoorideh

Background. Quality of life (QoL) is an important measure to understand the effect of diseases on patients' daily living. Yet, the research on QoL among patients with chronic diseases in Oman is scarce. This study aimed to assess the level and determine the predictors of QoL among patients with chronic diseases in Oman. *Methods*. A cross-sectional correlational descriptive was run among 340 patients with chronic obstructive pulmonary disease (COPD), chronic heart failure, and/or end-stage renal disease. *Results*. Participants' mean age was 60.6 years (SD ± 14.4) and the majority were males (63.5%). The highest mean scores were emotional well-being (mean = 85.2, SD = ±11.2) and role limitations due to personal or emotional problems (mean = 83.2, SD = ±35.8). In addition, COPD patients reported the lowest scores on the QoL questionnaire. Having a high score on the Karnofsky Performance Status Scale (KPSS) and being married predicted a higher score in the mental and physical domains of QoL, while having a higher total symptom number and COPD predicted a lower score in the mental domain. Older age, higher total symptom number, and a higher distress level predicted a lower score on the physical domain of QoL. *Conclusion*. The results call for a need to improve the QoL among the patients with chronic disease, including symptom management plans, self-management programmes, and training to enhance their own perception of QoL. Furthermore, symptom management plans are highly needed.

1. Introduction

Health-related quality of life (HRQoL) is a major concern in patients with chronic diseases, which influences the physical and psychological health of the patient as well as their treatment [1]. HRQoL is a term that has been used interchangeably with health and quality of life (QoL) but is considered to be confusing, and the existing tools have failed to measure the HRQoL [2]. The current study focuses on the QoL and adopts the World Health Organization's definition of quality of life (QoL): "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" [3].

Chronic diseases can interrupt individual's normal activities and function, causing frustration and loss of hope in life [1]. In a cross-sectional study conducted in the US, the HRQoL was assessed among 21,133 participants [4]. The participants were asked to indicate the presence or absence of 24 chronic diseases and to indicate any limitations in daily living. The HRQoL was assessed in five domains that included physical function, fatigue, pain, emotional distress, and social function. Out of the study sample, 19% reported none of the chronic diseases, 20% reported one chronic disease, and 61% reported two or more chronic diseases [4]. The study found that the participants with chronic diseases reported poorer QoL across all domains compared to the participants who reported none of the chronic diseases. In

addition, the presence of two or more chronic diseases was associated with worse QoL compared with the presence of one chronic disease [4]. This study included a large sample size. In addition, the QoL was assessed among the participants who reported the absence and presence of 24 chronic diseases.

Several studies have been conducted to assess the QoL among patients with chronic diseases. For example, a cross-sectional study was conducted in Egypt to assess the QoL and its relationship with disease severity among patients with chronic obstructive pulmonary diseases (COPDs) [5]. The assessment of the QoL was established by the St. George's Respiratory Questionnaire for COPD patients (SGRQ-C) in a total of 40 COPD patients. The baseline data were established by full disease history, physical examination, chest X-ray, and pulmonary function tests. Then, the participants completed the QoL assessment scale (SGRQ-C). The main result of the study was the significant negative correlation between COPD severity and the QoL, as severity of the disease increased and the QoL decreased dramatically. Moreover, a high smoking index among COPD patients is a strong predictor of a poorer QoL [5]. This study emphasised the need for the QoL assessment and predictors of HRQoL among patients with COPD and other chronic diseases.

Another study was conducted to assess the QoL among patients with end-stage renal disease (ESRD) on haemodialysis. A total of 320 patients were enrolled in the study from one of the dialysis centres, and the QoL was assessed by using the Missoula VITAs Quality of Life Index (MVQOLI) [1]. This study found that the QoL decreases with age, possibly because of the decrease in physical and cognitive ability in ESRD patients. Moreover, the QoL was found to be better in ESRD patients with higher education, patients' awareness about the disease and treatment, better treatment adherence, good relationships with medical staff, and patients with family support [1].

The QoL and its predictors are an important consideration in the care of patients with chronic diseases. A cross-sectional study was conducted in Ethiopia aimed to assess the HRQoL and its predictors among patients with all stages of chronic kidney disease including ESRD (stage 5) [6].The QoL was assessed using the medical outcomes study short form 36-items (SF-36). A total of 256 participants were enrolled from the nephrology clinic of Tikur Anbessa Specialized Hospital. The study found that the QoL was greatly affected across all domains, and the lowest mean scores across all domains were found among patients with ESRD (stage 5) except for the emotional role functioning in stage 4 [6]. The mean score of the QoL in the mental domain among patients with ESRD was 42.8, and the mean score in the physical health domain was 33.4. Multiple linear regression was used to predict the QoL domains, and the analysis revealed that the higher income status and haemoglobin levels greater than 11 g/dL predicted a higher QoL among patients with chronic kidney disease in all domains of SF-36. In addition, a higher QoL in the physical domain was predicted by high family income, higher educational status, and haemoglobin levels greater than 11 g/dL. Moreover, in the absence of disease complications, high family income and haemoglobin levels greater than 11 g/dL were found to be predictors of a high QoL in the mental domain [6].

In the other hand, a cross-sectional study was conducted to assess the impact of chronic heart failure (CHF) on disability and the QoL [7]. A total of 257 adult patients with CHF were enrolled in the study. The QoL was assessed using the Minnesota Living with Heart Failure Questionnaire, which consists of two sections, physical and emotional. Disability was assessed using the WHODAS 2 questionnaire, which has a global and six domain score that includes understanding and communication, getting around, self-care, getting along with people, life activities, and participation in society. The study found that the CHF effect on the QoL was mild. However, disability had a considerable effect. Moderate disability was found in 28% of the participants, and severe disabilities were observed in 16.7% of the patients. The risk of a poor QoL was three to five times higher in women without significant association with age. In addition, the QoL decreased as severity of disease increased [7]. Such a study found that female patients need to improve their QoL.

Moreover, it is well documented that not only chronic diseases impact the QoL. Besides the type of disease, both age and economic status of patient could be contributing factors for the level of the QoL of patients with chronic disease [8]. Similar results were reported by patients with diabetes mellitus in Saudi Arabia [9]. In addition, male gender, educational status, and presence of disease-related complications were all found to be associated factors with the QoL in persons with chronic disease [9]. Thus, socioeconomic factors need to be considered when examining any chronic disease and its relation to the QoL. Furthermore, since chronic diseases are known to have a limiting impact on the health and well-being of individuals, as well as their QoL, it is important to examine the QoL in patients with different conditions to be able to customize the care provided and meet the needs of these patients.

It is important to assess the QoL and its predictors for each population to identify areas that need improvement. The QoL has become an important measure to understand the effect of diseases on patients' daily living, specifically with long-term chronic diseases. Yet, the research on the QoL among patients with chronic diseases in Oman is scarce. There are a few published studies on the QoL among specific populations, such as people with diabetes mellitus [10] and kidney disease [11]. However, no studies could be found on the QoL of persons with COPD, ESRD, or CHF in Oman during the last decade. Therefore, the purpose of this study was to assess the level and determine the predictors of the QoL among patients with the chronic diseases, namely, COPD, ESRD, and CHF in Oman.

2. Materials and Methods

2.1. Design. A cross-sectional correlational descriptive design was used.

2.2. Sample. The sample was patients with one of the following chronic diseases: COPD, CHF, and ESRD. Patients who were 18 years or older, having one of the selected diseases for at least six months, able to speak and write in Arabic, and agreed to participate in the study were included. However, patients with cancer, those with highly infectious disease (i.e., COVID-19), and patients who were not able to give written consent were excluded. Patients with cancer were excluded due to the belief that their symptoms may have different pathological pathways. Combining them with nonmalignant diseases could potentially contaminate the sample. All participants were conveniently recruited.

3. Settings

The study took place in two hospitals and one dialysis centre in the Sultanate of Oman, Muscat Governate. The two hospitals are large referral hospitals where most of the patients with chronic disease are treated. Patients who are visiting outpoints clinics within those hospitals were targeted. The dialysis centre is one of the major dialysis centres in Muscat city. The bed capacity of this centre is 52 and serves 350 patients. In addition, it is operated by the Ministry of Health of Oman and serves patients round the clock [12].

3.1. Measurement Tools

3.1.1. The 36-Item Short Form Health Survey (SF-36). The 36-item short form health survey (SF-36) is a self-administered survey that was developed by RAND healthcare as a measure of the QoL. The SF-36 instrument consists of 36 items. This survey intends to measure the general health concept without specification on age, disease, or treatment group [13]. It evaluates eight health domains: first, physical functioning (10 items) measures limitations in daily life caused by health problems. Second, the physical domain (four items) estimates role limitations caused by physical health problems. Third, the bodily pain (two items) scale assesses pain frequency and pain interference within the usual roles. Fourth, the general health scale (five items) assesses individual perceptions of general health. Fifth, the vitality scale (four items) measures energy levels and fatigue. Sixth, the social functioning scale (two items) measures the extent to which ill health interferes with social activities. Seventh, the role emotional scale (three items) assesses role limitations due to emotional problems, and eighth, the mental health scale (five items) assesses psychological distress [13]. However, these eight domains are merged into two main domains: the physical health (physical functioning, physical domain, bodily pain, general health scale, and vitality scale) and the mental health domain (social functioning, role emotional scale, and mental health scale) based on their main content and in accordance with the previous studies using similar categorization [14–16]; Yusop et al. [17]. A higher total score of SF-36 indicates a better QoL, while the inverse indicates a poor QoL (Lins and Carvalho [18].

The scoring methods of this scale as per RAND healthcare are performed in two steps. First, for every item, there is a numeric value for each response (ranging from 0 to 100). A high score defines a more favourable health state. The second step is to calculate the average of the items in each domain [19]. The English and Arabic versions have been evaluated for reliability and equivalence by Coons et al. [20]. The Cronbach's α for the Arabic version of the SF-36 was found to be more than 0.70 in multiple subgroups in every scale except one. The English and Arabic versions of the SF-36 instrument are reliable and equivalent [20].

3.1.2. The Memorial Symptoms Assessment Scale (MSAS). The MSAS was developed by Portenoy et al. [21]. It was developed to assess the common physical and psychological symptoms experienced by cancer patients; however, many recent studies have used the scale for symptom assessment in other chronic disease, such as COPD [22, 23] and heart failure [24, 25]. This scale is designed to assess symptom prevalence, and it assesses symptom severity, frequency, and distress. A Likert scale is used to evaluate each dimension. [21]. Each symptom score is an average of its dimensions, and a higher score reflects higher severity, frequency, and distress. The total score in the MSAS is the average of the symptom scores for all 32 symptoms [26].

3.1.3. Karnofsky Performance Status Scale. The Karnofsky Performance Status Scale (KPSS) was developed in 1948 to guide the assessment of the functional status of hospitalised patients [27]. Its applicability for other medical conditions, such as ESRD [28], chronic pulmonary diseases [29, 30], and other chronic conditions have been documented [27].

The KPSS evaluates the functional status with scores of 11 elements ranging from 0 to 100. The maximum score is 100 for an individual with full functional capabilities to carry out normal daily activities. The minimum score is zero, which implies death. Significant scores on the scale include the score of 70, which indicates care of the self but unable to carry normal activities or do active work. A score of 50 indicates individuals who require considerable assistance and frequent medical care [31].

Furthermore, participants' demographic data including age, gender, marital status, educational level, monthly income, work status, and living place were collected. Moreover, data regarding participants' health status including diagnosis, comorbidities, number of hospital emergency visits, number of admissions, length of hospital admissions, and the time since diagnosis were collected from the patients' medical records.

3.2. Data Collection and Ethical Considerations. Data collected started after obtaining ethical approval and administrative permission from designated authorities within the selected settings. Then, the patients in the waiting areas with outpatients' clinics were approach. Then, the study purposes and requirements were explained, and interested patients who agreed to take part in the study were asked to sign a consent form. Then, clinical data were extracted from the electronic medical record. One of the research team was

present to provide help if needed. Questionnaire was either handed to one of the members of the research team or put in the designated box within the nursing station. All participants were assured that their participation was voluntary, and they had the right to withdraw from the study at any time and not to answer any research questions without affecting their medical and nursing care. Furthermore, they were informed that no identifiable data were needed, and only aggregated data would be presented or published.

3.3. Data Analysis. Data were analyzed statistically using IBM SPSS software version 25. Descriptive and inferential statistics were applied. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe the study sample characteristics. In addition, an ANOVA test was used to identify the variance in the mean scores of the QoL domains among disease groups (i.e., COPD, ESRD, and CHF). Furthermore, multiple linear regression analysis was used to conclude the predictors for the QoL domain scores (i.e., mental and physical). The study used Hosmer and Lemeshow's approach to build a multiple linear regression model [32]. First, a bivariate analysis was conducted on all independent variables to determine their significance. Simple linear regression and independent t-tests were used for continuous and dichotomous categorical variables, respectively. Dummy coding was applied to variables with more than two categories. Variables with a significance level of $p \leq 0.25$ were included in the regression model, while nonsignificant ones were removed. The regression analysis was repeated until a final stable model was reached to predict the mental health domain of the QoL, with a level of significance of $p \leq 0.05$.

4. Results

4.1. Sample Characteristics. The sample comprised 340 participants with chronic disease, 120 with ESRD, 120 with CHF, and 100 with COPD. The mean age of the participants was 60.6 years (SD 14.4) and most of them were males (63.5%). Table 1 details the participants' characteristics.

4.2. Quality of Life. The QoL was evaluated using the SF-36. Table 2 summarises the mean score of the eight domains by disease and pooled all together. The results show that emotional well-being (mean = 85.2, SD = 11.2) and role limitations due to personal or emotional problems (mean = 83.2, SD = 35.8) had the highest mean scores. In contrast, role limitations due physical health problems (mean = 36.6, SD = 43.3) and general health perceptions (mean = 45.6, SD = 18.6) had the lowest mean scores.

4.3. Quality of Life by the Disease. Regarding disease, role limitations due to personal or emotional problems had the highest mean scores among COPD (mean = 86.3, SD = 33.9) and CHF participants (mean = 86.9, SD = 31.8). The highest mean score for ESRD participants was for emotional well-being (mean = 88.9, SD = 8.5). The lowest mean score was for role limitations due to physical health problems in all disease groups. The mean score of this domain was 29.3 (SD = 41.3) in COPD, 41.3 (SD = 44.5) in ESRD, and 38.1 (SD = 43.2) in CHF. Moreover, the participants with CHF reported the highest QoL in the mental health domain with a mean score of 76.8 (SD = 13.74). The lowest QoL in both physical and mental domains was reported by the participants with COPD (mean = 44.06, SD = 23.96, and mean = 68.41, SD = 17.94). Table 3 presents the disease-specific QoL physical and mental domains and pooled together.

To examine the difference in the mean score of the two QoL domains by the disease group, an ANOVA test was conducted and Bonferroni correction for the post hoc analysis was implemented. There was a statistically significant difference in the mean score of the QoL between diseases for the mental health domain (F (2, 337) = (8.58), $p < 0.001$) and for the physical health domain (F (2, 337) = (7.31), $p < 0.001$). The post hoc analysis (Bonferroni corrected) for multiple comparisons in the QoL domains between disease groups showed the following results. For the mental health domain, there was a statistically significant difference in the mean scores between CHF (mean = 76.8, SD = 13.7) and COPD (mean = 68.4, SD = 17.9) ($p < 0.001$, 95% C.I. = (3.13, 13.63)). In addition, there was a statistically significant difference in the mean scores of the mental health domain between ESRD (mean = 75.8, SD = 16.7) and COPD (mean = 68.4, SD = 17.9) ($p = 0.002$, 95% C.I = (2.15, 12.65)).

For the physical health domain, there was no significant difference in mean scores between CHF (mean = 51.7, SD = 23.9) and ESRD (mean = 56.5, SD = 24.1) and between CHF (mean = 51.7, SD = 23.9) and COPD (mean = 44.1, SD = 24), $p = 0.374$ and $p = 0.059$, respectively. However, there was a statistically significant difference in the mean scores of the physical domain between COPD (mean = 44.1, SD = 24) and ESRD (mean = 56.5, SD = 24.1) ($p < 0.001$, 95% C.I = (−20.21, −4.57)). Table 3 presents the post hoc analysis (Bonferroni corrected) results for multiple comparisons in the QoL domains between the disease groups.

4.4. Predictors of the Quality of Life. A multiple linear regression was conducted to examine the predictors of the QoL for the two main domains (mental and physical). The Hosmer and Lemeshow's approach for modelling in multiple linear regression was followed. First, the bivariate analysis was conducted using a simple linear regression model for continuous variables (i.e., age, diagnosis duration, emergency room visits, admissions, LOS, total symptom number, KPSS score, frequency level, severity level, and distress level) and an independent t-test was conducted for the dichotomous variables (gender, MS, educational level, working status, monthly income, family caregiver, medical diagnosis, and having a chronic diseases). Dummy coding was applied to all variables with more than two categories (medical diagnosis and having chronic diseases). Second, all variables with significant results from the first step at the conservative level of significance ($p \leq 0.25$) were entered to the regression model. Then, those variables from the second step were entered separately in the multiple linear regression

Table 1: Participants' demographical and clinical characteristics ($N = 340$).

Characteristics	Frequencies (%)	Mean (SD)	Minimum	Maximum
Gender				
Male	216 (63.5)			
Female	124 (36.5)			
Marital status				
Married	244 (71.8)			
Not married	96 (28.2)			
Educational level				
Low educated	299 (87.9)			
Highly educated	41 (12.1)			
Work				
Working	45 (13.2)			
Not working	295 (86.8)			
Monthly income				
1000 OMR or less	281 (82.6)			
More than 1000 OMR	59 (17.4)			
Medical diagnosis				
COPD	100 (29.4)			
ESRD	120 (35.3)			
CHF	120 (35.3)			
Hospital				
A	85 (25)			
B	135 (39.7)			
C	120 (35.3)			
Family caregiver				
Yes	326 (95.9)			
No	14 (4.1)			
Habits				
Smoker	58 (17.1)			
Ex-smoker	32 (9.4)			
Regular exerciser	10 (2.9)			
Nonactive	19 (5.6)			
Chronic diseases				
No evidence of chronic diseases	62 (18.2)			
One chronic disease	141 (41.5)			
Two or more	137 (40.3)			
Age (years)		60.6 (14.4)	20	96
Diagnosis duration		5.9 (4.6)	0.2	24
Number of emergency room visits		1.2 (2.7)	0.00	30
Number of hospital admissions		0.4 (0.8)	0.00	9
LOS		2.5 (9.4)	0.00	120
KPSS		74 (13.5)		

KPSS = Karnofsky Performance Status Scale; LOS = length of stay; OMR = Omani Riyal.

Table 2: The quality of life eight domains in relation to chronic obstructive pulmonary diseases (COPD), end-stage renal disease (ESRD), and chronic heart failure (CHF).

Quality of life domains	COPD *M* (SD)	ESRD *M* (SD)	CHF *M* (SD)	Total *M* (SD)
Physical functioning	39.8 (29.1)	62.5 (29.2)	53.3 (31.8)	52.6 (31.4)
Bodily pain	67.1 (29.9)	72.1 (29.7)	69.4 (24.5)	69.7 (28)
Role limitations due to physical health problems	29.3 (41.3)	41.3 (44.5)	38.1 (43.2)	36.6 (43.3)
Role limitations due to personal or emotional problems	86.3 (33.9)	76.9 (40.5)	86.9 (31.8)	83.2 (35.8)
Emotional well-being	79.2 (12.4)	88.9 (8.5)	86.3 (10.6)	85.2 (11.2)
Social functioning	73.1 (30.1)	82.5 (22.3)	84 (18.3)	80.3 (24.1)
Energy/fatigue	35 (13.9)	54.9 (17.1)	50 (16.9)	47.3 (18.1)
General health perceptions	40.1 (17.6)	49.9 (17.5)	45.9 (19.5)	45.6 (18.6)

Table 3: Post hoc analysis (Bonferroni corrected) for multiple comparisons in the quality of life domains.

Quality of life domains	Comparison		SE	p values	95% confidence interval	
					Lower bound	Upper bound
Mental	CHF	ESRD	2.08	0.999	−4.02	5.99
		COPD	2.18	≤0.001*	3.13	13.63
	ESRD	CHF	2.08	0.999	−5.99	4.02
		COPD	2.18	0.002*	2.14	12.64
	COPD	CHF	2.18	≤0.001*	−13.63	−3.13
		ESRD	2.18	0.002*	−12.64	−2.14
Physical	CHF	ESRD	3.09	0.374	−12.22	2.68
		COPD	3.25	0.059	−0.20	15.44
	ESRD	CHF	3.09	0.374	−2.68	12.22
		COPD	3.25	≤0.001*	4.56	20.21
	COPD	CHF	3.25	0.059	−15.44	0.20
		ESRD	3.25	≤0.001*	−20.21	−4.56

*The mean difference is significant at the 0.05 level. CHF = chronic heart failure; ESRD = end-stage renal disease; COPD = chronic obstructive pulmonary diseases.

model and observed for its significance and R^2 values. Separate multiple linear regression models were created for the mental and physical domains following the same steps.

Regression modules were assessed for significance and variance explained. All variables with nonsignificant results were removed and the regression analysis was conducted again, and the change in R^2 was observed. This process was repeated to observe the changes in the model parameters for each contributing variable until the final stable models shown in Tables 4 and 5 were reached.

The results shown in Table 4 indicate that having a high score on the KPSS and being married predicted a higher score in the mental domain of the QoL, while having a higher total symptom number and COPD predicted a lower score in the same domain. The model explained 37.5% of the variance in the mean score of the mental domain of the QoL. For the physical domain of the QoL (Table 5), the variables having a high score on the KPSS and being married predicted a higher mean score. Older age, higher total symptom number, and a higher distress level predicted a lower score on the physical domain of the QoL. The model explained 66.8% of the variance in the mean scores of the physical domain of the QoL.

5. Discussion

The findings revealed that patients with selected chronic diseases (COPD, ESRD, and CHF) reported a relatively low QoL in the physical health domain with a mean score of 51.1 (SD = 24.5). In addition, they demonstrated a high QoL in the mental health domain with a mean score of 74 (SD = 16.5). The highest mean score of the QoL in the physical health domain was reported by participants with ESRD. Moreover, the highest QoL score in the mental health domain was reported by participants with CHF. Furthermore, the lowest reported QoL in both physical and mental domains was reported by participants with COPD who presented a low and poor QoL in the physical health domain and a relatively high QoL in the mental health domain.

When comparing these results with the previous studies, no studies were found that compared the QoL scores of patients with the selected disease together. In addition, different measures to assess the QoL were implemented; so, the ability to compare and discuss the QoL among those with disease was limited. However, the results were in line with the most previous findings of studies that included at least one of the selected chronic diseases [1, 4, 5, 7, 33]. For example, a study found that the participants with any chronic disease demonstrated a poorer QoL compared with individuals who did not have a chronic disease diagnosis [4]. They assessed the QoL among patients suffering from any of the 24 chronic diseases using the PROMIS that assesses the QoL in five domains. In another study, it was found that the effect of CHF on the QoL was mild [7]. They assessed the QoL using the Minnesota Living with Heart Failure questionnaire [7]. In addition, in another study, the authors found that the QoL was poor in patients with severe COPD [5]. Moreover, Cardin et al. [1], found that the average QoL among patients with ESRD was 17.4 with a total score ranging from 0 to 30. Furthermore, patients with chronic kidney disease on dialysis reported a low QoL, especially in the physical domain [33].

The QoL is a complex concept and is affected by many dimensions of human life, such as physical health, psychological health, and social status [34]. Its complexity makes it a concept difficult to be objectively measured. The difference between the current study findings and the previous studies can be explained by several factors. First, the current study used the SF-36, while all the other studies used different assessment tools, such as the health-related quality of life (HRQoL), which was used by Rothrock et al. [4] and the kidney disease quality of life short version 36, which was used by Almutary [33]. These tools differ in their components, domains, and scoring methods and some are disease-specific, such as the kidney disease quality of life short version 36. Second, the QoL is highly affected by the stage and severity of the disease. The severe and advanced stages of the disease are usually associated with a poor QoL [5]. In the current study, the stage of chronic disease was not

Table 4: Multiple linear regression model for the mental domain of the quality of life. Only significant predictors are presented in the table.

Variables	R^2	Unstandardised coefficients		p^*	95% CI for β	
		β	Std. error		Lower bound	Upper bound
	0.375					
KPSS		0.35	0.06	≤0.001*	0.240	0.465
Total symptoms number		−1.48	0.17	≤0.001*	−1.81	−1.15
Marital status		4.03	1.59	0.012*	0.9	7.15
COPD diagnosis		−6.52	1.6	≤0.001*	−9.67	−3.37

*All values are significant at the conservative level of ≤0.05. KPSS = Karnofsky Performance Status Scale; COPDs = chronic obstructive pulmonary diseases.

Table 5: Multiple linear regression model for the physical domain of the quality of life. Only significant predictors are presented in the table.

Variables	R^2	Unstandardised coefficients		p^*	95% CI for β	
		β	Std. error		Lower bound	Upper bound
	0.668					
Age		−0.18	0.06	0.004*	−0.3	−0.06
KPSS		1.1	0.07	≤0.001*	0.96	1.24
Total symptoms number		−1.34	0.19	≤0.001*	−1.72	−0.96
Distress level		−3.72	1.36	0.007*	−6.41	−1.04
Marital status		5.76	1.72	0.001*	2.38	9.14

*All values are significant at the conservative level of ≤0.05.

considered. Third, the QoL is greatly affected by the age of the individual; younger age is usually associated with a better QoL [35]. Finally, future studies should consider the assessment of the QoL among healthy individuals in Oman to compare it with the participants with chronic diseases.

5.1. Predictors of the Quality of Life among Patients with Chronic Diseases. The current study findings reveal that the better functional status (a higher KPSS score) and being married predict a higher score in the mental and physical health domains. In addition, a lower QoL in the mental domain was predicted by a higher total symptom number and diagnosis with COPD. Furthermore, a lower physical health domain was predicted by a higher total symptom number and a higher distress level. Although there is no study that has assessed the predictors of the QoL among patients with selected chronic diseases, all together, the results are comparable with studies that included at least one of the selected chronic diseases. The findings are inconsistent with the previous studies as they report different predictors to this study [6, 33, 36]. For example, the higher income status and greater than 11 g/dL haemoglobin level were predictors of the high QoL among patients with CKD in all domains of SF-36 [6]. In addition, high family income, higher educational status, and greater than 11 g/dL haemoglobin level are predictors of a higher QoL in the physical domain, while the absence of disease complications, high family income, and greater than 11 g/dL haemoglobin level are predictors of a high QoL in the mental domain [6]. Being in an advanced disease stage, receiving five or more medications, having three or more comorbidities, and haemoglobin levels of less than 11 g/dL are predictors of a lower QoL in the physical and mental domains [6]. In another study, it was found that self-reported health and the habit of daily regular activity were predictors for the high QoL among patients with cardiovascular chronic diseases [36]. Moreover, it was reported that older age, male gender, and lower education level were predictors of a lower score of QoL among patients with ESRD [33].

The difference in the predictors of the QoL in the current study and the previous studies can be explained by several factors. First, no study has explored the predictors of the QoL among the selected chronic diseases all together, which limits the discussion and comparisons. Second, the QoL assessment tools have different domains and different scoring systems, which may result in different predictors. The current study used the SF-36 and reported the predictors of the two main domains; physical and mental health. Other studies have used different QoL assessment tools, such as the EQ-5D-3L (Euro QOL) [36]. Third, determining the predictors of the QoL depends on the used model of multiple linear regression and the entered variables, which may result in different predictors of the QoL from a study to another.

5.2. Limitations. The results of this study need to be interpreted putting in mind the following limitations. First, the symptoms experienced are highly altered by the stage of the disease that was not considered in this study, and this may limit the generalizability of the study. Second, this study was conducted during the breakthrough of COVID-19, which might have impacted the reporting of symptoms and patient access to healthcare settings. Finally, the convenience samples carry the limitation of low representation of the targeted population.

6. Conclusion

Understanding the QoL and its predictors among patients with chronic diseases is essential when planning and implementing management plans. Our results call for special attention to the physical health domain of the QoL that might benefit from managing patients' total symptom number and their distress level. It is also critical for health care providers and policymakers to take the abovementioned predictors into consideration when implementing interventions to improve the QoL of this patient category. An example of an intervention that aims to promote patients' QoL is the adoption and implementation of palliative care services for patients with chronic disease. Moreover, self-management programmes and training for the patients may enhance their perception of the own QoL.

Data Availability

The datasets used and/or analyzed during the current study are available from the first author upon reasonable request.

Additional Points

The Following Are known about the Topic. (i) Quality of life is a major concern in patients with chronic diseases which has an impact on the physical and psychological health of the patients. (ii) Chronic diseases can interrupt the individual's normal activities and function, causing frustration and loss of hope in life. (iii) Quality of life and its predictors are an important consideration in the care of patients with chronic diseases. *This Paper Adds the Following.* (i) Patients with chronic diseases reported a relatively low quality of life in the physical health domain but a high quality of life in the mental health domain. (ii) The current study is the first that compared the quality of life scores of patients with selected diseases together. (iii) Our results call for special attention to the physical health domain of the quality of life that might benefit from managing patients' total symptom number and their distress level.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

The authors acknowledge the Open Access funding enabled and organized by Bibsam 2023.

References

[1] F. Cardin, F. Ambrosio, P. Amodio et al., "Quality of life and depression in a cohort of female patients with chronic disease," *BMC Surgery*, vol. 12, 2012.

[2] M. Karimi and J. Brazier, "Health, health-related quality of life, and quality of life: what is the difference?" *PharmacoEconomics*, vol. 34, pp. 645–649, 2016.

[3] Who, *Quality of Life*, World Health Organization, 2020.

[4] N. E. Rothrock, R. D. Hays, K. Spritzer, S. E. Yount, W. Riley, and D. Cella, "Relative to the general US population, chronic diseases are associated with poorer health-related quality of life as measured by the Patient-Reported Outcomes Measurement Information System (PROMIS)," *Journal of Clinical Epidemiology*, vol. 63, no. 11, pp. 1195–1204, 2010.

[5] Zamzam, A. Mohammed, Y. Nourane, Z. Afaf, and E. M. Allam, "Quality of life in COPD patients," *Egyptian Journal of Chest Diseases and Tuberculosis*, vol. 61, no. 4, pp. 281–289, 2012.

[6] B. Kefale, M. Alebachew, Y. Tadesse, and E. Engidawork, "Quality of life and its predictors among patients with chronic kidney disease: a hospital-based cross sectional study," *PLoS One*, vol. 14, no. 2, Article ID e0212184, 2019.

[7] L. Garcia-Olmos, M. Batlle, R. Aguilar et al., "Disability and quality of life in heart failure patients: a cross-sectional study," *Family Practice*, vol. 36, no. 6, pp. 693–698, 2019.

[8] F. S. Siboni, Z. Alimoradi, V. Atashi, M. Alipour, and M. Khatooni, "Quality of life in different chronic diseases and its related factors," *International Journal of Preventive Medicine*, vol. 10, 2019.

[9] D. Alshayban and R. Joseph, "Health-related quality of life among patients with type 2 diabetes mellitus in Eastern Province, Saudi Arabia: a cross-sectional study," *PLoS One*, vol. 15, no. 1, Article ID e0227573, 2020.

[10] M. S. D'Souza, V. Ramesh, S. D. Ruppert, and D. Jacob, "Health related quality of life among Omani men and women with type 2 diabetes," *Journal of Diabetes Research*, 2016.

[11] Al Salmi, Issa, P. Kamble, M. S. D'Souza, Y. Maimani, and S. Hannawi, "Kidney disease-specific quality of life among patients on hemodialysis," *International journal of nephrology*, 2021.

[12] Moh, "Annual health report 2019," Ministry of Health, 2019.

[13] L. Busija, E. Pausenberger, T. P. Haines, S. Haymes, R. Buchbinder, and R. H. Osborne, "Adult measures of general health and health-related quality of life: medical Outcomes study short form 36-item (SF-36) and short form 12-item (SF-12) health surveys, nottingham health profile (NHP), sickness impact profile (SIP), medical Outcomes study short form 6D (SF-6D), health utilities index mark 3 (HUI3), quality of well-being scale (QWB), and assessment of quality of life (AQoL)," *Arthritis Care & Research*, vol. 63, no. Suppl 11, pp. S383–S412, 2011.

[14] L. Lins and F. Martins Carvalho, "SF-36 total score as a single measure of health-related quality of life: scoping review," *SAGE open medicine*, vol. 4, Article ID 2050312116671725, 2016.

[15] C. T. Barnett, N. Vanicek, and R. C. J. Polman, "Temporal adaptations in generic and population-specific quality of life and falls efficacy in men with recent lower-limb amputations," *Journal of Rehabilitation Research and Development*, vol. 50, no. 3, pp. 437–448, 2013.

[16] T. Pekmezović, M. Ječmenica-Lukić, I. Petrović, V. Špica, A. Tomić, and S. Vladimir, "Quality of life in patients with progressive supranuclear palsy: one-year follow-up," *Journal of Neurology*, vol. 262, pp. 2042–2048, 2015.

[17] M. Yusop, N. Baizura, Y. Chan, Z. Mohd Shariff, and C. B. Huat, "Factors associated with quality of life among hemodialysis patients in Malaysia," *PLoS One*, vol. 8, no. 12, Article ID e84152, 2013.

[18] L. Lins and F. M. Carvalho, "SF-36 total score as a single measure of health-related quality of life: scoping review," *SAGE Open Med*, vol. 4, Article ID 2050312116671725, 2016a.

[19] Rand, "36-Item short form survey (SF-36) scoring instructions," *RAND Health Care*, 2021, https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form/scoring.html.

[20] S. J. Coons, S. A. Alabdulmohsin, R. Draugalis, and R. D. Hays, "Reliability of an Arabic version of the RAND-36 health survey and its equivalence to the US-English version," *Medical Care*, vol. 36, no. 3, pp. 428–432, 1998.

[21] R. K. Portenoy, H. T. Thaler, A. B. Kornblith et al., "The Memorial Symptom Assessment Scale: an instrument for the evaluation of symptom prevalence, characteristics and distress," *European Journal of Cancer*, vol. 30, no. 9, pp. 1326–1336, 1994.

[22] O. Melhem, E. Savage, and E. Lehane, "Symptom burden in patients with chronic obstructive pulmonary disease," *Applied Nursing Research*, vol. 57, Article ID 151389, 2021.

[23] M. Miravitlles and A. Ribera, "Understanding the impact of symptoms on the burden of COPD," *Respiratory Research*, vol. 18, no. 1, p. 67, 2017.

[24] K. Theander, M. Hasselgren, K. Luhr, J. Eckerblad, U. Mitra, and I. Karlsson, "Symptoms and impact of symptoms on function and health in patients with chronic obstructive pulmonary disease and chronic heart failure in primary health care," *International Journal of Chronic Obstructive Pulmonary Disease*, vol. 9, p. 785, 2014.

[25] J. A. Ezekowitz, V. Thai, S. Twylla, L. Sanderson, and B. Cujec, "The correlation of standard heart failure assessment and palliative care questionnaires in a multidisciplinary heart failure clinic," *Journal of Pain and Symptom Management*, vol. 42, no. 3, pp. 379–387, 2011.

[26] H. Abu-Saad Huijer, K. Sagherian, and H. Tamim, "Validation of the Arabic version of the memorial symptom assessment scale among Lebanese cancer patients," *Journal of Pain and Symptom Management*, vol. 50, no. 4, pp. 559–565, 2015.

[27] A. H. Friendlander and R. L. Ettinger, "Karnofsky performance status scale," *Special Care in Dentistry*, vol. 29, no. 4, pp. 147-148, 2009.

[28] Y. C. Lai, C. Y. Wang, S. H. Moi, C. H. Wu, C. H. Yang, and J. B. Chen, "Factors associated with functional performance among patients on hemodialysis in taiwan," *Blood Purification*, vol. 46, no. 1, pp. 12–18, 2018.

[29] C. Barbetta, V. Allgar, M. Maddocks et al., "Australia-modified Karnofsky Performance Scale and physical activity in COPD and lung cancer: an exploratory pooled data analysis," *BMJ Supportive & Palliative Care*, 2019.

[30] Y. Kanpolat, H. Tuna, M. Bozkurt, and A. H. Elhan, "Spinal and nucleus caudalis dorsal root entry zone operations for chronic pain," *Neurosurgery*, vol. 62, pp. 235–242, 2008.

[31] V. Mor, L. Laliberte, J. N. Morris, and M. Wiemann, "The Karnofsky Performance Status Scale. An examination of its reliability and validity in a research setting," *Cancer*, vol. 53, no. 9, pp. 2002–2007, 1984.

[32] Fagerland, W. Morten, and D. W. Hosmer, "A generalized Hosmer–Lemeshow goodness-of-fit test for multinomial logistic regression models," *STATA Journal*, vol. 12, no. 3, pp. 447–453, 2012.

[33] H. Almutary, "Quality of life of patients with chronic kidney disease: a comparative study between nondialysis and dialysis patients," *Saudi J Kidney Dis Transpl*, vol. 32, no. 4, pp. 949–957, 2021.

[34] K. Haraldstad, A. Wahl, R. Andenæs et al., "A systematic review of quality of life research in medicine and health sciences," *Quality of Life Research*, vol. 28, pp. 2641–2650, 2019.

[35] D. B. Bekelman and J. S. Rumsfeld, "Symptom burden, depression, and spiritual well-being: a comparison of heart failure and advanced cancer patients," *Journal of General Internal Medicine*, vol. 24, 2009.

[36] M. Saqlain, A. Riaz, A. Ahmed, S. Kamran, A. Bilal, and H. Ali, "Predictors of health-related quality-of-life status among elderly patients with cardiovascular diseases," *Value Health Reg Issues*, vol. 24, pp. 130–140, 2021.