



The Impact of Social Support on Quality of Life among Jordanian Cardiac Patients

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ABSTRACT

Background: Several studies identified the role of social support in improving patients' outcomes. However, very few studies investigated the relationship between social support and quality of life in developing countries. **Purpose:** The purpose of the present study was to investigate the relationship between social support and quality of life among Jordanian cardiac patients. **Methods:** A descriptive correlational study design was used. A structured interview with patients using a questionnaire was used in data collection. A convenient sample of 464 patients participated in this study from an educational hospital, a private hospital, and a governmental hospital. **Results:** The findings revealed a significant relationship between social support and quality of life among Jordanian cardiac patients. Affectionate tangible social support was found to have higher levels than emotional/informational support and positive social interaction. In addition, younger married patients who have college or university degrees reported higher levels of quality of life than their counterparts. **Conclusion:** Assessment for social support, quality of life and characteristics of cardiac patients is necessary to be carried out on a regular basis. Social support can influence cardiac patients' outcomes; the results of the present study clarified the positive relationship between social support and quality of life for cardiac patients in Jordan. **Implications for Nursing:** Providing social support for cardiac patients can help in improving their outcomes. Nurses can play a vital role in providing emotional and informational support for cardiac patients. Providing social support for widow females and elderly patients can contribute to improve their quality of life.

Keywords: Social support, Quality of life, Cardiac patients, Jordan

What does this paper add?

1. There is a significant relationship between social support and quality of life among cardiac patients in Jordan.
2. Cardiac patients in Jordan have lower levels of emotional support, informational support and positive social interaction than that of affectionate tangible social support.
3. Cardiac patients in Jordan have poor physical functions; most patients suffer from role limitation due to emotional and physical problems.

Introduction

Cardiac diseases are considered the leading cause of death around the world according to the World Health Organization (WHO) report in 2019. The estimation of death caused by cardiac diseases is considered relatively high. According to the American Heart Association (AHA) report in 2024, cardiac diseases caused more than 19.91 million deaths per year. Cardiac diseases result in 931,578 deaths in the United States in 2021. About 605,000 people in the US have new heart attacks and 200,000 recurrent heart attacks each year (AHA, 2024). In addition, the cost of cardiac diseases is

expensive; the direct and indirect costs of cardiac diseases between 2019 and 2020 were \$422.3 billion (AHA, 2024). In Jordan, cardiac diseases caused 18.6% of the total deaths in the country in 2020 (Sawalha et al., 2023).

Mortality rates are considered an ineffective method to evaluate the outcomes for patients suffering from chronic diseases, such as cardiac diseases (Davranovna et al., 2022). Therefore, a more effective approach has emerged to evaluate treatment outcomes from patients' perspective by measuring the quality of life for patients (Timóteo, 2023). Quality of life is considered a multi-dimensional concept that measures different aspects of patient functions. These functions include physical functioning, emotional well-being, and social functioning (Daundasekara, 2020).

Cardiac patients were found to have a poor quality of life. The functional and psycho-social limitations associated with cardiac diseases lead to developing poor quality of life for patients (Veskovic et al., 2023). Psychological aspects and social domains are important factors that affect the quality of life for patients, therefore increasing social support was found to improve cardiac patients' outcomes (Wenn et al, 2022), while lower social support was associated with lower quality of life for cardiac patients (Singh et al., 2023).

However, few studies investigated the relationship between social support and quality of life for cardiac patients in developing countries (Chollou et al., 2022), and a little is known about the relationship between social support and quality of life for cardiac patients in Jordan (Al-Zaru & Al-Dwairi, 2023). Thus, the purpose of the current study was to investigate the relationship between social support and quality of life among Jordanian cardiac patients. This study would provide policymakers and administrators with necessary information to improving outcomes for cardiac patients. Further, the findings could guide nursing practitioners to provide more holistic care for patients. The present study investigated the following research questions: (1) What are the levels of quality of life and social support among cardiac patients; (2) Is there a relationship between social support and quality of life among cardiac patients? and (3) Are there differences in the mean of quality of life based on the background of cardiac patients?

Background and Significance

Quality of life and social support are both important

aspects to evaluate cardiac patients' well-being and their outcomes. Holmes & Dickerson defined the quality of life as a "dynamic concept that describes the individual responses to the physical, mental, and social effects of diseases which affect the personal satisfaction with life circumstances" (1987: 15). Several studies in literature examined the quality of life for cardiac patients in different countries; Moradi et al. (2020) conducted a systematic review and meta-analysis that explored the quality of life among heart failure patients. The analysis consisted of 70 studies conducted in different countries. The findings showed that cardiac patients have poor quality of life, especially in physical functions. Similarly, another study was conducted in New Zealand to assess the quality of life for cardiac patients; the SF-12 tool was used to assess the quality of life. The findings of this study indicated that cardiac patients have poor quality of life, especially in the physical domain. In addition, some patients' characteristics affect the quality of life for patients, where older cardiac patients and female patients reported lower quality of life (Montayre et al., 2022).

However, some studies focused on assessing risk factors that affect cardiac patients' quality of life. A systematic review examined the predictors of quality of life for cardiovascular patients after cardiac surgery; 41 papers were included in the study. The findings of this study identified pre-operative potential modifiable risk factors, such as: smoking, weight, depression, while post-operative factors included pain management, and prevention of complications (Sanders et al., 2022). The finding of these studies can direct the interventions that can be used to improve patients' quality of life. In addition, the study emphasizes the importance of psychological readiness, anxiety reduction and social support to enhance patient's outcomes (Sanders et al., 2022). Another study assessed the life indicators for cardiac patients by measuring quality of life in Uzbekistan. SF-36 tool was used to assess the quality of life. The findings of this study indicated that cardiac patients had poor physical functions (Yarmatov et al, 2023).

Another study addressed the healthy life style for Jordanians, and the results indicated that smoking, physical inactivity, obesity, and unhealthy diet are considered major public health problems in Jordan. In addition, risk factors to develop cardiovascular diseases were addressed, including the percentage of non-

communicable diseases, such as risk factors for the prevalence of hypertension (52%), diabetes (20%), and cardiovascular diseases (25%) among adults aged 45-69 years (Sawalha et al., 2023).

In Jordan, a study was conducted by Alsaleh and Baniyasir (2023) on 400 patients with coronary heart disease. SF-36 was used to assess the quality of life for patients. The findings of the study identified that Socio-demographic and health characteristics, such as age, gender, health perception, chest pain frequency, education, job, caring responsibilities, smoking, previous and current physical activity behavior, significantly affect perceived barriers to physical activity for quality of life for cardiac patients in Jordan.

In conclusion, previous studies indicated that cardiac patients have poor quality of life in different countries around the world, including Jordan.

Social Support

Social support is defined as a "process of interaction in relationships which improve coping, esteem, belonging, and competence through actual or perceived exchanges of physical or psychological resources" (Gottlieb, 2000:28). The significance of social support had been identified in the literature since the 1970s (Cohen & Wills, 1985). Stress has a negative effect on physical and psychological health; the accumulation of stress over a prolonged period of time produces physical and psychological changes that can lead to disease development (Cohen & Wills, 1985). In addition, social isolation could lead to development of anxiety, depression, and chronic diseases, such as cardiac diseases (Freak-Poli & Barker, 2021; Paul et al 2021; Teshale et al., 2023). Patients with a high level of social support had a lower mortality rate than patients with a low level of social support (Gronewold et al., 2021). Moreover, social support is shown to have a positive impact on health; several studies identified that the presence of social support may buffer the relationship between stress and disease development (Sayilan & Doğan 2020; Sharma et al., 2021).

Several studies were conducted to examine the role of social support in different diseases including cancer, diabetes mellitus, hypertension, and rheumatoid arthritis. Higher social support was associated with higher quality of life, better physical functional status, and better adherence to treatment regimens (Finck et al., 2018; Molla et al., 2022; Zhang et al., 2021). In addition,

Czajkowski et al. (2022) conducted a study that investigated the role of low social support in cardiac-disease development. The findings showed that social support could affect the etiology and prognosis of cardiac diseases in three methods: (1) health behaviors, where poor social support could lead to unhealthy lifestyle habits, such as smoking, physical inactivity, and consuming unhealthy foods; (2) physiological mechanisms, where low social support could influence the development of low-grade inflammation, coagulation activity, and thrombotic complications involved in cardiac diseases; and (3) psychological factors, where decreased levels of social support could lead to the development of anxiety and depression. Interestingly, anxiety and depression are predictive factors for cardiac-disease development.

Another study was conducted to investigate the relationship between social support and self-care behaviors among heart failure patients. The study findings clarified that social support from family, health care providers, and others improved the self-care behaviors among cardiac patients (Megiati et al., 2022).

Al-Zaru and Al-Dwairi investigated social support for cardiac patients. A descriptive, cross-sectional design was used. A convenient sample of 275 patients with coronary heart disease was recruited from inpatient cardiac units in a university-affiliated hospital in northern Jordan. The study suggested that perceived social support is a significant predictor of patient satisfaction with nursing care. In addition, nurses should continuously assess the level of illness perception, social support, and satisfaction with nursing care quality for patients with coronary heart disease and offer an intervention based on these perceptions (Al-Zaru & Al-Dwairi, 2023).

Sufficient social support was found to be associated with moderate level of stress, mild level of depression, and with better coping strategies, while poor social support was associated with psychological distress, and depressive symptoms for cardiac patients in Jordan (Abu Sumaqa et al., 2023). In addition, providing social support was found to improve adherence to healthy habits among cardiac patients in Jordan (Tawalbeh et al., 2015). In conclusion, previous studies emphasized that providing social support is important to improve cardiac patients' outcomes.

Social Support and Quality of Life

Several studies investigated the relationship between social support and quality of life. Lower level of social support was associated with poor physical and mental functions of quality of life (Alshraifeen et al., 2020; Lei, & Kantor, 2022). A cross-sectional study was conducted to assess the impact of social support on physical activity in adults with heart failure. 197 adults with HF (n = 197) from two outpatient departments for cardiovascular diseases were recruited. The findings showed that social support has an impact on physical activity and quality of life for cardiac patients (Ma, 2023).

In the United States of America, received social support and its effects on treatment compliance and quality of life for cardiac patients were investigated, and the study findings revealed that social support categories are directly associated with higher QoL, adherence to appointments, and substance abuse avoidance (Wenn et al., 2022).

In Korea, a cross sectional study was conducted with a sample of 190 patients who were admitted to a cardiology ward at a university hospital. The study findings showed a positive significant correlation between social support and physical activity (Han & Won, 2022).

In Jordan, Tawalbeh conducted a study that examined the effect of social support and patients' self-care behaviors among heart failure patients. The study findings indicated that patients with lower income, older age, smaller duration of disease, less persons living at home, worse cardiac functional status, and the presence of hypertension or diabetes have lower quality of life. In addition, patients with lower perceived social support reported lower quality of life, while patients with adequate social support had better adherence to healthy lifestyle habits and better quality of life (Tawalbeh, 2024).

Another study in Jordan conducted by Al-Zaru & Al-Dwairi examined the relationship between perceived social support and quality of care among cardiac patients. A descriptive, correlational design was used. A convenient sample of 275 patients with coronary heart disease was recruited from inpatient cardiac units in a university hospital in northern Jordan. The results of the study indicated that perceived social support is a significant predictor of patient satisfaction. To improve patient outcomes, nurses should continuously assess the

level of illness perception, social support, and satisfaction with nursing care quality for patients (Al-Zaru & Al-Dwairi, 2023).

Saifan et al. (2024) conducted a qualitative study to examine quality of life in cardiac patients with heart failure, activities' intolerance, dyspnea, fatigue, edema, and physical constraints. The findings indicated that patients reported that cardiac diseases have psychological impacts, such as having difficulties with social activities, anxiety, depression, social isolation, lack of social support, consequently affecting their physical health (Saifan et al., 2024). In addition, a descriptive cross-sectional design study was conducted by Al-Sutari & Abdulrahim. A convenient sample of 167 patients in outpatient clinics from three hospitals in Amman participated in the study. The short-form 36 tool was used to assess quality of life for cardiac patients. The results revealed that cardiac patients have poor quality of life, which affects their physical and psychological well-being (Al-Sutari & Abdulrahim, 2024).

In summary, the literature review revealed a positive relationship between social support and the quality of life of patients who had cardiac diseases. Most of these studies were conducted in western countries. However, very few studies were conducted in developing countries. In Jordan, none of the studies examined such a relationship. Therefore, the present study will contribute to enhance the knowledge regarding social support, quality of life, and the relationship between social support and quality of life among cardiac patients in Jordan. Investigating such variables within different cultural contexts will help policy makers and administrators develop and implement targeted interventions to enhance quality of life and social support systems for patients with cardiac problems. This will help in decreasing negative outcomes, including re-admission, increased length of stay, and further complications.

Methods

Research Design

The study utilized a cross sectional correlation design to assess the level of social support and quality of life, investigate the relationship between social support and quality of life, and examine the relationship between cardiac patient characteristics and their quality of life.

Study Setting

The current study was conducted in three hospitals from different health care sectors in Jordan, including university, private, and governmental sectors. The hospitals were selected conveniently of large bed capacity. The university hospital bed capacity is 647 beds. The hospital contains specialized units and facilities to care for cardiac patients. It contains a cardiac catheterization department, a pre-post cardiac catheterization ward, a cardiac intensive care unit, and a cardiac coronary unit. The private hospital has a bed capacity of 423 beds. The hospital provides several services for cardiac patients. The hospital includes a cardiac catheterization department, a pre-post cardiac catheterization ward, a cardiac intensive care unit, and a cardiac coronary unit, in addition to outpatient cardiac clinics. The public hospital has a capacity of 1100 beds that can be extended to include 1500 beds. The hospital contains an outpatient cardiac clinic.

Sample

The target population of this study was Jordanian cardiac patients. The accessible population was cardiac patients who were treated as outpatients in cardiac clinics in the targeted 3 hospitals during the time of data collection. A convenient sample of 464 patients participated in this study from outpatient cardiac clinics during their waiting time. The sample size was calculated according to the rule of thumb (van Voorhis and Morgan, 2007). A sample of at least 250 participants was needed for the current study, noting that there are 20 variables in the study (7 demographic variables and 2 main variables; one with 8 sub-scales; and the other with 5 dimensions). Therefore, $(20 \times 10) + 50 = 250$ participants. The sample size was increased, since the sample was a convenient one where the more the size the more the generalizability of the findings, and to compensate for an anticipated loss of data regarding uncompleted questionnaires and random errors by the participants. One seventy-five patients were approached from each hospital with a total of 525 patients with a response rate of 88% ($n=464$). The response rates were 87% for the university hospital ($n=153$); 90% for the public hospital ($n=159$); and 86% for private hospital ($n=152$).

The inclusion criteria were: age above 18 years, ability to read and understand research questions, and having a cardiac disease, such as cardiovascular diseases,

heart failure, valvular heart diseases, cardiac arrhythmias, or multiple cardiac diseases. The exclusion criteria were having mental or psychological problems that require treatment with medication, such as mental retardation or depression, having other chronic diseases that may impair physical functions, such as severe musculo-skeletal injury, respiratory diseases, or renal impairment.

Ethical Considerations and Data Collection Procedure

The Institutional Review Board (IRB) approval was obtained from the affiliated university (10/109/2017), and from the three targeted hospitals before the commencement of data collection. The patients were informed about their participation rights. The participants were assured that their participation is voluntary and that they have the right to withdraw from the study at any time, and that all data will be treated with confidentiality. The researchers assessed the eligibility of the patients to participate in the study, using the inclusion and exclusion criteria, and participation rights were clarified. The researchers provided a brief introduction for the participants about the study purposes. Written consent forms were obtained from all participants. A structured interview using a questionnaire in Arabic language that contains patient demographics, social support instrument and quality-of-life instrument were used.

Instruments

Quality of life is defined as a dynamic concept that describes the individual responses to the physical, mental, and social effects of diseases, which affects the personal satisfaction with life circumstances (Holmes & Dickerson, 1987:15). It was measured by the SF-36 instrument. It contains 36 items to measure different aspects of quality of life. The SF-36 items have a Likert method of summated ratings, where these measures are then collected to produce raw data for each sub-scale. Then, the total score of sub-scales is transformed into a 0 -100 scale. A higher score of SF-36 indicates a better health status, while a lower score indicates an impaired health status (Ware & Sherbourne, 1992). The cut point was 50 as the moderate level, above which is the high level and below which is the low level.

SF-36 has eight sub-scales that measure quality of life: 1) physical functioning (ten items); 2) role limitations due to physical health problems (four items); 3) role limitations due to emotional problems (three

items); 4) Energy/fatigue (four items); 5) emotional well-being (five items); 6) social functioning (two items); 7) pain intensity (two items); and 8) general health perceptions (five items), in addition to a single item that measures perception changes in health. In addition, the result of SF-36 can be summarized into two main component scores; the first score is called the Physical Component Score (PCS) which is the average of calculating physical functioning, pain intensity, role limitations due to physical health problems, and general health perceptions. The second score is called the Mental Component Score (MCS), which is the average of calculating emotional well-being, role limitations due to emotional problems, energy/fatigue, and social functioning (Grassi & Nucera, 2010).

SF-36 is considered reliable and commonly used for cardiac patients (Gierlaszyńska et al., 2016). The internal consistency of SF-36 in all items exceeds (0.7), where Cronbach's alpha ranges from 0.72 to 0.94 (Failde & Ramos, 2000). SF-36 has been translated into several languages, including the Arabic language. Regarding the reliability of the Arabic version; the alpha coefficient values range from (0.57) for general health perception to (0.88) for physical function; the reliability of all sub-scales exceeds (0.7), except for general health (Abdulmohsin et al., 1997). In addition, El-Kalla et al. (2016) identified the psychometric proprieties of the Arabic version of SF-36 in Egypt. The reliability of all sub-scales exceeded (0.7), except for pain (0.43), vitality (0.54) and social functioning (0.68). It is acceptable for some of the sub-scales that had a small number of items to have an alpha less than 0.70. However, the total scale reliability exceeds 0.70. In the present study, alpha coefficients for the SF-36 sub-scales were as follows: physical function (0.65), role limitations due to physical problems (0.67), role limitations due to emotional problems (0.65), energy/fatigue(vitality) (0.72), emotional well-being (0.70), general health (0.74), social functioning (0.62), and pain intensity (0.63).

Social support, defined as "any information or helpful material provided by groups or people who know each other, resulting in positive behavioral and emotional responses" (Garcia et al., 2015:565), was measured by MOS Social Support Survey (MOS SSS). The MOS social support survey includes 19 items, and measures different dimensions of social support. These dimensions include: emotional support (attachment or affect) and informational

support (guidance or appraisal support which contains 8 items), tangible support (material support, aid, reliable alliance which includes 4 items), positive social interaction (belonging or social companionship which includes 4 items), and affectionate support which includes 3 items. The MOS social support survey is a reliable tool; alpha coefficients were above 0.91 for all sub-scales (Sherbourne & Stewart, 1991). The MOS social support survey was also translated into several languages, including the Arabic language. The Arabic version of MOS is also considered a reliable measure; the alphas coefficients for all sub-scales exceed (0.70), except for affectionate support (0.65), and the overall reliability of MOS social support score is (0.92) (Dafaalla et al., 2016). In the current study, the Cronbach's alpha for MOS social support survey was (0.81).

A demographic form was also used to collect data about participants' age, gender, social status, working status, educational level, monthly income, and health insurance.

The primary researcher secured the permission of using SF-36, and MOS-SSS tools from the original authors before the study commenced.

Data Analysis

The Statistical Package of Social Sciences (SPSS), version 22, was used to analyze the data in the current study. Pearson correlation test was used to examine the relationship between social support and quality of life. Descriptive statistics (mean, standard deviation) was used to assess levels of social support, and levels of quality of life. Independent-sample T-test, Analysis of Variance (ANOVA) test and *post hoc* test were used to examine the relationship between characteristics of cardiac patients and their quality of life. The data was checked for normality, where all variables were normally distributed.

Results

The participants' mean of age was 58.47 years ranging from 20 years to 95 years. The majority of participants were males (62.5%, n=290) and married (82.8%, n=384). The majority of participants have a secondary educational level (45%, n=209). According to working status, 48.5% (n=225) of participants did not work. Most of the participants had less than 500 JD as a monthly income (72%, n=335); and had medical insurance (82.3%, n=382). Table 1 presents the characteristics of the sample.

Table 1. Sample characteristics (N=464)

Participants' Characteristics	Frequency		Percentage (%)
Gender	Male	290	62.5
	Female	174	37.5
	Total	464	100
Social status	Single	13	2.8
	Married	384	82.8
	Widowed	60	12.9
	Divorced	7	1.5
	Total	464	100
Educational level	Primary education	105	22.6
	Secondary education	209	45.0
	College degree	61	13.1
	Baccalaureate degree	67	14.4
	Post-graduate education	22	4.7
	Total	464	100
Working status	Work	125	26.9
	Don't work	225	48.5
	Retired	114	24.6
	Total	464	100%
Type of work	Without work	336	72.4
	Office work	70	15.1
	Field work	54	11.6
	Missed	4	.9
	Total	464	100%
Monthly income	Less than 500 JD	335	72.2
	500JD and more	124	26.7
	Missed	5	1.1
	Total	464	100
Insurance	Have insurance	382	82.3
	Without insurance	82	17.7
	Total	464	100
Type of cardiac diseases	Cardiovascular diseases	251	54.1
	Heart failure	43	9.3
	Cardiac arrhythmia	64	13.8
	Valvular heart disease	24	5.2
	Multiple cardiac problems	81	17.5
	Other cardiac problems	1	1.1
	Total	464	100

Quality of Life and Social Support

The total SF-36 score in this study was calculated by taking the average of the eight sub-scales of SF-36 out of 100. The total score of SF-36 was (M= 64, SD= 16, n= 434). The role limitations due to emotional problems

sub-scale showed the highest mean (M=75, SD= 22.6, n= 462); while pain intensity showed the lowest mean (M= 50, SD= 24.8, n= 464). Table 2 presents data about the quality of life sub-scales.

Table 2. Total quality of life and sub-scale scores

Quality of life sub-scales	N	Min.	Max.	M	SD
Physical function	451	45	86	67	17.8
Role limitations due to physical problems	462	50	95	72	21.2
Role limitations due to emotional problems	462	52	98	75	22.6
Energy/fatigue	457	52	76	64	11.4
Emotional well-being	454	53	75	64	9.8
Social functioning	461	46	70	57	11.2
Pain intensity	464	26	75	50	24.8
General health	459	47	82	60	13.0
Total SF-36	434	371	657	510	130
Total SF-36 out of 100	434	46	82	64	16
Physical component	443	55	70	62	6
Mental component	451	64	78	65	9

The mean of total social support was (M= 82, SD=15, n= 421), with a maximum score of 97, and a minimum score of 64 on a scale out of 100. According to sub-scales, affectionate support sub-scale had the

highest mean (M= 91.31), while positive social interaction sub-scale had the lowest mean with (M= 70.79). Table 3 presents the scores of total social support and its sub-scales.

Table 3. Total social support and its sub-scales

Social support sub-scales	N	Min	Max	M	SD
Emotional/informational support	433	54	96	77.38	17.95
Tangible support	463	78	100	89.92	18.13
Affectionate support	459	71	100	91.31	16.40
Positive social interaction	454	54	93	70.79	22.43
Total social support (out of 100)	421	64	97	82	15

Relationship between Social Support and Quality of Life

The relationship between social support and quality of life was assessed using Pearson correlation coefficient test. The results indicated a significant, but weak, relationship between social support and quality of life ($r=0.14$; $p<0.01$). In addition, the relationship between social support sub-scales and the components of quality of life; physical component and mental component, was examined. The mental component of quality of life showed a significant weak correlation

with the total score of social support ($r= 0.18$; $p<0.01$), while the physical component of quality of life showed no significant correlation with the total score of social support ($r=0.05$). Further, according to the total score of quality of life and social support sub-scales, the results showed significant weak correlations of total quality of life with tangible support ($r=0.14$; $P<0.01$) and affectionate support ($r=0.15$; $P<0.01$); however, there were no significant correlations between the total score of quality of life and emotional/ informational support, and positive social interaction (see Table 4).

Table 4. The relationship between social support and quality of life

	Emotional/ informational support	Tangible support	Affectionate support	Positive social interaction	Total social support
Physical function Pearson correlation	0.050	0.085	0.142**	0.178**	0.156**
Role limitations due to physical problems Pearson correlation	0.109*	0.136**	0.140**	0.139**	0.180**
Role limitations due to emotional problems Pearson correlation	0.087	0.192**	0.122**	0.100*	0.167**

Energy/fatigue (vitality) Pearson correlation	-0.074	0.073	0.083	-0.016	0.034
Emotional well-being Pearson correlation	0.002	0.024	0.018	0.052	0.037
Social functioning Pearson correlation	0.119*	0.044	0.010	0.067	0.083
Pain intensity Pearson correlation	-0.118*	-0.125**	-0.073	-0.174**	-0.163**
General health Pearson correlation	-0.020	-0.050	-0.060	-0.123**	-0.077
Total –SF36 Pearson correlation	0.059	0.139**	0.150**	0.077	0.145**
Physical component Pearson correlation	-0.022	0.038	0.117*	-0.005	0.049
Mental component Pearson correlation	0.116*	0.186**	0.111*	0.122*	0.181**

** Correlation is significant at 0.01 level (2-tailed).

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

Cardiac Patients' Characteristics and Their Quality of Life

Independent-sample t-test was used to examine the differences in quality of life according to gender. The independent-sample t-test showed significant differences between male and female patients; male patients reported higher quality of life than female patients ($t=4.22$, $df=432$, $p=0.001$). One-way ANOVA analysis was used to examine the differences in patients' quality of life due to their ages. The results showed significant differences between age groups in quality of life ($F=3.824$, $df= 2,431$, $P =0.023$). Then, *post hoc* analysis (Tukey test) was performed to identify the differences in quality of life between age groups. The results showed significant differences between (41-65) years old patients who reported a higher score of quality of life than patient aged 66 and older.

Further, the results showed significant differences between marital status groups ($F= 7.645$, $df= 3,430$, $P = 0.001$). Married patients reported a higher score of quality of life than widows. For educational level, the results also showed significant differences between educational level groups ($F= 4.476$, $df = 4,429$, $P = 0.001$); then, Post Hoc (Tukey test) analysis was used to examine the differences between social-status groups. The results clarified that there were significant differences between married and widowed patients with ($P=0.001$). The Post Hoc analysis (Tukey test) showed that patients with a college degree reported a higher level of quality of life than patients with primary or secondary education. For working status, the results showed significant differences between working-status groups ($F=9.389$,

$df= 2,431$, $P =0.001$). The Post Hoc analysis (Tukey test) showed that patients who work reported a higher score of quality of life than patients without work. For monthly income, independent-sample t-test showed that patients with a monthly income of 500 JD and more reported a higher score of quality of life than patients with a monthly income of less than 500 JD ($t=3.75$, $df=429$, $p=0.001$). For health insurance, independent-sample t-test showed that patients with a health insurance reported a higher score of quality of life than patients without a health insurance ($t=3.12$, $df=432$, $p=0.002$).

Moreover, independent-sample t-test analysis showed that patients who perform physical exercises have a higher level of quality of life than patients who don't perform physical exercises ($t=3.17$, $df=432$, $p=0.002$). For smoking, the independent-sample t-test showed that there were no significant differences in the mean of quality of life between smokers and non-smokers ($t=-0.349$, $df=432$, $p=0.73$).

Discussion

The findings of this study showed that pain intensity, general health, social functioning had lower scores, whereas role limitations due to emotional problems and role limitations due to physical problems sub-scales showed higher scores. These findings could be explained by the fact that cardiac diseases are associated with changes in physical ability and vitality. Moreover, cardiac diseases can affect mental health by several changes, such as anxiety and depression; these changes can interfere with the performance of cardiac patients, their roles, and their usual activities. Cardiac diseases

can affect all dimensions of cardiac patients' life, including physical, psychological, emotional and social functions, which can negatively affect their general health and their social interaction with others. Such findings were similar to those of Alharbi et al. (2022) who found that pain intensity and general health had lower scores of quality of life assessment among cardiac patients in Saudi Arabia.

The present study also found moderate levels of perceived social support. Participants perceived higher levels of affectionate and tangible support compared to levels of emotional/informational support, and positive social interaction. These findings may be explained by the fact that most patients received their social support from their family members. Family members provide primary needs for cardiac patients, such as love, compassion, food and helping with activities of daily living. However, physical restrictions caused by cardiac diseases can cause feelings of being a burden on others. Further, anxiety, anger, and depression may interfere with the perceptions of emotional support for cardiac patients and limit their expression of their feelings, sharing their problems with others as well as limiting their recreational activities. In addition, the low mean of informational support can be explained by the absence of health education and information from healthcare providers. These findings are similar to those of other studies, such as the study conducted in Canada by Oremus et al. (2020) who found that tangible support had the highest mean score of social support; while emotional/informational support had the lowest mean score of social support.

The study findings also showed a significant positive relationship between social support and quality of life among cardiac patients. Social support could enhance patients' well-being. Social support can help with ventilation of feelings for cardiac patients, and reduce their feelings of anxiety and depression. Moreover, social support may enhance physical functions for cardiac patients by helping them in their daily activities when needed. Further, informational support may increase patients' adherence to treatment regiment and promote healthy lifestyle habits. These findings are similar to those of other studies, like the studies conducted by Ma (2023), and Teleki et al. (2022) who found that better social support was associated with higher functional status and higher quality of life. Similar findings were also reported by Alharbi et al.

(2022) in Saudi Arabia, who found a significant positive correlation between social-support sub-scales and quality-of-life dimensions except for affectionate support.

The present study also showed that: male patients had a higher level of quality of life than female patients. This finding could be explained by the fact that female patients may have lower physical abilities, and are more likely to develop anxiety and depression. In addition, women tend to give others support and ignore their own health needs. These findings are similar to those of several studies in the literature (Garay et al., 2020; Mamasoliyevna et al., 2022; Shih et al., 2020). Another finding includes that young adulthood and middle-aged patients had a higher level of quality of life than older adults. This could be due to the fact that elderly patients are more likely to have limitations in physical functions, and to develop anxiety and depression. Similar findings are reported by other studies in the literature (Hiriscau et al., 2022). Other studies identified that elderly patients have a higher level of quality of life than younger patients (Journiac et al., 2020; Rometsch et al., 2019). In addition, married patients had a higher level of quality of life than widowed patients. This finding can be due to the fact that married patients had more support from their partners in regard to physical, social and psychological aspects of their life, while widowed patients are more likely to assume more responsibility and are more prone to develop anxiety and depression. Similar findings were reported by several studies, such as (Dhindsa et al., 2020; Ghuloom & Sanad, 2023).

Further, it was found that patients with higher education had a higher level of quality of life than patients with lower education. This could be due to that patients with a higher education level may have more information and understanding of their diseases and treatment regimens. Similar findings were reported by other studies, like (Ghuloom & Sanad., 2023; Endalew et al., 2021). Moreover, working patients had a higher level of quality of life than non-working patients. Patients with work have better physical activity and more social interaction with others, and are more likely to be vital and to have better living conditions than patients without work. These findings are similar to the findings of other studies, like (Khurshid et al., 2020; Krzeminska et al., 2019).

Besides, patients with a monthly income of 500 JD and more had a higher level of quality of life than

patients with a monthly income of less than 500JD. This may be due to the fact that patients with a monthly income of more than 500 JD are more likely to have better treatment options, and are more likely to be engaged in healthy lifestyle habits. These findings are similar to the findings of other studies in the literature (Jalilian et al., 2020; Saqlain et al., 2021; Zhang et al., 2022). Moreover, patients with a health insurance had a higher level of quality of life than patients without a health insurance. Patients with a health insurance can receive effective treatment regimens in the early onset of disease, whereas patients without a health insurance are more likely to delay seeking medical attention and receive treatments in the late stages of cardiac disease. This finding was similar to the finding of another study (Wajanga et al., 2022). Additionally, patients who perform physical exercises had a higher level of quality of life than patients who don't perform physical exercises. This finding can be due to that performing physical exercises has a good effect on tolerance and can improve physical and mental functions. This finding was like the finding of (Odunaiya et al., 2024).

Limitations of the Study

The sample of the study was a convenient one of patients who were treated in the clinic at the time of data collection. Measurements of social support and quality of life were obtained at one point of time; however, social support and quality of life may change at different points of time. Further, using self-report questionnaires could create a reporting bias.

Implications for Nursing

Nurses should regularly evaluate social-support needs of cardiac patients. While engaging family members, nurses should provide emotional support as well as health education about the disease process and treatment regimens, and emphasize the importance of healthy habits, especially for elderly female patients with low education levels. Identifying patients with poor social support and quality of life is necessary. It is recommended to establish social-media connections, such as websites that connect patients with each other and help form support groups for patients. Applying applications of smart phones to provide social and informational support is also recommended (Akh-Zaheya et al., 2023). Nurses should provide emotional support as well as health education about cardiac

diseases and treatment regimens, and emphasize the importance of healthy habits for cardiac patients and their families, especially for females, elderly patients, and low educational level patients. In addition, involving family and significant others in the treatment plan is important through empowering them with skills and knowledge that help them provide social support for their patients.

Further, emphasizing the role of future nurses in providing social support for patients is essential, through integrating the concepts of social support and quality of life into the curriculum of undergraduate nurses. Future research studies should identify other factors that affect social support and quality of life at different points of time, utilizing longitudinal designs. It is recommended to examine the impact of social-support interventions, such as social-support groups on cardiac patients' quality of life.

Conclusion

The assessment for social support, quality of life and characteristics of cardiac patients is necessary to be carried out on a regular basis. Social support can influence cardiac patients' outcomes; the results of the present study clarified the positive relationship between social support and quality of life for cardiac patients in Jordan. These assessments provide valuable information to evaluate patient outcomes, identify the patients' needs, and help craft interventions to satisfy these needs. Providing social support for cardiac patients can help improve their outcomes; therefore, nurses can play a vital role in providing emotional and informational support for cardiac patients. Providing social support for widowed females and elderly patients can contribute to improve their quality of life. Further, future studies that introduce social-support interventions, such as health-education programs, and social-support groups, are highly recommended.

Conflict of Interests

The authors have no conflict of interests to declare with respect to the authorship and/or publication of this article.

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