


The Associations Between Patients' Characteristics and the Quality of Life Among Acute Coronary Syndrome Patients in Jordan: A Cross-Sectional Study

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Abstract

Introduction: Acute coronary syndrome (ACS) is one of the most significant leading causes of death and disability in the world. The quality of life (QoL) score is used to evaluate the impact of ACS treatments on the patients' physical, emotional, and social functioning. It is considered a significant indicator of the progress of the patients' health status and is useful in predicting patients' needs for continuing, modifying, or changing their treatment plans.

Objective: To identify the associations between patients' characteristics and the QoL among ACS patients in Jordan.

Methods: A descriptive cross-sectional study was conducted using a convenience sample of 372 participants with ACS from six referral hospitals in Jordan.

Results: Jordanian patients with higher educational level and exercise had significant and positive association with QoL ($\beta = 0.257$, $p < .001$), ($\beta = 0.191$, $p < .001$), respectively. Also, patients who reported having dyslipidaemia and having unstable angina (UA) had lower score of QoL ($\beta = -0.165$, $p < .001$), ($\beta = -0.149$, $p < .001$), respectively. Finally, gender and working status did not significantly appear to have an association with the total QoL.

Conclusions: This study sheds light on the importance of increasing the level of patients' awareness about their illness by educating them about it and encouraging them to engage in physical activity programs.

Keywords

quality of life, acute coronary syndrome, cardiovascular diseases, Jordan

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Introduction

Worldwide, cardiovascular diseases (CVDs) are among the leading cause of death (Townsend et al., 2022; World Health Organization, 2019), and account for 31% of deaths, which equates to 17.9 million people every year. It is notable that more than 75% of CVD-related deaths occur in low and middle-income countries (World Health Organization, 2019). This study focuses on Jordan, where diseases of the circulatory system are the leading cause of death among the Jordanian population, at 39.1%. Of these deaths, hypertensive diseases account for the highest number of deaths, followed by ischemic heart diseases and cerebrovascular diseases (Ministry of Health, 2015).

Coronary heart disease (CHD) is manifested through a number of clinical presentations, which are grouped together as an acute coronary syndrome (ACS) (Alfasfos et al., 2016).

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On a worldwide scale, ACS is responsible for about seven million deaths and 129 million disabilities annually (Vedanathan et al., 2014). In ACS, the coronary arteries are obstructed, which results in restricted blood flow to the heart (Kumar & Cannon, 2009). ACS is further classified into three distinct categories of intensity: unstable angina (UA); non-ST-segment elevation myocardial infarction (NSTEMI), in which coronary arteries are partly or periodically occluded; and ST-segment elevation myocardial infarction (STEMI), which reflects full occlusion of the arteries (Kumar & Cannon, 2009).

Review of Literature

In order to promote better health for the many patients who suffer from ACS, a number of researchers have highlighted the importance of evaluating patients' quality of life (QoL) and the factors that predict it (Sevinc & Akyol, 2010; Uchmanowicz et al., 2019; Zaben & Khalil, 2019). Understanding the factors that affect QoL is extremely valuable, so management strategies that help patients gain QoL and clinical improvements are preferable to other approaches (Gallagher et al., 2019; Kaambwa et al., 2020). Several research studies have identified the clinical and demographic factors that have an impact, including age (De Smedt et al., 2013), sex (Hawkes et al., 2013), the severity of angina (Dias et al., 2005), a previous cardiovascular event (Dias et al., 2005), type of ACS (Failde & Soto, 2006), physical functioning (Failde & Soto, 2006) and depression (Rumsfeld et al., 2003).

A descriptive study in Malaysia evaluated patients with ACS and identified significant differences in QoL depending on the patients' gender, medical diagnosis, history of dyslipidemia and physical activity level, as well as educational level and employment status (Azmi et al., 2015). These findings demonstrate that healthcare providers have a pivotal role to play in improving patients' knowledge and encouraging them to focus on developing a healthier lifestyle. The provision of information that allows healthcare providers to target their approaches toward increasing knowledge among patients with ACS can, therefore, deliver better patient outcomes, so identifying the factors that are associated with better or worse QoL outcomes among ACS patients is vitally important (Vedanathan et al., 2014). Several studies have examined the biomedical risk factors of CVD and identified significant predictors among ACS patients, including high blood pressure (HTN), high cholesterol level, diabetes mellitus (DM), high low-density lipoprotein level (LDL), and low high-density lipoprotein level (HDL) (Abid et al., 2021; Batty et al., 2020; De Backer et al., 2015; Kumar & Cannon, 2009; Su et al., 2019).

Nevertheless, the majority of studies that have investigated the factors that affect the QoL for patients with ACS have focused on developed countries rather than on developing countries. There is a dearth of research that has

investigated the association between patients' characteristics and QoL among ACS patients in Jordan, despite the fact that ACS is not only responsible for the majority of CVD deaths worldwide but also that this is particularly notable in Jordan. Therefore, this study aimed to identify the associations between patients' characteristics and the QoL among ACS patients in Jordan. This study will provide baseline data that could be useful for other research studies related to ACS patients in Jordan.

Methods

Design

A descriptive cross-sectional design was adopted to identify the association between patients' characteristics and the QoL among ACS patients in Jordan.

Research Question

What are the associations between patients' characteristics and the QoL among ACS patients in Jordan?

Setting

Six hospitals were chosen for this study, including two public, two private, one educational, and one military. All of the chosen hospitals are located in the capital city of Amman and are considered to be referral hospitals for CVDs. These hospitals cover the entire central and southern regions of Jordan, with some coverage in the northern region.

Sample

After getting ethical approval from the recruited hospitals, the main investigator (PI) met with the heads of the nursing units to explain the objectives of the study and to request their cooperation in approaching the eligible patients. The departmental heads of nursing appointed charge nurses to assist the PI in their absence. A convenience sample of patients who met the following inclusion criteria was invited to participate: (1) patients with ACS who were admitted to the hospital with an ACS diagnosis of STEMI, NSTEMI, or UA from January 2015 to December 2016; (2) older than 18 years; (3) mentally and hemodynamically stable; (4) medical profiles indicate that they have no chronic diseases except hypertension (HTN), DM, and dyslipidemia; (5) able to read and write Arabic; and (6) able to give informed consent. The sample size was calculated using power analysis software and considering a power of 0.80%, and a medium effect size, and an α of 0.05. Based on these criteria a sample size of 300 patients was sufficient to detect a significant result. A total of 410 patients were approached; 390 patients consented and agreed to participate in the study, of which 372 fully completed and returned the

questionnaire and were included in the analysis (a response rate of 90.73%).

Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (IRB) committee in each hospital included in the current study. The participants were able to choose whether or not to participate in this study. An information sheet was given to each participant who agreed to participate, then a brief interview was held with the anticipated participants to introduce them to the study and its questionnaire. Each

Table 1. The Participants' Sociodemographics and Clinical Characteristics (N = 372).

Characteristics	Mean \pm SD	%	N
Age (years)	55.20 \pm 10.45	–	–
BMI	28.48 \pm 5.82	–	–
Medical diagnosis			
Unstable angina (UA)	–	39.0%	145
Myocardial infarction	–	61.0%	227
Gender			
Male	–	67.2%	250
Female	–	32.8%	122
Employment status			
Yes	–	59.7%	222
No	–	40.3%	150
Dyslipidemia			
Yes	–	54.0%	201
No	–	46.0%	171
Exercises			
Yes	–	20.4%	76
No	–	79.6%	296
High blood pressure			
Yes	–	54.8%	204
No	–	45.2%	168
Diabetes			
Yes	–	40.6%	151
No	–	59.4%	221
Marital status			
Single	–	3.2%	12
Married	–	86.8%	323
Divorced	–	2.7%	10
Widowed	–	7.3%	27
Educational level			
Secondary school and below	–	42.7%	159
High school	–	26.3%	98
Diploma	–	12.4%	46
B.Sc	–	14.0%	52
Postgraduate	–	4.6%	17
BMI categories			
Underweight	–	1.6%	6
Normal	–	25.3%	94
Overweight	–	37.4%	139
Obesity	–	35.8%	133

Note: BMI = body mass index.

participant had the opportunity to ask questions and seek clarification about any aspect of the study. The participants were given assurance that all gathered information would be number-coded, kept in the researcher's personal computer under an anonymous file name, and secured with a password. In this study, the consent form was attached to the information sheet and all the participants chose to sign the consent form; written informed consent was provided by the participants prior to any data collection.

Instrument for Data Collection

A characteristic checklist was issued to every participant and gathered the following information: medical diagnosis, patient's gender, marital status, educational level, employment status, exercise level, body mass index (BMI), and chronic illnesses such as high blood pressure, diabetes, and dyslipidemia.

MacNew Heart Disease Health-related QoL (MacNew)

The MacNew instrument was designed to detect any meaningful and small changes in QoL among heart disease patients. Several studies have suggested that MacNew is one of the best instruments for predicting QoL (Asadi-Lari et al., 2003; Hofer et al., 2014), and it meets the primary goal of the study. Therefore, it was selected to be utilized in the current research.

This instrument consists of 27 items distributed across three major domains, physical, emotional, and social (Dixon et al., 2002; Höfer et al., 2004). Using a Likert scale, the participants rate their response for each item from 1 to 7 and the score of the instrument ranges from 7 to 189. The mean of the global score was calculated ending with a minimum score of 1, indicating low QoL; while the maximum score of 7 was interpreted as high QoL. The physical domain score was calculated by the mean score of the 13 items representing the domain. Meanwhile, the emotional domain contains 14 items and the social domain comprises 13 items. It is of note that some items are included in more than one domain.

The MacNew instrument was translated into Arabic; this version has very good psychometric proprieties with internal consistency (Cronbach's alpha) of ≥ 0.91 for each domain (Rawas, 2015; Rawas et al., 2015). Additionally, the results of test-retest reliability on a sample of 58 patients ranged from 0.81 to 0.87.

Statistical Analysis

Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS21). Descriptive statistics were performed to describe the sample characteristics

(frequencies, means, percentages, and *SDs*). To answer the research question, multiple regression analysis was adopted to assess the association between the study variables. The assumption of the standardized multiple regression: multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals were checked (Polit & Beck, 2016). The research question had regression equations in which the total score of QoL was the dependent variable and the independent variables were the demographic variables (gender, educational level, exercises, working status, medical diagnosis, and dyslipidemia).

Results

Characteristics of Participants

In this study, a total of 372 patients with ACS completed the questionnaire fully and were thus included in the final analysis, as shown in Table 1. The patient's ages ranged from 30 to 83 years, with a mean age of approximately 55 years. Most of the patients were married (86.8%), male (67.2%), and working (59.7%). The level of education was checked, which revealed that approximately 42.7% of the patients were educated up to secondary school level or below and only 26.3% had high school qualifications. Only 20.4% of patients reported that they exercised regularly, while more than two-thirds of them were categorized as overweight or obese.

With regard to the clinical characteristics of the ACS patients, most of them had been diagnosed as myocardial infarction (MI) (61.0%), while the remainder had been diagnosed with UA. Furthermore, 54.8% of the patients were suffering from HTN, 40.6% had DM and 54.0% reported dyslipidemia.

Demographics and QoL

As shown in Table 2, the educational level had a significant and positive association with total QoL ($\beta = 0.257, p < .001$). Likewise, exercises had a significant and positive association with total QoL ($\beta = -0.191, p < .001$). Also, patients who

reported having dyslipidemia and having UA had lower score of QoL ($\beta = -0.165, p < .001$), ($\beta = -0.149, p < .001$), respectively. Finally, gender and working status did not significantly appear to have an association with total QoL.

To conclude, the independent variables were educational level, exercise, dyslipidemia, and medical diagnosis. These variables explained 20% of the variance in the QoL MacNew global score. Among those independent variables, educational level made a significant unique contribution (standardized beta value = 0.257).

Discussion

The purpose of this study was to identify the association between patients' characteristics and the QoL for patients with ACS through the use of a descriptive cross-sectional design. The study found that four independent variables, educational level, exercise, dyslipidemia, and medical diagnosis had a significant association with QoL among ACS patients in Jordan. This finding supports the findings of the previous studies that are concerned with this topic (Kramer et al., 2012).

Furthermore, the most influential independent factor that influenced QoL was educational level, while the medical diagnosis was the weakest independent factor. Moreover, while educational level and exercise had positive associations with total QoL, the history of dyslipidemia and medical diagnosis (UA) had negative associations. These are also in agreement with other studies (Christian et al., 2007).

The findings demonstrate that level of education had a positive association with QoL. This was consistent with the findings of Ammouri et al. (2011) study. In the current study, the highly educated sample might have been exposed to educational information about heart disease more than other population groups.

Research findings indicate that practicing exercise had a positive association with the QoL of patients with ACS. Exercise has been shown to be associated with better QoL by decreasing the mortality rate and CVD risk factors. Physical activity not only shifts the patients' attitude toward developing a healthy lifestyle but also improves their health status and QoL outcomes (Sevinc & Akyol, 2010).

On the other hand, having a history of dyslipidemia is negatively associated with QoL among ACS patients. This result was supported by (Montalescot et al., 2007), who assigned untreated dyslipidemia as a predictor of hospital deaths across patients with ACS. Generally, a history of dyslipidemia is strongly associated with an unhealthy lifestyle and usually, these patients are obese, do not practice exercise, and eat unhealthy food (Leon & Bronas, 2009).

The study found that medical diagnosis is negatively associated with the QoL among ACS patients. Patients who had a diagnosis of UA showed lower QoL than MI patients.

Table 2. Predictors of QoL MacNew Global Score in the Regression Model.

Variables accepted in the model	Standardized beta	T	p-value	Part
Educational level	0.257	5.318	$p < .001$	0.247
Exercises	0.191	3.981	$p < .001$	0.185
Dyslipidaemia	-0.165	-3.489	$p < .01$	-0.162
Medical diagnosis	-0.149	-3.068	$p < .01$	-0.143
Gender	0.095	1.553	0.121	0.072
Working status	0.024	0.422	0.673	0.020

Note: QoL = quality of life.

Rumsfeld et al.'s (2001) study enrolled 2,733 ACS survivors and found that UA patients reported poor QoL in comparison with MI patients, but this finding may be explained by signs and symptoms of the subclinical diagnosis. Patients with UA develop several anginal attacks which increase in intensity over time and have recurrent cardiac events; unlike MI patients, who experience a sudden cardiac event (Rumsfeld et al., 2001). The other explanation relates to therapeutic management, as MI is considered a life-threatening emergency condition that needs aggressive and immediate treatment. In contrast, UA patients may delay seeking medical attention and when they do, this may be less intense (Maddox et al., 2007), which can increase rehospitalizations and visits to the emergency department (ED) and consequently inhibit a patient's ability to perform certain tasks and daily living activities (Fors et al., 2015).

The current study's findings revealed that neither gender nor working status had a significant association with QoL, which contradicts the findings of some other literature on the subject (Dias et al., 2005). Dias et al.'s study (Dias et al., 2005) aimed to identify the clinical, demographic, and psychosocial characteristics of patients admitted for ACS that were predictive of QoL at clinical follow-up and found that patients who had a better QoL perception were young, male smokers who had more than 12 years of education. As the present study found that gender and working status were not predictive of QoL perception, this suggests that further studies are required in order to understand the reasons for this difference.

The findings of this study have significant implications for clinical practice and education. Several education programs are helpful to be implemented, for instance, to raise the ACS knowledge of less educated adults. This could be implemented utilizing a variety of information dissemination strategies (e.g., media). Moreover, cardiac rehabilitation is one of the most important programs for improving the QoL and health-related parameters of CVD patients (Ades, 2001; Eshah & Bond, 2009). In Jordan, there are a number of cardiac rehabilitation programs that improve cardiac patients' survival and QoL through the use of dedicated monitored exercise regimens and counseling overseen by a skilled specialized health professional (e.g., physiotherapist and cardiologist). The efficient implementation of such programs in Jordan's various health sectors may improve the QoL of ACS patients.

Limitations

This study is one of a few studies that explore the associations between patients' characteristics and the QoL among ACS patients in Jordan. Nevertheless, certain aspects may limit the generalizability of this study's findings, the first of which is that the cross-sectional design has limitations regarding the assessment of the cause and effect relationship between the study variables within a certain period (Polit &

Beck, 2016). Additionally, using a convenient sampling strategy might not be representative of patients with ACS in Jordan. However, it should be noted that the cross-sectional approach used in the study does provide valuable knowledge about the association and the relationship between different variables. Future studies with randomly selected samples are recommended which could improve the generalizability of the findings.

Conclusion

The findings of this study suggest that low levels of educational and physical inactivity were the most significant predictors of poor QoL among Jordanian patients with ACS. Health professionals can play a significant role in enhancing patients' QoL by providing them with continuous education and encouraging them to engage in more physical activity programs.

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Declaration of Conflicting Interests


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