Belitung Nursing Journal

E-ISSN: 2477-4073 | P-ISSN: 2528-181X

Volume 8, Issue 4
July - August 2022

Edited by Assoc. Prof. Dr. Yupin Aungsuroch & Dr. Joko Gunawan

The Official Publication of
Belitung Raya Foundation
Department of Publication, Indonesia

Factors related to health-related quality of life in patients with acute coronary syndrome in West Java, Indonesia: A correlational study

Belitung Nursing Journal
Volume 8(4), 349-356
© The Author(s) 2022
https://doi.org/10.33546/bnj.1247

Haerul Imam[1] **and Chanokporn Jitpanya**[2*]

[1] Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand
[2] Srisavarindhira Thai Red Cross Institute of Nursing, Bangkok, Thailand

***Corresponding author:**
Assoc. Prof. Dr. Chanokporn Jitpanya
Srisavarindhira Thai Red Cross Institute of Nursing, Rama 4 Road, Wangmai, Pathumwan, Bangkok, Thailand, 10330
Email: chanokporn.j@stin.ac.th

Article info:
Received: 17 November 2020
Revised: 8 August 2022
Accepted: 9 August 2022

E-ISSN: 2477-4073 | P-ISSN: 2528-181X

Abstract

Background: Although acute coronary syndrome impacts patients' health-related quality of life, a dearth of studies explore this issue in Indonesia. Thus, understanding factors associated with health-related quality of life among patients with acute coronary syndrome is a necessity.
Objective: This study aimed to examine the relationships between age, pain, dyspnea, functional status, self-efficacy, social support, and health-related quality of life in patients with acute coronary syndrome in West Java, Indonesia.
Methods: This study employed a descriptive correlational study involving 186 patients with acute coronary syndrome purposively selected in the outpatient clinics of the top referral public hospital. Data were collected in 2020 using validated instruments: Rose Questionnaire for Angina (RQA), Rose Dyspnea Scale (RDS), Seattle Angina Questionnaire (SAQ), General Self-efficacy Scale (GSE), ENRICHD Social Support Instrument (ESSI), and MacNew Health-Related Quality of Life. Data were analyzed using descriptive statistics and Spearman-rank correlation.
Results: Overall, the health-related quality of life in patients with acute coronary syndrome was high (Mean = 4.97, SD = 0.92), including in its subscales: emotional (Mean = 4.94, SD = 0.88), physical (Mean = 5.07, SD = 1.12), and social (Mean = 5.05, SD = 1.55) subscales. Significant factors related to health-related quality of life were pain (r = 0.296, p <0.001), functional status (r = 0.601, p <0.001), dyspnea (r = -0.438, p <0.001), and self-efficacy (r = 0.299, p <0.001). Meanwhile, age and social support had no significant relationships with health-related quality of life (p = 0.270, p = 0.059). Interestingly, social support was significantly correlated with the emotional subscale of health-related quality of life (r = 0.156, p = 0.034).
Conclusion: Functional status, pain, and self-efficacy were positively correlated with health-related quality of life, while dyspnea had a negative association. This finding serves as basic information for nurses and other healthcare professionals to consider the related factors identified in this study to improve nursing interventions in order to increase health-related quality of life among patients with acute coronary syndrome.

Keywords

health-related quality of life; acute coronary syndrome; pain; dyspnea; functional status; self-efficacy; Indonesia

Background

The Indonesian Heart Association (IHA) reports that coronary artery disease is the most common cause of mortality worldwide at 36% in 2020, as well as in Indonesia at 26.4% (Indonesian Heart Association, 2019). It has been supported by a previous report by World Health Organization (WHO) that ischemic heart disease has been growing in number and ranks second after stroke (WHO, 2015). Also, the ischemic disease is considered the second cause of the largest mortality (Usman et al., 2019). In addition, according to the Basic Health Research of Indonesia or called Riset Kesehatan Dasar (RISKESDAS), the prevalence of Coronary Heart Disease (CHD) based on doctor diagnosis was approximately 0.5% (883,447 persons), while based on medical doctor-diagnosis or symptoms, it was around 1.5% (2,650,340 persons) (Indonesian Ministry of Health, 2013). Regarding doctor diagnosis, West Java was the highest among all provinces in Indonesia, at 0.5% (160,812 patients) of the total CHD patients. Still, East Java had the highest data based on the symptoms at 1.5% (144,279 patients), and 95% were more than 25 years old (Indonesian Ministry of Health, 2013).

The terms Acute Coronary Syndrome (ACS) (OGara et al., 2013), Acute Myocardial Infarction (AMI), CardioVascular

Diseases (CVD), and even coronary heart disease are often used interchangeable, although there are some distinctions among those (Sanchis-Gomar et al., 2016). For example, American Heart Association (AHA) explains that ACS refers to a wide range of conditions by acute myocardial ischemia and infarction due to a sudden reduction in coronary blood flow (Amsterdam et al. (2014). But, then, another study explains that unstable angina (UA), non-ST-elevation myocardial infarction (NSTEMI), and ST-elevation myocardial infarction (STEMI) are also ACS. In contrast, NSTEMI and STEMI are included in Myocardial Infarction (MI) (Singh et al., 2022). Thus, it may create confusion.

However, despite the terms related-CHD, CAD or ACS affects the patients' mortality (Nuraeni et al., 2021). Major events related to myocardial infarction and angina in coronary heart disease were around 60% (Sanchis-Gomar et al., 2016). Mostly, patients with ACS, especially MI, could survive approximately 80% after coronary events; the youngest survivors are a high-risk group that needs crucial prevention programs for long-term care of AMI (Radisauskas et al., 2019). Nevertheless, in the Indonesian population, the amount of information on survival myocardial infarction is limited, but the number of CAD patients that encompass ACS has been shown to represent the AMI population.

The acute coronary syndrome has an impact on many aspects of patients' lives, including physical, psychological, emotional, and social elements (Aljabery et al., 2017; Krethong et al., 2008). Many patients in developing countries have a low Health-Related Quality of Life (HRQOL). For example, Aljabery et al. (2017) revealed that patients' quality of life was low in Jordan. The physical domain was the most affected, followed by the emotional and social domains. However, a low score of HRQOL can affect the recovery process, decrease compliance with treatments, reduce the capacity to perform activities of daily living, increase the rate of hospital readmission, and put the patient at risk for complications and death (Rodriguez & Mahaffey, 2016).

In Indonesia, to our knowledge, several local studies have been published on patients with ACS and Quality of Life (QOL). For instance, Santoso et al. (2017) reported that more than half of the patients with ACS have low QOL in Semarang, Indonesia. In addition, two research in Yogyakarta, Indonesia, revealed that almost half of the respondents had a poor quality of life in psychological and sexual aspects (Deiwi & Widaryati, 2015; Fitrari et al., 2015). Furthermore, Nuraeni et al. (2016) explored factors related to QOL in patients with ACS in Hasan Sadikin Hospital, Bandung, Indonesia. They found that revascularization, rehabilitation, anxiety, depression, and spiritual wellbeing had strong associations with QOL. However, these factors may not explain all factors related to QOL and not specifically focus on HRQOL. Thus, our study aimed to determine the level of HRQOL and its related factors in patients with ACS in West Java, Indonesia.

According to Wilson and Cleary Model (Wilson & Cleary, 1995), some factors are related to HRQOL, such as biological and physical factors, symptoms, functioning, and social support factors. But our study only focuses on individual characteristics (age and self-efficacy), symptom status (pain, dyspnea), functional status, and characteristic environment (social support). The rationales for each variable in our study are explained in the following.

Age. Age is the duration or a measure of time of the existence of an individual with ACS. Aging mechanism combined with inflammatory process and progression of atheroma with the formation and expansion of necrotic core, fibrous cap, matrix accumulation, and various degrees of plaque instability yields atherosclerotic. This process leads to STEMI and NSTE-ACS, in which this patient characteristic is having an imbalance between oxygen demand and supply (Dai et al., 2016). Thus, older adults have more classifications with more multivessel and main diseases. In other words, an increasing age decreases the physical health of HRQOL (Hawkes et al., 2013). Also, Jankowska-Polanska et al. (2016) also stated that older age could predict lower HRQOL in patients with ACS. Interestingly, another research showed no significant difference between age and quality of life (Thiruvisaakachelvy et al., 2019). Hence, it needs more exploration of whole HRQOL aspects among patients with ACS.

Self-efficacy. Self-efficacy is confidence in self-care ability (Bandura, 1977) and patient's belief regarding HRQOL, including illness management and rehabilitation (Banik et al., 2018). Healthcare professionals should focus on not only the physical aspect of the patients but also the quality of life in terms of physical, psychological, mental, and social life (Nuraeni et al., 2021). Motivating patients to involve in their health and disease management and assisting them is one of the best alternative ways. When the patients can deal with it, they will accept to live with this and reduce adverse effects on their life (Barham et al., 2019). Brink et al. (2012) reported that self-efficacy is positively associated with HRQOL.

Pain. Pain, or chest pain in this study, is typically described as pressure, burning, or squeezing sensation across the precordium, next, shoulder, jaw, arm, and abdomen (Coven et al., 2016). Physiologically, the pain will come upon a patient with ACS as the primary manifestation clinic and worsen if the ACS has dire prognoses (Amsterdam et al., 2014; Coven et al., 2016). In addition, there is an association between chest pain and HRQOL (Rieckmann et al., 2020).

Dyspnea. Dyspnea is shortness of breath or sensation of difficult and uncomfortable breathing that is common among those with ACS and is strongly associated with quality of life. Increasing oxygen demand leads to exertional chest and dyspnea (Coven et al., 2016). Thus, the higher dyspnea, the worse the quality of life (Arnold et al., 2009).

Functional Status. It is the capability to do daily activities (functional capacity, performance, reserve, and utilization). The functional status is often used interchangeably, such as health status, quality of life, physical functioning, physical activities, and activities of daily living (Bakas et al., 2012; Saiwutthikul et al., 2021). There is limited evidence to use this term on patients with ACS. According to Wu et al. (2016), the patients with better functional status had a better quality of life.

Social Support. Social support is indicated as a related factor to CHD (Khayyam-Nekouei et al., 2013). It is also supported by Wang et al. (2014) revealed that perceived social support significantly affected HRQOL. The social support can be from family, spouse, and community.

Health-related quality of life. It refers to health status and is viewed as a continuum of increasingly complex patient outcomes: biological/physiological factors, symptoms, functioning, and overall wellbeing or quality of life in patients with ACS (Wilson & Cleary, 1995).

On the other hand, in regard to the nursing significance of the study, HRQOL is one of the most important aspects of nursing outcomes (King, 2006). Nurses and advanced practice nurses have taken on key roles in caring for patients with ACS, CHD, or other cardiac diseases, particularly in evaluating lifestyle and managing single and multiple risk factors, including hypertension, smoking, lipids, diabetes, and other factors, through specialized clinics and programs in primary care, worksites, cardiac rehabilitation, and discharge planning. Thus, the results of this study help nurses understand the factors related to HRQOL, especially to improve nursing interventions in patients with ACS.

Methods

Study Design

A descriptive correlational design was used. This study was conducted at a top referral public hospital in Bandung, West Java, Indonesia.

Samples/Participants

A total of 186 patients in the outpatient department were included in this study. Purposive sampling was used in selecting the samples according to inclusion criteria: (i) age between 25 and 60 years old, (ii) CAD patient with a history of angina, NSTEMI, and STEMI, (iii) be able to speak, read, and write in Bahasa Indonesia, (iv) at least one month after discharge from hospital, (v) treated by medication and revascularization, (vi) having good hemodynamic and consciousness, and (vii) willing to be a participant in this study. The exclusion criteria were those with rheumatic heart disease, arrhythmia, and other unstable hemodynamic conditions.

Instruments

There are six parts of the instruments in this study: First, the socio-demographic characteristics section, which consists of close-open inquiries about age, gender, weight, height, marital status, smoking activity, diabetes mellitus history, education, occupation, and disease duration.

Second, Rose Questionnaire for Angina (RQA) to assess pain or chest pain. Initially, this instrument contained seven questions to define angina pectoris and indicated possible myocardial infarction by responding to a single question (Rose, 1962). If yes to questions 1 and 2, 3 or 4, 'stops or slow down' for question 5, 'relieved' for question 6, '10 min or less' for question 7, 'sternum' or 'left anterior chest and left arm' for question 8 diagnosed as 'incident case of angina pectoris' (Rahman et al., 2013). RQA has been translated into many languages, such as Hindi, Punjabi, Urdu, and Bengali (Fischbacher et al., 2001). To use in our study, this instrument has been translated into Bahasa Indonesia and obtained a Content-Validity Index (CVI) score of 0.95. As a result, we used one question about their chest pain history for having angina. This questionnaire is used for the diagnosis of angina. Hence, the patients have been diagnosed with ACS by physicians.

Third, the Rose Dyspnea Scale (RDS) (Rose et al., 1982), consisting of a 4-item questionnaire with a 1-month recall period, was used to assess patients' level of dyspnea with ordinary activities. For each patient, the highest limitation associated with dyspnea is the RDS score designated with a range from 0 to 4, which indicates no dyspnea for 0 and 4, indicating dyspnea with ordinary washing and dressing (similar to the New York Heart Association class scoring for heart failure). The RDS has been validated in patients with CAD and has shown to be associated with quality of life, rehospitalization, and long-term survival in patients with CAD (Arnold et al., 2009). In our study, the instrument was translated into Bahasa Indonesia and had a CVI score of 0.82.

Fourth, Seattle Angina Questionnaire (SAQ) to monitor disease-specific functional status. The instrument consists of 19-item consisting of physical limitation (question 1) caused by coronary artery disease, anginal stability (question 2) over the preceding month, frequency of angina symptoms (questions 3-4), satisfaction with treatment (questions 5-8), and patients' perceptions (questions 9-11) of how their coronary disease limits the quality of their lives. Scores range from 0 to 100, with higher scores indicating better health status. A clinically significant change is between 5 and 8 points (Chan et al., 2014; Spertus et al., 2000; Spertus et al., 1995). This instrument is available in the Bahasa Indonesia version from previous research (Nuraeni et al., 2016).

Fifth, General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1995) was used to measure self-efficacy. It is a 10-item questionnaire concerning self-confidence, e.g., dealing efficiently with unexpected events, handling unforeseen situations, and finding solutions to problems. Each question was answered using a 4-point scale with scores from not at all true =1 to exactly true = 4 (range 10-40). The Cronbach's alpha coefficient in the present sample from 23 countries ranged from 0.76 to 0.90, with the majority in the high 0.80s. The Indonesian version of this scale is available (Schwarzer & Jerusalem, 1995).

Sixth, the ENRICHD Social Support Inventory (ESSI) (Vaglio et al., 2004) was used, and it is suitable for a cardiac population that has been validated and reliably tested by many studies (Bucholz et al., 2014; Vaglio et al., 2004). The ESSI full version contains a 7-item self-report survey that assesses four social support domains: emotional, instrumental, informational, and appraisal. The remaining five items (1, 2, 3, 5, and 6) were summed to create a total score ranging from 5 to 25, with higher scores indicating greater perceived social support. This 5-item scale has been validated and highly correlated with the full-length 7-item scale. It has also been used in a previous study of patients with coronary artery disease (CAD) (Bucholz et al., 2014). In our research, this instrument was translated into Bahasa Indonesia, with a CVI of 1.0 and Cronbach's alpha of 0.67.

Seventh, MacNew heart disease health-related quality of life (MacNew) (Höfer et al., 2016) to measure HRQOL. This instrument consists of 27 items divided into three major domains (physical, emotional, and social) with a Likert scale from 1 to 7 for each item. The global score for the instrument ranges from 7 to 189. After that, the global score's mean was calculated, ending with a minimum score of one, indicating low QoL, and a maximum score of seven interpreted as high QoL. The score was calculated for the physical and social domain by the mean score of the 13 items representing the domain. In contrast, the emotional subscale was calculated by the mean score of the 14 items representing the domain. The scale has been translated to Bahasa Indonesia, with a CVI of 1.0 and Cronbach's alpha of 0.91.

In this study, the Back-Translation technique was used for the translation process of the instruments of RQA, RDS, SAQ, ESSI, and MAcNew. The instruments were translated from the English version to Bahasa Indonesia by two bilingual translators who were good both in English and Bahasa Indonesia. During the translation process, the focus of the experts was on cross-cultural and conceptual, rather than on linguistic/literal equivalence. For the validity testing of the Indonesian version, five experts in adult nursing, especially internal disease-specific cardiovascular, both academicians and practitioners in Indonesia, were included. The original authors granted permission to use all instruments, except for RQA, RDS, and ESSI, as they are open access licensed by WHO (Rose, 1962; Rose et al., 1982) and Vaglio et al. (2004).

Data Collection

Data were collected in 2020 by the researchers and a research assistant (a nurse). The first researcher coordinated with the nurse at the cardiovascular outpatient clinic department about the procedure of data collection. The nurse helped collect data by spreading questionnaires and recollected them from the participants. During the data collection, the researchers and the research assistant explained to patients the contents of the measurements and ensured that the instruments were fully understood comprehensively.

Data Analysis

Descriptive statistics and Spearmen rank correlation were used for statistical analysis in this study. The relationship magnitude and strength were determined by the following criteria: r = 0.10 - 0.29 (small or low relationship), 0.30 – 0.49 = medium relationship, and 0.50 – 1.0 = strong or high relationship (Cohen, 1988; Kyoungrim et al., 2019). The value of significance (2-tailed) is less than 0.05 significant at a 95% confidence interval. The Statistical Package for the Social Sciences, version 22.0 (SPSS 22.0), was used for analysis.

Ethical Consideration

This study was approved by the Institutional Review Board Ethical Committees of Hasan Sadikin General Hospital (approval no. LB.02.01/X.6.5/185/2020) and Health School Science of Bhakti Kencana. Informed consent was assured prior to data collection. This article was derived from a master thesis of the first author (Imam & Jitpanya, 2020).

Results

Characteristics of the Participants

Of the total participants, males were dominant (65.6%). Almost half of them had normal weight (44.6 %), while few patients had obesity class 1 (10.8%), obesity class 2 (2.2%), and underweight (3.2%). Less than half of them (32.8%) graduated from high school. Regarding occupation, almost a fourth of them were housewives (22%), followed by government officers and entrepreneurs (16.7%), employees (14.5%), laborers (9.1%), and others (8.6%). In addition, a fourth of them had a lower income (39.2%). For the characteristics of smoking activity and diabetes mellitus disease history, most participants were not smokers and had no diabetes mellitus (79%). For disease duration characteristics, 33.3% of the participants had ACS for 7-12 months (**Table 1**).

Table 1 Demographic characteristics of participants (N = 186)

Demographic Characteristics	*n*	%
Age (years)		
25-44	22	11.8
45-59	105	56.5
60-74	50	26.9
75-90	9	4.8
Mean, SD (55.69, 10.15)		
Min-Max (28-85)		
Gender		
Male	122	65.6
Female	64	34.4
Marital status		
Single	6	3.2
Married	162	87.1
Divorced/Widowed	18	9.7
Body Mass Index (BMI)		
Underweight	6	3.2
Normal Weight	83	44.6
Overweight	72	38.7
Obesity Class 1	20	10.8
Obesity Class 2	4	2.2
Extreme Obesity	1	0.5
Educational level		
Non-education	6	3.2
Primary school	42	22.6
Secondary school	21	11.3
High school	61	32.8
Diploma	18	9.7
College/University	38	20.4
Occupation		
Employee	27	14.5
Government Officer	31	16.7
Entrepreneur/Own Businessmen	31	16.7
Student	4	2.2
Worker	3	1.6
Labor	17	9.1
Farmer	2	1.1
Housewife	41	22.0
Unemployed	14	7.5
Others	16	8.6
Income (million Rupiahs/month)		
Low Income	73	39.2
Middle Income	20	10.8
High Income	30	16.1
Very High Income	63	33.9
Active Smoking		
Smoking	39	21
No Smoking	147	79
Diabetes mellitus		
Yes	39	21
No	147	79
Duration of disease (ACS)		
1-3	22	11.8
4-6	21	11.3
7-12	62	33.3
13-36	42	22.6
37-72	12	6.5
>72	27	14.5

Health-Related Quality of Life (HRQOL)

Overall, the health-related quality of life in patients with acute coronary syndrome was high (Mean = 4.97, SD = 0.92), including in its subscales: emotional (Mean = 4.94, SD = 0.88), physical (Mean = 5.07, SD = 1.12), and social subscale (Mean = 5.05, SD = 1.55) (**Table 2**).

Table 2 Distribution of mean and standard deviation of HRQOL and its subscales (*N* = 186)

HRQOL	Mean	SD
Global score (Total score)	4.97	0.92
Emotional subscale score	4.94	0.88
Physical subscale score	5.07	1.12
Social subscale score	5.05	1.55

Factors Related to Health-Related Quality of Life

Table 3 shows that pain (*r* = 0.296, *p* <0.001), functional status (*r* = 0.601, *p* <0.001), self-efficacy (*r* = 0.299, *p* <0.001) had positive significant relationships with HRQOL and its domains. While dyspnea was negatively correlated (*r* = -0.438, *p* <0.001) with HRQOL and its subscales. Surprisingly, no significant correlation between age and total global score of HRQOL (*r* = 0.081, *p* = 0.270) including with all subscales: emotional (*r* = 0.123, *p* = 0.095), physical (*r* = 0.058, *p* = 0.438), and social subscales (*r* = 0.093, *p* = 0.205). Similarly, there was no significant relationship between social support and the total score of HRQOL (*r* = 0.139, *p* = 0.059) but significantly correlated with the emotional subscale (*r* = 0.156, *p* = 0.034).

Regarding strength association among variables, only functional status had a strong relationship with total score of HRQOL (*r* = 0.601) and in almost all subscales, such as for physical (*r* = 0.605) and social (*r* = 0.586) subscales, except for emotional dimension (*r* = 0.488). Dyspnea had a negative and medium correlation with total global score (*r* = -0.438) and its all dimensions – emotional (*r* = -0.367), physical (*r* = -0.445), and social (*r* = -0.455) dimensions.

In contrast, chest pain and self-efficacy had positive and low correlations with the total global score. As seen from the subscales, self-efficacy had a moderate relationship with the emotional subscale (*r* = 0.349), and pain had a medium correlation with the physical subscale (*r* = 0.314). For the social support variable, a weak correlation was found with the emotional subscale of HRQOL (*r* = 0.156).

Table 3 Correlations between independent variables and HRQOL

Variables	HRQOL (Total score)		Emotional Subscale		Physical Subscale		Social Subscale	
	r	*p*-value	*r*	*p*-value	*r*	*p*-value	*r*	*p*-value
Age	0.081	0.270	0.123	0.095	0.058	0.438	0.093	0.205
Chest pain	0.296	<0.001*	0.237	<0.001*	0.314	<0.010*	0.265	<0.001*
Dyspnea	-0.438	<0.001*	-0.367	<0.001*	-0.445	<0.001*	-0.455	<0.01*
Functional status	0.601	<0.001*	0.488	<0.001*	0.605	<0.001*	0.586	<0.001*
Self-efficacy	0.299	<0.001*	0.349	<0.001*	0.287	<0.001*	0.286	<0.001*
Social support	0.139	0.059	0.156	0.034*	0.080	0.276	0.096	0.194

*Correlation is significant at *p*-value <0.05 (2-tailed)

Discussion

This study aimed to determine the level of HRQOL and its related factors among patients with ACS in West Java, Indonesia. Surprisingly, the average of the HRQOL (total score and all subscales) was high compared to the level of HRQOL among these kinds of patients from previous studies (Aljabery et al., 2017; Kahyaoglu Sut & Unsar, 2011; Santoso et al., 2017).

In addition, our study revealed that functional status, self-efficacy, pain, and dyspnea had significant relationships with HRQOL and its subscales. Of all variables, only functional status had a strong positive relationship with HRQOL. This is in line with Wu et al. (2016) indicated that functional status was positively associated with quality of life. Further, the additional knowledge from our study that the functional status had a strong correlation in physical and social subscales of HRQOL, except in the emotional subscale, only a medium association.

A significant correlation between self-efficacy and HRQOL was also determined, but with a low positive correlation. However, this indicated that the patients have a belief about their abilities to complete their tasks in daily routines that could enhance to master patients' sense of living with the disease (Bandura, 1977), which increases the overall quality of life (Loo et al., 2016). In other words, when these patients have good confidence to preserve functioning in daily life, it could be seen that they have improved their quality of life (Peters et al., 2019). Indeed, self-efficacy assessment is a standard approach to measuring the potential of self-management (Tan, 2016). Moreover, HRQOL is a recognition concern as the outcome (Ali et al., 2020). So, the enhancing effect of chronic care is associated with self-efficacy improvement (Peters et al., 2019). However, the study results were in line with Barham et al. (2019) and Brink et al. (2012) reported that self-efficacy is positively associated with HRQOL.

Additionally, our study revealed that pain had a low positive significant correlation with HRQOL. However, this aligns with Rieckmann et al. (2020) found an association between chest pain and HRQOL. Rationally, ischemic will decrease blood flow in the coronary artery, leading to chest pain. Handrinos et al. (2014) stated that chest pain is the most complaint correlated to a concordant diagnosis of ACS. Consequently, the patients will limit their activities and decrease their physical quality of life (Rieckmann et al., 2020).

Dyspnea has a moderate negative correlation with HRQOL. This, however, makes sense that if dyspnea occurs, the patients feel uncomfortable breathing and limit their movement. In other words, the more dyspnea, the more suffering the life of the patients. This is in line with Barnett et al. (2017) and Arnold et al. (2009) that dyspnea was most common in patients with ACS and was negatively related to the quality of life.

Interestingly, there was no correlation between age and HRQOL in our study. As seen from the data, the age variable had an SD score of 10.15, which describes the spreading of data from the smallest number to the most prominent data. Thus, according to our study, all age groups could have ACS, not only older people but also younger patients (68%), especially the age group 25 – 44 who had a low emotional dimension of HRQOL. However, this finding was in line with Hawkes et al. (2013) said that younger people had lower mental or emotional health, but it is not in line with the decreased physical health of HRQOL among older adults (Hawkes et al., 2013). Additionally, from the study findings, getting old with ACS does not mean the patients will have low or high HRQOL. Age does not do anything with life quality. Further, this research has one similar result showing no significant difference between age and quality of life and its subscale (Thiruvisaakachelvy et al., 2019).

In addition, social support had no correlation with HRQOL. This is not in line with Wang et al. (2014) and Khayyam-Nekouei et al. (2013) revealed that perceived social support had a significant relationship with HRQOL. However, it is also interesting to note that although social support, in terms of the total score, had no significant association with HRQOL, it was statistically significant with the emotional subscale of HRQOL. This is the additional knowledge to understand how social support affects HRQOL in patients with ACS.

Implications for Nursing Practice

The study revealed that self-efficacy, pain, dyspnea, functional status, and social support were significantly associated with HRQOL. Therefore, this study has several implications for nursing practice: First, enhancing self-efficacy by nurses among patients with ACS is necessary. It can be done through consultation, health education programs, and life goals workshops.

Second, it is related to chest pain. Nurses need to assess or educate the patients on how to manage the pain, such as using distraction, deep breathing, guided imagery, and other methods. Additionally, it may be related to healthcare-seeking behavior, drug adherence, and knowledge. Nurses need to identify more about pain management, which can be an issue to explore for future studies.

Third, regarding dyspnea. Nurses need to teach the patients how to manage dyspnea or at least know how to identify the triggers, know physical activities limitation, and understand the possibility of side effects from the medicine. Also, providing an intolerance assessment form when patients complain of dyspnea may be necessary. During control, the patients could be trained to increase tolerance in their activities or self-detection-related strenuous activity.

Fourth, it is related to functional status. Indeed, being physically active is a major step for patients with ACS. However, there is no fastest process. Nurses need to keep reminding the patients to keep weight under control, no high cholesterol, no high blood sugar, and no high blood pressure, which requires strict and discipline behavior.

Fifth, for the social support variable, our study tells that it is essential and contributes to the emotional dimension of the patients. However, it also indicates that nurses and other healthcare professionals need to improve social support in order to have an impact on all dimensions of HRQOL, especially physical and social dimensions. Social support is basically one of the sources of motivation for the patients to move on and enhance their quality of life. Nurses need to remind the patients' families, alternatives, and friends that their roles are important to the patients.

Last, it is recommended for the Government of Indonesia, the Ministry of Health, Policymakers, and hospital and healthcare center managers to provide an integrated system to prevent any advanced problems regarding the cardiac event and to promote healthy living to avoid any risk factors, such as an expansion of free smoking area and physical activity area, providing more green area, and routine medical checkup.

Limitations and Recommendations for Future Studies

This study's findings might not represent West Java and Indonesia because data were gathered only in the central city. Therefore, further research is needed with a larger, multiethnic sample to understand HRQOL in patients with ACS in Indonesia. In addition, the study findings did not present cause effects; thus, a causal model to confirm the factors and predict HRQOL is needed for future studies. Also, an intervention study to improve HRQOL is necessary.

Conclusion

Pain, functional status, social support, and self-efficacy were positively correlated with HRQOL, while dyspnea was negatively associated. In addition, age had no relationship with HRQOL. The study results serve as inputs for nurses and other healthcare professionals to understand the factors influencing HRQOL. The study results can also be used to develop interventions to control and manage symptoms and physical activity, improve self-efficacy, enhance social support, and increase the quality of life among patients with ACS.

Declaration of Conflicting Interest

All authors declare no conflict of interest in this study.

Funding

1) Graduate Scholarship Program for ASEAN Countries, Chulalongkorn University, Bangkok, Thailand, and 2) Teaching Assistantship Scholarship, Graduate School, Chulalongkorn University, Bangkok, Thailand.

Acknowledgment

The authors acknowledge the Graduate Scholarship Program for ASEAN Countries and the Teaching Assistantship Scholarship, Graduate School, Chulalongkorn University, for all the funding support. Also, gratitude to the Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand, for all valuable support. Sincere appreciation also to Assoc. Prof. Capt. Dr. Yupin Aungsuroch and Assist. Prof. Teera Sindecharak for their insightful comments and suggestions in this study. In addition, the authors also thank the Directors, doctors, nurses, research assistant (Rini Yuliarti, S.Kep, Ners), and other staff of Hasan Sadikin General Hospital and Regional Hospital of Majalaya, Indonesia, for their unconditional support, as well as all the experts (Prof. Kusman Ibrahim, PhD, RN; Joko Gunawan, PhD; Cecep Eli Kosasih, PhD; Titis Kurniawan, PhD; Nurlaeci, M.Kep; Noviyah, S.Kep, Ners) who helped in the instruments' translation and validation.

Authors' Contributions

All authors contributed equally to this study according to ICMJE authorship criteria, except for data collection by the first author (HI). The second author (CJ) was the thesis advisor of the first author in this study. Furthermore, all authors approved the final version of the article and agreed to be accountable for all stages of the study.

Authors' Biographies

Haerul Imam, RN is a master's nursing student at the Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand.

Chanokporn Jitpanya, PhD, RN is an Associate Professor at the Srisavarindhira Thai Red Cross Institute of Nursing, Bangkok, Thailand.

Data Availability

The datasets generated during and analyzed during the current study are available from the corresponding author on reasonable request.

References

Ali, A., Rasheed, A., & Naz, S. (2020). Health-related quality of life of nurses working in Tertiary Care Hospital of Karachi. *Pakistan Journal of Medical Sciences*, *36*(3), 490-495. https://doi.org/10.12669%2Fpjms.36.3.1267

Aljabery, M. A., Saifan, A. R., AbuRuz, M. E., Masa'Deh, R., & Hayeah, H. M. A. (2017). Quality of life among patients with acute coronary syndrome. *IOSR Journal of Nursing and Health Science*, *6*(2), 23-30.

Amsterdam, E. A., Wenger, N. K., Brindis, R. G., Casey, D. E., Ganiats, T. G., Holmes, D. R., Jaffe, A. S., Jneid, H., Kelly, R. F., Kontos, M. C., Levine, G. N., Liebson, P. R., Mukherjee, D., Peterson, E. D., Sabatine, M. S., Smalling, R. W., & Zieman, S. J. (2014). 2014 AHA/ACC Guideline for the Management of Patients With Non–ST-Elevation Acute Coronary Syndromes: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Journal of the American College of Cardiology*, *64*(24), e139-e228. https://doi.org/10.1016/j.jacc.2014.09.017

Arnold, S. V., Spertus, J. A., Jones, P. G., Xiao, L., & Cohen, D. J. (2009). The impact of dyspnea on health-related quality of life in patients with coronary artery disease: Results from the PREMIER registry. *American Heart Journal*, *157*(6), 1042-1049. https://doi.org/10.1016/j.ahj.2009.03.021

Bakas, T., McLennon, S. M., Carpenter, J. S., Buelow, J. M., Otte, J. L., Hanna, K. M., Ellett, M. L., Hadler, K. A., & Welch, J. L. (2012). Systematic review of health-related quality of life models. *Health and Quality of Life Outcomes*, *10*(1), 1-12. https://doi.org/10.1186/1477-7525-10-134

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191-215. https://psycnet.apa.org/doi/10.1037/0033-295X.84.2.191

Banik, A., Schwarzer, R., Knoll, N., Czekierda, K., & Luszczynska, A. (2018). Self-efficacy and quality of life among people with cardiovascular diseases: A meta-analysis. *Rehabilitation Psychology*, *63*(2), 295-312. https://psycnet.apa.org/doi/10.1037/rep0000199

Barham, A., Ibraheem, R., & Zyoud, S. e. H. (2019). Cardiac self-efficacy and quality of life in patients with coronary heart disease: A cross-sectional study from Palestine. *BMC Cardiovascular Disorders*, *19*, 290. https://doi.org/10.1186/s12872-019-01281-7

Barnett, L. A., Prior, J. A., Kadam, U. T., & Jordan, K. P. (2017). Chest pain and shortness of breath in cardiovascular disease: A prospective cohort study in UK primary care. *BMJ Open*, *7*(5), e015857. http://dx.doi.org/10.1136/bmjopen-2017-015857

Brink, E., Alsén, P., Herlitz, J., Kjellgren, K., & Cliffordson, C. (2012). General self-efficacy and health-related quality of life after myocardial infarction. *Psychology, Health & Medicine*, *17*(3), 346-355. https://doi.org/10.1080/13548506.2011.608807

Bucholz, E. M., Strait, K. M., Dreyer, R. P., Geda, M., Spatz, E. S., Bueno, H., Lichtman, J. H., D'Onofrio, G., Spertus, J. A., & Krumholz, H. M. (2014). Effect of low perceived social support on health outcomes in young patients with acute myocardial infarction: results from the variation in recovery: Role of gender on outcomes of young AMI patients (VIRGO) study. *Journal of the American Heart Association*, *3*(5), e001252. https://doi.org/10.1161/JAHA.114.001252

Chan, P. S., Jones, P. G., Arnold, S. A., & Spertus, J. A. (2014). Development and validation of a short version of the Seattle angina questionnaire. *Circulation: Cardiovascular Quality and Outcomes*, *7*(5), 640-647. https://doi.org/10.1161%2FCIRCOUTCOMES.114.000967

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: Routledge.

Coven, D. L., Compton, S. J., Kalyanasundaram, A., Shirani, J., Windle, M. L., Yang, E. H., Basson, C. T., Bessman, E., Brown, D. F., Compton, S. J., & Setnik, G. (2016). *Acute Coronary Syndrome Clinical Presentation*. https://emedicine.medscape.com/article/1910735-clinical

Dai, X., Busby-Whitehead, J., & Alexander, K. P. (2016). Acute coronary syndrome in the older adults. *Journal of Geriatric Cardiology*, *13*(2), 101-108. https://doi.org/10.11909/j.issn.1671-5411.2016.02.012

Deiwi, J. K., & Widaryati, W. (2015). *Hubungan jenis sindrom koroner akut dengan kualitas hidup aspek psikologis pada pasien pasca serangan jantung yang dirawat di RS PKU Muhammadiyah Yogyakarta [The relationship between types of acute coronary syndrome with quality of life psychological aspects in post-heart attack patients treated at PKU Muhammadiyah Hospital Yogyakarta]* [Thesis, STIKES'Aisyiyah Yogyakarta]. Yogyakarta, Indonesia.

Fischbacher, C. M., Bhopal, R., Unwin, N., White, M., & Alberti, K. (2001). The performance of the Rose angina questionnaire in South Asian and European origin populations: A comparative study in Newcastle, UK. *International Journal of Epidemiology*, *30*(5), 1009-1016. https://doi.org/10.1093/ije/30.5.1009

Fitrari, Lia, & Widaryati. (2015). *Hubungan jenis sindrom koroner akut dengan kualitas hidup aspek seksual pasien pasca serangan jantung di RS PKU Muhammadiyah Yogyakarta [The relationship between types of acute coronary syndrome and quality of life in sexual aspects of patients after a heart attack at PKU Muhammadiyah Hospital Yogyakarta]* [Thesis, STIKES 'Aisyiyah Yogyakarta]. Yogyakarta, Indonesia.

Handrinos, A., Braitberg, G., & Mosley, I. T. (2014). Acute coronary syndrome diagnosis at hospital discharge: How often do we get it right in the emergency department? *Emergency Medicine Australasia : EMA*, *26*(2), 153-157. https://doi.org/10.1111/1742-6723.12165

Hawkes, A. L., Patrao, T. A., Ware, R., Atherton, J. J., Taylor, C. B., & Oldenburg, B. F. (2013). Predictors of physical and mental health-related quality of life outcomes among myocardial infarction patients. *BMC Cardiovascular Disorders*, *13*(1), 1-9. https://doi.org/10.1186/1471-2261-13-69

Höfer, S., Turk-Adawi, K., & Oldridge, N. (2016). The MacNew heart disease health-related quality of life questionnaire: Updated reference data for users. *European Journal for Person Centered Healthcare*, *4*(1), 221-229. http://dx.doi.org/10.5750/ejpch.v4i1.1076

Imam, H., & Jitpanya, C. (2020). *Factors related to health-related quality of life in patients with acute coronary syndrome in West Java, Indonesia* [Master Thesis, Chulalongkorn University]. Bangkok, Thailand.

Indonesian Heart Association. (2019). *Press Release, World Heart Day PERKI 2019*. http://www.inaheart.org/news_and_events/news/2019/9/26/press_release_world_heart_day_perki_2019

Indonesian Ministry of Health. (2013). *Basic health research (Riset kesehatan dasar)* https://pusdatin.kemkes.go.id/resources/download/general/Hasil%20Riskesdas%202013.pdf

Jankowska-Polanska, B., Uchmanowicz, I., Dudek, K., & Loboz-Grudzien, K. (2016). Sex differences in the quality of life of patients with acute coronary syndrome treated with percutaneous coronary intervention after a 3-year follow-up. *Patient Preference and Adherence*, *10*, 1279-1287. https://doi.org/10.2147%2FPPA.S106577

Kahyaoglu Sut, H., & Unsar, S. (2011). Is EQ-5D a valid quality of life instrument in patients with acute coronary syndrome? *Anatolian Journal of Cardiology/Anadolu Kardiyoloji Dergisi*, *11*(2), 156-162. https://doi.org/10.5152/akd.2011.037

Khayyam-Nekouei, Z., Neshatdoost, H., Yousefy, A., Sadeghi, M., & Manshaee, G. (2013). Psychological factors and coronary heart disease. *ARYA Atherosclerosis*, *9*(1), 102-111.

King, C. R. (2006). Advances in how clinical nurses can evaluate and improve quality of life for individuals with cancer. *Oncology Nursing Forum*, *33*(1), 5-12.

Krethong, P., Jirapaet, V., Jitpanya, C., & Sloan, R. (2008). A causal model of health-related quality of life in Thai patients with heart-failure. *Journal of Nursing Scholarship*, *40*(3), 254-260. https://doi.org/10.1111/j.1547-5069.2008.00235.x

Kyoungrim, K., Gholizadeh, L., Inglis, S. C., & Hae-Ra, H. A. N. (2019). Validation of the Korean version of the MacNew heart disease health-related quality of life questionnaire. *Journal of Nursing Research*, *27*(2), e11. https://doi.org/10.1097/jnr.0000000000000274

Loo, D. W. Y., Jiang, Y., Koh, K. W. L., Lim, F. P., & Wang, W. (2016). Self-efficacy and depression predicting the health-related quality of life of outpatients with chronic heart failure in Singapore. *Applied Nursing Research*, *32*, 148-155. https://doi.org/10.1016/j.apnr.2016.07.007

Nuraeni, A., Anna, A., Praptiwi, A., & Nurhamsyah, D. (2021). Illness cognition and depression among patients with coronary heart disease. *Belitung Nursing Journal*, *7*(4), 304-310. https://doi.org/10.33546/bnj.1540

Nuraeni, A., Mirwanti, R., Anna, A., Prawesti, A., & emaliyawati, e. (2016). Faktor yang memengaruhi kualitas hidup pasien dengan penyakit jantung koroner [Factors influencing quality of life in patients with coronary heart disease]. *Jurnal Keperawatan Padjadjaran*, *4*(2), 107-116. https://doi.org/10.24198/jkp.v4i2.231

OGara, P. T., Kushner, F. G., Ascheim, D. D., Casey, D. E., Chung, M. K., de Lemos, J. A., Ettinger, S. M., Fang, J. C., Fesmire, F. M., Franklin, B. A., Granger, C. B., Krumholz, H. M., Linderbaum, J. A., Morrow, D. A., Newby, L. K., Ornato, J. P., Ou, N., Radford, M. J., Tamis-Holland, J. E., . . . Zhao, D. X. (2013). 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction. *Circulation*, *127*(4), e362-e425. http://doi.org/10.1161/CIR.0b013e3182742cf6

Peters, M., Potter, C. M., Kelly, L., & Fitzpatrick, R. (2019). Self-efficacy and health-related quality of life: A cross-sectional study of primary care patients with multi-morbidity. *Health and Quality of Life Outcomes*, *17*, 37. https://doi.org/10.1186/s12955-019-1103-3

Radisauskas, R., Kirvaitiene, J., Bernotiene, G., Virviciutė, D., Ustinaviciene, R., & Tamosiunas, A. (2019). Long-term survival after acute myocardial infarction in Lithuania during transitional period (1996–2015): Data from population-based Kaunas Ischemic heart disease register. *Medicina*, *55*(7), 357. https://doi.org/10.3390/medicina55070357

Rahman, M. A., Spurrier, N., Mahmood, M. A., Rahman, M., Choudhury, S. R., & Leeder, S. (2013). Rose Angina Questionnaire: Validation with cardiologists' diagnoses to detect coronary heart disease in Bangladesh. *Indian Heart Journal*, *65*(1), 30-39. https://doi.org/10.1016/j.ihj.2012.09.008

Rieckmann, N., Neumann, K., Feger, S., Ibes, P., Napp, A., Preuß, D., Dreger, H., Feuchtner, G., Plank, F., & Suchánek, V. (2020). Health-related qualify of life, angina type and coronary artery disease in patients with stable chest pain. *Health and Quality of Life Outcomes*, *18*(1), 1-10. https://doi.org/10.1186/s12955-020-01312-4

Rodriguez, F., & Mahaffey, K. W. (2016). Management of patients with NSTE-ACS: A comparison of the recent AHA/ACC and ESC guidelines. *Journal of the American College of Cardiology*, *68*(3), 313-321. https://doi.org/10.1016/j.jacc.2016.03.599

Rose, G. A. (1962). The diagnosis of ischaemic heart pain and intermittent claudication in field surveys. *Bulletin of the World Health Organization*, *27*(6), 645-658.

Rose, G. A., Blackburn, H., Gillum, R. F., & Prineas, R. J. (1982). Cardiovascular survey methods. *World Health Organization Monograph Series*, *56*, 1–888.

Saiwutthikul, S., Siripitayakunkit, A., & Duangbubpha, S. (2021). Selected factors related to physical activity among persons with heart failure in a university-affiliated hospital, Bangkok, Thailand. *Belitung Nursing Journal*, *7*(6), 500-507. https://doi.org/10.33546/bnj.1829

Sanchis-Gomar, F., Perez-Quilis, C., Leischik, R., & Lucia, A. (2016). Epidemiology of coronary heart disease and acute coronary syndrome. *Annals of Translational Medicine*, *4*(13), 256. https://doi.org/10.21037%2Fatm.2016.06.33

Santoso, T., Sujianto, U., & Susilawati, D. (2017). Factors affecting quality of life in patients with coronary artery disease. *Indonesian Journal of Nursing Practices*, *1*(3), 133-139. https://doi.org/10.18196/ijnp.1371

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). NFER-NELSON.

Singh, A., Museedi, A. S., & Grossman, S. A. (2022). *Acute coronary syndrome*. Treasure Island, FL: StatPearls Publishing.

Spertus, J. A., McDonell, M., Woodman, C. L., & Fihn, S. D. (2000). Association between depression and worse disease-specific functional status in outpatients with coronary artery disease. *American Heart Journal*, *140*(1), 105-110. https://doi.org/10.1067/mhj.2000.106600

Spertus, J. A., Winder, J. A., Dewhurst, T. A., Deyo, R. A., Prodzinski, J., McDonnell, M., & Fihn, S. D. (1995). Development and evaluation of the Seattle Angina questionnaire: A new functional status measure for coronary artery disease. *Journal of the American College of Cardiology*, *25*(2), 333-341. https://doi.org/10.1016/0735-1097(94)00397-9

Tan, N. C. (2016). Self-efficacy assessment: A step towards personalized management of chronic diseases. *Proceedings of Singapore Healthcare*, *25*, 71-71. https://doi.org/10.1177%2F2010105816643738

Thiruvisaakachelvy, B., Ab Manap, N., Khalid, K. B. M. K. M., Alias, M. N. B. A., & Jamaludin, N. B. (2019). Quality of life among post acute myocardial infarction patient. *ILKKM Journal of Medical and Health Sciences*, *1*(1), 20-24.

Usman, Y., Iriawan, R. W., Rosita, T., Lusiana, M., Kosen, S., Kelly, M., Forsyth, S. J., & Rao, C. (2019). Indonesia's sample registration system in 2018: A work in progress. *Journal of Population and Social Studies*, *27*(1), 39-52. https://doi.org/10.25133/JPSSv27n1.003

Vaglio, J., Conard, M., Poston, W. S., O'Keefe, J., Haddock, C. K., House, J., & Spertus, J. A. (2004). Testing the performance of the ENRICHD Social Support Instrument in cardiac patients. *Health and Quality of Life Outcomes*, *2*(1), 1-5. https://doi.org/10.1186/1477-7525-2-24

Wang, W., Lau, Y., Chow, A., Thompson, D. R., & He, H.-G. (2014). Health-related quality of life and social support among Chinese patients with coronary heart disease in mainland China. *European Journal of Cardiovascular Nursing*, *13*(1), 48-54. https://doi.org/10.1177/1474515113476995

WHO. (2015). *Indonesia : WHO Statistical Profile*. http://www.who.int/gho/countries/idn.pdf?ua=1

Wilson, I. B., & Cleary, P. D. (1995). Linking clinical variables with health-related quality of life: A conceptual model of patient outcomes. *JAMA*, *273*(1), 59-65. https://doi.org/10.1001/jama.1995.03520250075037

Wu, J.-R., Lennie, T. A., Frazier, S. K., & Moser, D. K. (2016). Health-related quality of life, functional status and cardiac event-free survival in patients with heart failure. *The Journal of Cardiovascular Nursing*, *31*(3), 236-244. https://doi.org/10.1097%2FJCN.0000000000000248

Cite this article as: Imam, H., & Jitpanya, C. (2022). Factors related to health-related quality of life in patients with acute coronary syndrome in West Java, Indonesia: A correlational study. *Belitung Nursing Journal, 8*(4), 349-356. https://doi.org/10.33546/bnj.1247