

ORIGINAL RESEARCH

The Relationships between Physical and Emotional Symptoms and Health-Related Quality of Life of Patients after Percutaneous Coronary Intervention



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Abstract

Background: Percutaneous coronary intervention (PCI) for myocardial infarction patients has been shown to provide outstanding results, yet research has shown that patient quality of life varies. However, few studies have been done on the physical and emotional symptoms that impact health-related quality of life (HRQoL) of patients who have undergone PCI.

Purpose: This study aimed to identify physical (fatigue, angina, dyspnea) and emotional (stress, anxiety, depression) symptoms related to HRQoL of myocardial infarction patients after PCI.

Methods: This study used a cross-sectional approach. A total of 154 patients, who were recruited using a purposive sampling method, participated in this study. The Fatigue Assessment Scale (FAS), the Seattle Angina Questionnaire-7 (SAQ-7), the Dyspnea scale (modified MRC score), the Depression, Anxiety, Stress Scale 21 (DASS-21), and the MacNew Quality of Life Questionnaire were all used to collect the data. Linear regressions were used to analyze the data.

Results: The mean of the global HRQoL score was 5.11(0.90). Results on physical symptoms showed that a total of 49.4% of participants reported fatigue; the mean angina score was 69.6(12.06), and the mean score of dyspnea level was 0.63(0.92). Emotional symptoms reported that stress was at an average level (83.1%), anxiety was at a moderate level (63%), and depression was at a standard level (72.7%). The multiple linear regression analyses revealed fatigue ($\beta=-0.22$), angina ($\beta=0.30$), and anxiety ($\beta=-0.32$) as the factors related to HRQoL.

Conclusion: Despite having a PCI after an acute myocardial infarction, the patients' HRQoL was above the middle score. It was discovered that anxiety, angina, and fatigue predicted HRQoL in patients with myocardial infarction after PCI.

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1. Introduction

Cardiovascular diseases remain the leading killer in Indonesia and around the world. According to the data, there are 4.2 million cardiovascular disease sufferers in Indonesia, where the prevalence of the condition is 15 per 1000 individuals (Ministry of Health RI, 2018). In 2016, 17.9 million deaths out of 57 million deaths (31%) worldwide were caused by cardiovascular disease (World Health Organization, 2021). By 2035, it is predicted that 40% of people in the United States will live with cardiovascular disease (American Heart Association, 2017). Among non-communicable diseases in those under 70, cardiovascular disease ranks first in mortality (37%), and developing nations account for 85% of these fatalities. An Institute for Health Metrics and Evaluation (IHME) report stated that coronary heart disease is responsible for 14.4% of deaths in Indonesia. Lifestyle, smoking, and diet are the main contributors to coronary heart disease (CHD), so it is suggested that 50% of patients with CHD have the potential to experience sudden cardiac arrest or sudden cardiac death (Ministry of Health RI, 2018).

PCI is a non-surgical, invasive procedure that aims to reduce coronary artery narrowing or occlusion and increase blood flow to ischemic tissue. Contrary to alternative treatments like coronary artery bypass grafting (CABG), PCI has a number of benefits, including faster recovery, better clinical improvement, higher success rates, and a lower post-procedural mortality rate (Moreno et al., 2020). However, even after receiving PCI, these patients' health-related quality of

life (HRQoL) declined, as seen by their activity limitations, emotional instability, and decreased social engagement (Murphy et al., 2019). Along with mortality and recurrence rates, HRQoL is an important outcome measure for PCI patients (Van Nguyen et al., 2021). By taking into account a number of proven predictors of decreased quality of life following acute coronary syndrome, it was discovered that acute coronary syndrome patients had lower quality of life in general health, physical health, and well-being than the general population (Mollon & Bhattacharjee, 2017).

Quality of life after acute coronary syndrome is influenced by factors such as age, gender, occupation, income, lifestyle, depression, social support, self-efficacy, coping mechanisms, medication adherence, hypertension, alcohol use, smoking, and anxiety (Brink et al., 2012; Hawkes et al., 2013; Krack et al., 2018; Panther & Kritpracha, 2011; Wang et al., 2014). Another study discovered a strong correlation between a patient's gender, occupation, marital status, number of hospitalizations, Canadian Cardiovascular Society (CCS) angina grade, angina severity, type of treatment, and dimensions of quality of life in patients with angina pectoris (Kharama et al., 2014). Further research revealed that age, marital status, the role of the primary caregiver, the amount of time after the initial PCI, the New York Heart Association (NYHA) functional class, anxiety, and depression were all substantially associated with HRQoL in patients who had undergone PCI (Kim, 2022). To provide customized nursing interventions for patients with post-acute coronary syndrome after PCI, it is essential to comprehend the elements that affect patients' quality of life.

While creating a potent nursing intervention to enhance the quality of life, it is essential to take the reasons for the low quality of life score into account. The purpose of the quality of life evaluation in this study is to uncover additional aspects of the patient's life that impact their quality of life and evaluate the effectiveness of the patient's therapy. Moreover, PCI patients have shown high levels of anxiety (Murphy et al., 2019), and the HRQoL of PCI patients is negatively correlated with both depression and anxiety (Liu et al., 2018). Nevertheless, no previous studies have been conducted on the physical and emotional symptoms that affect HRQoL in patients undergoing PCI. Therefore, this study aimed to identify the physical and emotional symptoms that influence health-related quality of life in patients with myocardial infarctions after percutaneous coronary intervention. The physical symptoms, including fatigue, angina, and dyspnea, and emotional symptoms that consist of stress, anxiety, and depression, were examined in this study. The findings of this study offer valuable information for creating patient interventions and education strategies.

2. Methods

2.1 Research design

This study was a cross-sectional descriptive correlational study. This study examined the relationships between physical symptoms, such as fatigue, angina, and dyspnea, and emotional symptoms, such as depression, anxiety, and stress, with HRQoL in patients with myocardial infarctions after PCI.

2.2 Setting and samples

This study was conducted in a referral hospital in Sumatera Island, Indonesia, which runs a regional cardiovascular center. This hospital runs a primary PCI-capable center, an intensive coronary care unit, and an outpatient cardiac clinic. Data were collected from May to June 2022 using questionnaires.

The participants involved in the study were patients after PCI recruited from outpatient cardiac clinics who met the following inclusion criteria: (1) having a history of myocardial infarction, (2) having had the first PCI treatment for longer than three months for physiological and psychological adaptation after treatment, (3) age between 30-75 years old, (4) having no cognitive impairment, and (5) being able to communicate and understand Bahasa Indonesia as well as to answer the questionnaires. Then, α level of 0.05, a confidence level of 95%, and a margin of error of 5% were used for sample size determination (Serdar et al., 2021). Therefore, a sample size of 154 was calculated. A total of 162 patients agreed to participate in this study, and after checking for incomplete data, eight patients were excluded from the analysis. Finally, 154 participants were included in the data analysis. The sampling method was a non-probability purposive sampling method. Patients with myocardial infarction after PCI who visited the cardiac clinic and met the criteria were enrolled in this study.

2.3 Measurement and data collection

The instruments used in this study included the Indonesian version of the following five questionnaires that had been previously used in Indonesia: (1) the Fatigue Assessment Scale (FAS), (2) the Seattle Angina Questionnaire-7 (SAQ-7), (3) the Dyspnea scale (modified MRC score), (4) the Depression, Anxiety, Stress Scale 21 (DASS-21), and (5) the MacNew Quality of Life Questionnaire. A summary of the instruments and their psychometric properties is presented in Table 1. Demographic data included age, gender, level of education, employment status, marital status, and economic status. Biological and disease-related data were extracted from electronic patient records, including comorbidities, weight, and height.

Table 1. Characteristics of instruments used in this study and their psychometric properties

Scales/ subscales	Number of items	Score	Responses	Validity	Internal Consistency (Cronbach's alpha)
The Fatigue Assessment Scale (FAS) (De Vries et al., 2004)	10	10-50 < 22: no fatigue 22-34: Fatigue ≥ 35: extreme fatigue	5-point scale 1-5 (never to always)	Pearson correlation values range from 0.45 to 0.72 (Zuraida & Chie, 2014)	0.812 (Zuraida & Chie, 2014)
The Seattle Angina Questionnaire-7 (SAQ-7) (Chan et al., 2014)	7	0-100	5-or 6-point scales then transformed to scores ranging from 0 to 100	Pearson correlation values range from 0.47 to 0.57 (Wantiyah et al., 2020)	0.866 (Wantiyah et al., 2020)
The modified Medical Research Council dyspnoea scale (mMRC) (Bestall et al., 1999)	1	0-4	0-4	Spearman's correlation coefficient was 0.78 (Paternostro-Sluga et al., 2008)	Inter-rater agreement was 0.78, and intra-rater agreement was 0.86 (Paternostro-Sluga et al., 2008)
The Depression, Anxiety, Stress Scale 21 (DASS-21) (Lovibond & Lovibond, 1995)	21	0-126	4-point scale 0-3 (never to always)	Inter-item correlation ranging from 0.23 to 0.56 (Arjanto, 2022)	0.85 (Arjanto, 2022)
Depression scale	7	0-42 0-9: normal, 10-13: mild, 14-20: moderate, 21-27: severe, ≥28: extreme severe			0.85 (Arjanto, 2022)
Anxiety scale	7	0-42 0-7: normal, 8-9: mild, 10-14: moderate, 15-19: severe, ≥20: extreme severe			0.84 (Arjanto, 2022)
Stress scale	7	0-42 0-14: normal, 15-18: mild, 19-25: moderate, 26-33: severe, ≥34: extreme severe			0.84 (Arjanto, 2022)

Table 1. Continued

Scales/ subscales	Number of items	Score	Responses	Validity	Internal Consistency (Cronbach's alpha)
The MacNew Heart Disease HRQoL Instrument (Höfer et al., 2004)	27	1-7	Seven-point scale (1-7)	Pearson correlation value ranging from 0.47 to 0.71 (Basuki et al., 2021)	0.95 (Basuki et al., 2021)
Emotional function domain	14	1-7			0.97 (Basuki et al., 2021)
Physical limitations domain	13	1-7			0.98 (Basuki et al., 2021)
Social function domain	13	1-7			0.98 (Basuki et al., 2021)

Four nurse research assistants were trained by the first author in data collection methods. During the data collection period, these research assistants screened patients to determine their eligibility based on the inclusion and exclusion criteria. Subsequently, potential participants were provided with an explanation of the study, and informed consent was obtained from all who agreed to participate. The research assistants also distributed questionnaires to the participants for independent completion. Once completed, the questionnaires were returned to the research assistants. On average, it took approximately 30 minutes to complete the questionnaire.

2.4 Data analysis

Demographic information, disease-related features, and each variable were described using descriptive statistics, including frequencies, percentages, means, and standard deviations. Data distribution was assessed using the Kolmogorov-Smirnov test. All data were normally distributed ($p > 0.05$) (Mishra et al., 2019). The independent t-test, one-way analysis of variance, and Pearson product-moment correlation test were used, where necessary, to assess the association between demographic and social characteristics, medical history, physical symptoms, emotional symptoms, and HRQoL. Univariate linear regressions were also completed during screening to the associations between the physical and emotional symptoms and the global QoL. Variables associated with the global-QoL measured at a p -value below or equal to the 0.1 level were reserved for subsequent analyses. The critical variables from the univariate analysis and multiple linear regression were used to identify the value of HRQoL based on the value of physical and emotional symptoms variables. All linear regression assumptions were checked, and there was no violation. All six variables are included in the analysis. The level of statistical significance was set at < 0.05 .

2.5 Ethical considerations

The study was carried out according to the established protocol. The medical research ethics committee of Dr. M. Djamil Hospital, Padang, Indonesia, permitted the study's ethical conduct (reference number: LB.02.02/5.7/176/2022). Surveys were anonymous. The participants were informed of the study, and informed consent was obtained from all participants prior to survey.

3. Results

3.1 Characteristics of the participants

Table 2 provides the demographic and social traits of the participants. The participants were, on average, 59.5(7.61) years old and were mostly males (90.3%). In total, 47.7% of the highest education was senior high school, 42.2% were employed, 96.1% were married, and 84.4% were moderate in economic status. About 67.5% of participants had undergone revascularization with PCI once, with 61.7% of participants having one stent. The majority of participants (61.7%) were in New York Heart Association functional class I, while some (28.1%) were in type II. Education, number of stents, and the number of PCI had significant relationships with HRQoL ($p < 0.05$).

Table 2. Participant's characteristics and their relationships with HRQoL (n=154)

Characteristics	f(%)	Mean(SD)	HRQoL Mean(SD)	r/t/F	p
Age (year)		59.6(7.61)	5.11(0.90)	r= 0.025	0.760
Gender				t=-0.752	0.453
Male	139(90.3)		5.13(0.90)		
Female	15(9.7)		4.95(0.85)		
Education				F=3.068	0.012
Elementary	27(17.5)		4.80(0.86)		
Junior High School	19(12.3)		5.08(0.80)		
Senior High School	73(47.4)		5.03(0.93)		
Bachelor	29(18.8)		5.42(0.79)		
Master	5(3.2)		5.96(0.53)		
Doctor	1(0.6)		6.59		
Employment status				F=0.662	0.577
Employed	65(42.2)		5.21(0.95)		
Retired	30(19.5)		5.10(0.96)		
Unemployed	58(37.7)		5.01(0.81)		
Pensioned due to disability	1(0.6)		4.48		
Marital status				t=0.488	0.627
Married	148(96.1)		5.12(0.91)		
Divorced/widowed/not married	6(3.9)		4.94(0.43)		
Economic status				F=1.662	0.193
Low	6(3.9)		4.57(1.15)		
Moderate	130(84.4)		5.11(0.93)		
High	18(11.7)		5.33(0.36)		
Number of PCI				F=2.914	0.015
1	104(67.5)		5.23(0.89)		
2	35(22.7)		4.98(0.81)		
3	8(5.2)		4.92(0.85)		
4	5(3.2)		3.95(0.97)		
5	1(0.6)		3.89		
6	1(0.6)		5.70		
Number of the stent				F=3.110	0.011
1	95(61.7)		5.26(0.87)		
2	32(20.8)		5.07(0.86)		
3	16(10.4)		4.81(0.88)		
4	7(4.5)		4.09(0.92)		
5	3(1.9)		4.74(0.74)		
6	1(0.6)		5.70		
NYHA classification				F=2.592	0.078
Class I	95(61.7)		5.18(1.03)		
Class II	44(28.6)		5.14(0.59)		
Class III	15(9.7)		4.62(0.55)		
Class IV	0				

Note. t= t-test, r=Pearson product-moment correlation, F=one-way analysis of variance

3.2 Health-related quality of life

On average, participants rated their global HRQoL on the MacNew Heart Disease HRQoL as 5.11(0.90) (Table 3). The emotional function domain had the highest mean compared to the other two domains.

Table 3. Health-related quality of life (n=154)

Quality of Life	Mean(SD)
Global	5.11(0.90)
Emotional function domain	5.32(0.97)
Physical limitation domain	5.03(0.96)
Social function domain	5.00(0.88)

3.3 Physical and emotional symptoms

The degree of physical and emotional symptoms experienced by participants is presented in Table 4. As many as 49.4% of participants reported fatigue, while 40.9% reported no fatigue. According to this study's results, participants had a mean angina score of 69.6(12.06). The mean score of dyspnea level was 0.63(0.92). There were significant relationships between fatigue, angina, and HRQoL ($p < 0.005$). Emotional symptoms reported by participants were as follows: stress at a normal level (83.1%), anxiety at a normal level (63%), and depression at a normal level (72.7%). However, among the participants, 8.4% reported extremely high levels of stress, 22.1% claimed moderate levels of anxiety, and 13% had moderate levels of depression. There were significant relationships between stress, anxiety, depression, and HRQoL ($p < 0.005$).

Table 4. Physical-emotional symptoms and their relationships with HRQoL (n=154)

Categories	f(%)	Mean(SD)	HRQoL Mean(SD)	r/F	p
Fatigue				F=51.041	0.000
No fatigue	63(40.9)		5.75(0.53)		
Fatigue	76(49.4)		4.79(0.85)		
Extreme Fatigue	15(9.7)		4.07(0.43)		
Angina		69.6(12.06)		r=0.555	0.000
Dyspnea (mMRC scores)		0.63(0.92)		r=-0.149	0.065
Stress				F=19.365	0.000
Normal	128(83.1)		5.33(0.80)		
Mild	10(6.5)		4.15(0.78)		
Moderate	3(1.9)		4.15(0.69)		
Severe	13(8.4)		3.98(0.38)		
Extreme severe	0				
Anxiety				F=41.374	0.000
Normal	97(63.0)		5.59(0.62)		
Mild	3(1.9)		5.47(0.15)		
Moderate	34(22.1)		4.33(0.72)		
Severe	3(1.9)		4.16(0.75)		
Extreme severe	17(11.0)		4.05(0.41)		
Depression				F=31.305	0.000
Normal	112(72.7)		5.47(0.70)		
Mild	6(3.9)		4.96(0.88)		
Moderate	20(13.0)		4.07(0.54)		
Severe	4(2.6)		4.09(0.55)		
Extreme severe	12(7.8)		3.96(0.38)		

Note. r=Pearson product-moment correlation, F=one-way analysis of variance

Multiple regression analyses were carried out based on independent variables to predict the value of the HRQoL. The multiple linear regression analyses revealed a constant of 4.76. The HRQoL varied as many as 4.76 with an independent variable when all other independent variables were held constant. These multiple linear regression results confirmed that fatigue ($\beta = -0.22$), anxiety ($\beta = -0.32$), and angina ($\beta = 0.30$) predicted HRQoL in patients with myocardial infarction after PCI ($p < 0.05$) (Table 5).

Table 5. Factors affecting the HRQoL

Factors	B	SE	β	t	p
(Constant)	4.76	0.44		10.82	0.000*
Fatigue	-0.03	0.01	-0.22	-2.87	0.005*
Angina	0.02	0.00	0.30	5.08	0.000*
Dyspnea	0.00	0.05	0.00	0.05	0.960*
Stress	-0.01	0.01	-0.11	-0.79	0.433*
Anxiety	-0.03	0.01	-0.32	-2.52	0.013*
Depression	-0.01	0.02	-0.07	-0.46	0.644*

Note. *Multiple linear regression test, B=Unstandardized Coefficients B, β =beta, SE=Standard error, t=t test

4. Discussion

Overall, this study aimed to identify the relationships between the physical and emotional symptoms and the HRQoL in patients with myocardial infarction after PCI. The overall mean of the HRQoL score in this study was above the middle score. Post-myocardial infarction patients experienced lower HRQoL compared to the general population (Mollon & Bhattacharjee, 2017). The results on HRQoL in this study are higher than those of the earlier studies on patients after acute coronary syndrome who were treated by medication and revascularization, as well as those who had older age (Imam & Jitpanya, 2022; Jankowska-Polańska et al., 2016). Revascularization procedure, for instance, PCI, resulted in more improvement in HRQoL than medication such as thrombolytic therapy (Rančić et al., 2013). The negative impact of age on the HRQoL might be explained by the mobility restrictions. The emotional function domain showed the highest mean score compared to the mean scores of other domains. In contrast, a previous study indicated that the social function domain had the highest mean score while the physical function had the lowest mean score (Jankowska-Polańska et al., 2016). After two years of PCI, patients scored highest in the social function domain (Yazdani-Bakhsh et al., 2016). This result on HRQoL was confirmed by the results on stress, anxiety, and depression, whereas all were at normal levels. Normal mental health may explain why the emotional domain had the highest mean score.

This study showed that male patients had a marginally higher quality of life than female patients. The findings of this investigation were confirmed with those of earlier studies. Previous studies also showed that female patients scored lower HRQoL than men (Jankowska-Polańska et al., 2016; Mujtaba et al., 2019). Males showed a positive trend for improvement in the majority of HRQoL categories, whereas females improved only in the Physical Component Summary and social functioning domains (Jankowska-Polańska et al., 2016). Males in this study reported higher HRQoL than females, which may be explained by the occupational activity of males compared to females, who were mostly unemployed.

Fatigue and even extreme fatigue, experienced by more than half of the participants in this study, had significant relationships with HRQoL. The finding is supported by a study that reported that fatigue in post-myocardial infarction patients was related to physical activity and the HRQoL (Crane et al., 2015). Fatigue/vital exhaustion is also directly related to the quality of life of CAD patients after PCI, along with social support and depression (Saengsiri et al., 2014). During early recovery from post-MI, patients experience physical fatigue and decreased participation in the recommended levels of physical activity (Crane et al., 2015; Fredriksson-Larsson et al., 2015) and self-care (Kessing et al., 2015). Fatigue was also associated with another physical symptom: breathlessness, and emotional symptom: stress (Fredriksson-Larsson et al., 2015). The physical and mental dimensions of the HRQoL two years after MI were predicted by experiencing general fatigue at four months ($p < 0.01$) (Alsén & Brink, 2013). Improving self-care by handling fatigue problems will improve the patient's quality of life (Kessing et al., 2015).

This study revealed that angina was significantly related to the HRQoL. In one study, although there was no significant relationship between angina and quality of life, the authors emphasized angina as a considerably important symptom to evaluate in patients after PCI (Saengsiri et al., 2014). Older patients reported higher levels of angina scores one year after acute MI than younger patients (<50 years) (Arnold et al., 2014). Patients commonly experience recurrent angina after PCI, particularly patients with diffuse coronary artery disease involving more than one artery (Mujtaba et al., 2019). However, PCI significantly improved angina stability, frequency, and physical limitation (Ybarra et al., 2017).

A marginal number of participants in this study reported stress ranging from mild to severe levels. Stress was found to have a significant relationship with HRQoL on myocardial infarction patients after PCI. The prevalence of post-MI stress was twice of that found in the general population (Wasson et al., 2014). In young and middle-aged patients with myocardial infarction, a study reported higher levels of perceived stress throughout the first 12 months of recovery (Xu et al., 2017). Anxiety, depression, and stress consistently showed a significantly negative impact on myocardial infarction patients' HRQoL (Kang et al., 2017). Fear at the time of the attack, more awareness of the threat to life, psychiatric history, sociodemographic factors, and lack of social support contributed to the development of stress after myocardial infarction (Tulloch et al., 2015). Positive coping strategies to alleviate stress and promote communication may significantly affect HRQoL by improving mental state and health behavior (Du et al., 2020). Moreover, adequate

social support for patients can mitigate the effects of stress in patients after PCI (Wulandari et al., 2019).

The anxiety level of most participants in this study was at a normal level, while a small number of participants reported mild to extremely severe anxiety. Moreover, anxiety was found to have a significant relationship with the HRQoL. A previous study revealed that the prevalence of anxiety symptoms in MI patients ranged from 24% to 31%. The occurrence of anxiety after the onset of myocardial infarction is triggered by dysregulation of neuro-hormonal systems within the physiological stress response, which is the sympathetic nervous system and the hypothalamus-pituitary-adrenal axis (Kumar & Nayak, 2017). The percentage of anxiety among myocardial infarction patients increased among both revascularization and non-revascularization patients (Pino et al., 2018). However, the incidence of anxiety among participants in this study was relatively higher than in the previous study (Liu et al., 2018) and consistent throughout the earlier study's findings, a literature review, in which it was stated that anxiety is correlated with HRQoL (Kang et al., 2017). Structural equation modeling (SEM) research also discovered a substantial role for cardiac anxiety as an independent predictor of the HRQoL in myocardial infarction patients (Wulandari et al., 2019). This result should become a concern since emotional symptoms can negatively affect self-efficacy (Liu et al., 2018). The presence of anxiety and its effect on the HRQoL require an integrated cardiac care approach, incorporating screening and access to mental healthcare (Pino et al., 2018). Therefore, nurses can get involved to identify and intervene early to support HRQoL, especially in the early stage of recovery from MI.

There were small numbers of participants reporting mild to extremely severe levels of depression, and that depression showed a significant relationship with the HRQoL in this study. MI patients experience feelings of extreme sadness and despair that could lead to high cardiac morbidity and mortality and poor prognosis of further cardiac events. Most of the patients with MI develop a prominent and persistent depressed mood and loss of interest in daily activities (Kumar & Nayak, 2017). The severity of depression symptoms increases from the 15th to the 30th day after MI. This issue may have an impact on self-care behavior (Niakan et al., 2015). Depression in myocardial infarction patients after PCI was closely related to psychological resilience and self-efficacy (Liu et al., 2018). Poor self-care behavior, self-efficacy, and psychological resilience may be related to decreased HRQoL.

Surprisingly, the final analysis showed that stress and depression did not significantly elucidate the HRQoL. The explanation for the insignificant finding could be that the participants in this study have had the first PCI treatment for longer than three months. Depression in myocardial infarction patients is commonly found early after PCI (Niakan et al., 2015). Moreover, the effect of stress on the HRQoL might be mediated by coping styles. Positive coping styles can reduce various environmental stressors.

5. Implication and limitation

This study's findings have implications for post-PCI care and follow-up of myocardial infarction patients. First, observing changes in the physical and mental symptoms following PCI may aid nurse practitioners in creating treatments to improve patient's quality of life (QoL). This information could assist advanced practice nurses in designing cardiac nursing interventions tailored to help manage symptoms' release. On the other hand, it is essential to be aware of this study's limitations. First, because this study was cross-sectional and correlational, it is difficult to infer causality. Second, the sample was collected from one study center and may not represent the concerned population. However, because the study center is a referral in this region, the findings might provide a good case for guiding decisions in actual circumstances.

6. Conclusion

Despite receiving PCI after an acute myocardial infarction, the patients' HRQoL in this study remains above the middle score. Therefore, there is still an opportunity for improvement. Fatigue, angina, and anxiety were found to have significant relationships with HRQoL. In addition, angina was the most decisive influence on HRQoL.

This study recommends that nurses should be aware of the relationship between physical and emotional symptoms, including fatigue, angina, and anxiety, and the HRQoL. Patients with myocardial infarction may suffer physical and emotional symptoms, for instance, exhaustion, chest discomfort, and shortness of breath, which might overlap with anxiety symptoms.

Therefore, it is recommended that post-MI patients be screened for emotional distress whenever they report frequent physical symptoms. The findings of this study may be used to better target nurse treatments to ease post-myocardial infarction patients' symptoms and enhance their quality of life following PCI. The results of this study are limited in their ability to explain the factors that need to be taken into account in developing nursing care, focusing on improving clinical outcomes like quality of life because it examined the impact of physical and emotional symptoms on patients' quality of life following PCI. In order to measure factors affecting quality of life using a causal model that identifies the components of HRQoL and their determinants, more studies are necessary.

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Author contribution

EH: Study design and data analysis

EH, FM: data collection, draft and revised manuscript

Conflict of interest

The authors declare that they have no conflict of interest in this study.

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