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FACTORS RELATED TO QUALITY OF LIFE AFTER PERCUTANEOUS CORONARY INTERVENTION (PCI) IN PATIENTS WITH ATHEROSCLEROSIS HEART DISEASE

Original Research

Ilham Pangestu Jati*, Tri Sunaryo, Novita Kurnia Wulandari

Ministry of Health Polytechnic of Surakarta, Indonesia

ABSTRACT

Introduction: *Atherosclerotic heart disease is one of the leading cardiovascular diseases with a high mortality rate globally. Atherosclerosis occurs due to the accumulation of cholesterol and low-density lipoproteins (LDL) on the inner walls of blood vessels, forming plaques that can completely block arteries, potentially leading to death. One of the interventions used to relieve such blockages is percutaneous coronary intervention (PCI). PCI can have an impact on patients' physical activity and quality of life. The aim of this study is to determine the factors associated with quality of life after PCI in patients with atherosclerotic heart disease.* ***Methods:*** *This study employed a descriptive correlational research design with a cross-sectional approach. The sampling technique used was accidental sampling, resulting in a total of 60 respondents. Data were analyzed using the Spearman rank test and logistic regression.* ***Results:*** *The findings indicated that most respondents (81.7%) reported a moderate quality of life. Factors associated with quality of life after PCI included age, gender, education, anxiety, and illness perception. The results of the multivariate analysis revealed that the most significant factor associated with quality of life post-PCI was education, with an odds ratio (OR) of 9.392.* ***Conclusions:*** *Among all the factors, education emerged as the most dominant determinant of quality of life after PCI, with an odds ratio (OR) of 9.392 and a 95% confidence interval (CI) of 1.252–70.434.*

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**Correspondence:*
Ilham Pangestu jati

**Email:*
ilhampangestujatikumpulsari@gmail.com

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INTRODUCTION

Atherosclerosis is a chronic condition caused by the accumulation of cholesterol and low-density lipoproteins (LDL) on the walls of blood vessels, leading to blockages. Intervention techniques, such as Percutaneous Coronary Intervention (PCI), have been developed to alleviate these blockages. PCI is a non-surgical procedure that uses balloons and stents to restore blood flow through the coronary arteries. This technique is often the preferred method for treating the disease and has been applied to 60-80% of patients worldwide (Harselia, 2018).

Although PCI is effective in improving blood flow, the procedure often impacts a patient's quality of life. Patients may experience immobilization, which can lead to both physical and psychological complications, such as anxiety and limitations in physical activity (Oktaviono, 2019).

Atherosclerosis is one of the major cardiovascular diseases, with high mortality rates globally. According to data from the World Health Organization (WHO), in 2015, this disease was responsible for up to 31% of total global deaths (WHO, 2021). Its impact is not only significant in terms of health but also economically. In 2008, the United States and the European Union experienced economic losses of $297.7 billion and €196 billion, respectively (Global Burden of Disease, 2021). In Southeast Asia, the prevalence of the disease is approximately 58%, with mortality increasing from 5.6 million in 1990 to 10.8 million in 2019 (Zhao, 2021). In Indonesia, the prevalence reached 29.2% of the total 22,093 samples taken nationwide (Maharani et al., 2019), with an annual death toll of approximately 470,000 (Hussain, et al., 2016). In Central Java, the prevalence of heart disease is 1.56%, or approximately 91,161 people

(Riskesdas, 2018). In Surakarta city, heart disease accounts for 82.25% of non-communicable disease (NCD) cases (Surakarta City Health Office, 2023). Other factors, such as social support, perceptions of illness, and anxiety, also play a critical role in determining the quality of life of post-PCI patients. Strong family support can reduce anxiety and improve quality of life (Budiman, 2018), while a positive perception of illness can help reduce morbidity and mortality (Michaela & Yunita, 2021).

Therefore, the care provided to post-PCI patients must be holistic, addressing the physical, psychological, social, and environmental domains. The role of nurses is crucial in helping patients not only maintain physical health but also enhance their overall quality of life (Zhang, et al., 2023).

This study aimed to identify factors that influence the quality of life of post-PCI patients with atherosclerotic heart disease. By understanding these factors, the study seeks to provide a foundation for more effective interventions aimed at improving patients' quality of life.

MATERIALS AND METHODS

The type of research used in this study is descriptive quantitative. The design is a correlational study with a cross-sectional approach, which aims to examine the relationships between variables. The study was conducted on the 5th Floor Aster inpatient ward at Dr. Moewardi Hospital, Central Java, Indonesia, over a period of approximately 2 months. The study population consisted of 60 respondents who had signed informed consent. The sampling technique used in this study was accidental sampling. The instruments used in this study were the WHOQOL-BREF Questionnaire, the Zung Self-Rating Anxiety Scale (SAS), the Multidimensional Scale of Perceived Social Support (MPSS), and the Brief Illness Perception Questionnaire (BIPQ). These instruments have been tested for validity and reliability, ensuring that the questionnaires are both valid and reliable for use. Data analysis was conducted using SPSS version 26. The analysis included univariate, bivariate, and multivariate tests. Univariate analysis was performed using descriptive statistics, bivariate analysis using the Spearman rank test, and multivariate analysis using logistic regression. This study underwent an ethical review at the Research Ethics Commission of Dr. Moewardi Hospital, Central Java Province, and was approved with the reference number: 2.297/XII/HREC/2023.

RESULTS

Table 1. The characteristics of respondents based on age, gender, education, occupation, and marital status at Dr. Moewardi Hospital, 2023

Age (Years Old)	**Frequency (f)**	**Percentage (%)**
Adult	22	36.7
Elderly	38	63.3
Gender	**Frequency (f)**	**Percentage (%)**
Male	32	53.3
Female	28	46.7
Education	**Frequency (f)**	**Percentage (%)**
Elementary school	23	38.3
Junior high school	9	15.0
High school	17	28.3
D3	1	1.7
S1	10	16.7
Occupation	**Frequency (f)**	**Percentage (%)**
Employed	53	88.3
Not working	7	11.7
Marital Status	**Frequency (f)**	**Percentage (%)**
Married	55	91.7
Divorced	5	8.3
Total	**60**	**100**

Based on Table 1. In the age category, 38 respondents (63.3%) were aged 46-65 years. Based on gender, the majority of post-PCI patients were male, totaling 32 individuals (53.3%). Regarding education, most post-PCI patients were elementary school graduates, with 23 individuals (38.3%) in this category. Out of 60 respondents, 53 (88.3%) were employed, while 7 (11.7%) were unemployed. As for marital status, most respondents were married, with 55 individuals (91.7%), while 5 respondents (8.3%) were divorced.

Table 2. The characteristics of respondents based on of factors related to quality of life after PCI at Dr. Moewardi Hospital, 2023.

Anxiety	**Frequency (f)**	**Percentage (%)**
Not anxious	33	55.0
Mild anxiety	27	45.0
Social Support	**Frequency (f)**	**Percentage (%)**
Social support moderate	20	33.3
Social support high social support	40	66.7
Lilnes Perception	**Frequency (f)**	**Percentage (%)**
Good perception	20	33.3
Poor perception	40	66.7
Total	**60**	**100%**

Table 2 shows that, of the 60 respondents, most did not experience anxiety: 33 individuals (55.0%) reported no anxiety, while 27 individuals (45.0%) experienced mild anxiety. Regarding social support from the family, the majority of post-PCI patients received high social support, with 40 individuals (66.7%) in this category, and 20 individuals (33.3%) received moderate social support. As for the illness perception factor, the majority of post-PCI patients had a poor perception of their disease, with 40 individuals (66.7%) reporting poor perception, while 20 individuals (33.3%) had a good perception.

Table 3. Frequency Distribution of Post-PCI Quality of Life at Dr. Moewardi Hospital, 2023

Characteristics	**Category**	**Frequency (f)**	**Percentage(%)**
Quality of life	Moderate Quality of Life	49	81.7
	High Quality of Life	11	18.3
Total		**60**	**100**

Table 3 shows that, out of 60 respondents, 49 individuals (81.7%) reported having a moderate quality of life, while 11 individuals (18.3%) reported a high quality of life.

Table 4. Spearman Rank Test of the Relationship between Post-PCI Quality of Life and Factors Affecting Quality of Life at Dr. Moewardi Hospital, 2023.

Test	**Correlation coefficient**	**Criteria**	**Results**
		p < α	
Spearmen's Rank Quality of Life*Anxiety	-0,342	0,007 < 0,05	Significant
Spearmen's Rank Quality of Life*Social Support	-0,213	0,102 > 0,05	Not significant
Spearmen's Rank Quality of Life*Perception of Illness	-0,396	0,002 < 0,05	Significant
Spearmen's Rank Quality of Life*Marital Status	0,013	0,992> 0,05	Not significant
Spearmen's Rank Quality of Life*Education	0,263	0,042<0,05	Significant
Spearmen's Rank Quality of Life*Gender	-0,271	0,037 <0,05	Significant
Spearmen's Rank Quality of Life*Age	-0,311	0,015<0,05	Significant
Spearmen's Rank Quality of Life*Occupation	-0,096	0,465> 0,05	Not significant

Table 4 shows that, based on Spearman's statistical test, a variable is considered to have a relationship if p < 0.05. From the table, 8 variables were found to be associated with quality of life: anxiety, perception of illness, education, gender, and occupation. Meanwhile, 3 variables showed no relationship with quality of life: social support, marital status, and occupation.

Table 5. Multivariate analysis of logistic regression of the dominant factors associated with quality of life after PCI at Dr. Moewardi Hospital,2023.

Variable	**Wald**	**Slg.**	**Exp.B OR**	**95% CI**	
				Lower	**Upper**
Age	2,668	0,102	0,102	0,653	1,039
Occupation	0,410	0,522	0,141	0,000	56,646
Marital status	1,876	0,171	0,158	0,011	2,217

Variable	Wald	Slg.	Exp.B OR	95% CI	
				Lower	Upper
Education	4,748	0,029	9,392	1,252	70,434
Gender	1,045	0,307	7,662	0,154	380,384
Anxiety	3,858	0,050	0,001	0,000	0,984
Social Support	5,684	0,017	0,008	0,000	0,422
Illness Perception	3,665	0,056	0,015	0,000	1,105

Table 5 shows that the results of the univariate logistic regression test indicate that the education variable is the most dominant factor associated with post-PCI quality of life, with an odds ratio (OR) of 9.392 and a 95% confidence interval (CI) of 1.252–70.434.

DISCUSSION

Age

The results of this study indicate that most respondents are elderly (46-65 years), accounting for 65.0%. This suggests that the majority of patients with atherosclerotic heart disease fall within the elderly age range. This age group is at higher risk of experiencing various diseases, including atherosclerotic heart disease. These findings align with Ayton, et al. (2018), which reported that most respondents were in the 60-69 age range, accounting for 38%. Similarly, Nuraeni (2016) found that most respondents were over 45 years old, entering old age.

Age is a significant risk factor for cardiovascular disease because it leads to changes in the heart and blood vessels. As a person ages, the susceptibility to heart disease increases. While serious heart conditions are rarely observed before the age of 40, the risk increases fivefold between the ages of 40 and 60. Heart disease is commonly found in individuals aged 60 and above, but cases have also been reported in those under 40. In men, heart disease-related deaths begin at age 35 and continue to rise with age (AHA, 2018). Individuals aged >45 years have a 32-fold higher risk of developing heart disease, particularly as they age. This increased risk is attributed to changes in behavior and the accumulation of fatty tissue, which causes muscle stiffness. These factors are largely unavoidable due to the natural aging process (Riungu et al., 2018).

Based on the results of the study, there is no gap between theory and fact (Iskandar & Alfridsyah, 2017), which indicates that age over 40 years increases the risk of coronary heart disease. As age increases, plaque accumulates in the same locations. These substances adhere to the walls of blood vessels, causing the plaque to enlarge, thereby narrowing the arteries. This narrowing reduces the oxygen-rich blood supply to the heart, potentially leading to blockages in the coronary arteries. This condition is largely influenced by uncontrolled health factors, which contribute to the development of coronary heart disease.

Gender

The results of this study show that there are more male patients than female patients, with 41 respondents (68.3%). This finding aligns with research conducted by Tsoulou et al. (2023), which indicates that men affected by heart disease (69.0%) outnumber women sufferers (31.0%). Similarly, research by (Nuraeni & Mirwanti (2017) found that the majority of heart disease sufferers are men (77.0%). These two studies support the 2018 report from the Indonesian Ministry of Health, which states that heart disease is more prevalent among men than women.

The higher proportion of men suffering from heart disease can be attributed to unhealthy lifestyle behaviors prevalent among men. According to Pracilia et al. (2019), men are more at risk for coronary heart disease due to unhealthy habits such as smoking and alcohol consumption, compared to women, who rarely engage in these behaviors. Men are expected to experience heart disease about 10 years earlier than women. While women who are still menstruating benefit from protection by the hormone estrogen, the incidence of heart disease increases after menopause. Additionally, men are more likely to experience stress, which is another risk factor for heart disease. Stress in men often arises from external pressures and work-related workloads. Stress is triggered by the central nervous system's response to stressors, which stimulates the production of adrenaline and catecholamines. High levels of these hormones can lead to constriction of the heart's blood vessels, an increased heart rate, and disrupted blood supply to the heart.

Education

The results of this research show that the majority of respondents have an elementary school education, accounting for 38.3%. This finding is consistent with Dahlia & Damanik, (2019), who suggest that education level can influence a person's ability to obtain information about their illness. A person's level of education also plays a key role in determining their intellectual abilities,

understanding, and capacity for critical and logical thinking when processing information and making decisions. Furthermore, education influences the ability to absorb and apply information. The higher a person's education level, the greater their knowledge about various aspects of life, including health-related knowledge and skills, and the more likely they are to anticipate and avoid illness (Notoatmodjo, 2016).

Marital status

The majority of respondents in this study were married, accounting for 91.7%. This finding is consistent with Lestari & Sunaryo (2018), which reports that the majority of patients who experienced a heart attack and underwent PCI were married, with 93.3% in this category. Similarly, Tsoulou et al. (2023) found that the highest proportion of patients were married, with 66.0% in this group.

While marital status is not a direct risk factor for coronary heart disease, the high number of married individuals among heart disease patients undergoing PCI suggests that marital status plays a significant role in providing social support. Having a life partner can encourage the adoption of healthy and positive behaviors, as supported by Rochmayanti (2011), who highlighted that a supportive partner contributes to improved health behaviors.

Relationship between Anxiety and Quality of Life after PCI in Atherosclerotic Hearth Disease patients

The results of this research showed a p-value < 0.05, indicating that anxiety is related to quality of life after PCI. These findings are consistent with the research by Awaludin & Sekarwati (2018), which also identified a relationship between anxiety and quality of life in heart patients. Similarly, Hastuti & Mulyani (2019) found that anxiety is related to quality of life after PCI, with many patients experiencing mild to moderate anxiety.

Anxiety is a negative emotion that arises as a result of stress, danger, and tension, triggered by the activation of the nervous and sympathetic systems (Hastuti & Mulyani, 2019). In some patients, anxiety is caused by the PCI procedure itself. The highest anxiety scores were observed one day after the procedure. Anxiety can occur both before and after PCI (Gu et al., 2016).

Several factors may contribute to psychological problems following PCI, including a lack of understanding about the disease and the PCI procedure, as well as insufficient medical explanations and/or accurate information regarding the surgery (Albus, et al., 2019). Other factors that contribute to anxiety include disease complications, the threat of death, and pain. Additionally, anxiety after PCI may be caused by dissatisfaction with the procedure, physical discomfort during the procedure, and fear of complications such as stent thrombosis or in-stent restenosis (Gu, et al., 2016).

Relationship between social support and quality of life after PCI

The results of the bivariate analysis using Spearman's rank correlation showed that there was no significant relationship between social support and quality of life (0.102). These findings are consistent with Rochmayanti (2011), who reported no significant relationship between social support and quality of life (p = 0.169). However, the results of this study contrast with the findings of Widyasari (2019), which demonstrated a significant relationship between social support and quality of life after PCI (p = 0.032). In Widyasari's study, the analysis showed a moderate to strong positive relationship, suggesting that better family support is associated with a better quality of life after PCI.

The absence of a relationship between social support and quality of life in this study indicates that other factors may influence quality of life. While social support may not directly affect quality of life, it remains a valuable support system that can help patients reduce anxiety or depression related to their illness. Kristofferzon et al. (2019) emphasized that patient care planning should include family members and other social support systems to help patients overcome daily challenges. In this study, other factors related to quality of life were anxiety and illness perception.

Based on the researcher's observations or Based on the researcher's observations, although social support did not show a significant relationship in the analysis, most respondents reported having high social support. Social support remains an important system that helps patients manage anxiety, and illness perception is also a crucial factor to consider.

Relationship between illnes perception and quality of life after PCI

Most of the respondents in this study had a poor perception of illness (66.7%). The research results showed that the bivariate analysis of the Spearmen's rank test was 0.02 < 0.05, indicating a relationship between illness perception and quality of life after PCI. This finding is consistent with previous research, which also found a significant relationship between illness perception and quality of life after PCI, with a moderate strength of

association (p = 0.043; r = 0.287). Similarly, another study showed that illness perception is related to quality of life, with a p-value smaller than the α value (0.040 < 0.05) (Thagizadeh et al., 2022).

Illness perception refers to an individual's perception and evaluation of their illness. This perception can be influenced by various factors, such as environmental influences and personal experiences (Michaela & Yunita, 2021). Chronic diseases, such as heart disease, are lifelong conditions that cannot be cured but can be managed through regular monitoring and treatment. A patient's ability to accept this reality can lead to an improvement in quality of life. However, according to Hagger and Orbell (2003), many patients with chronic diseases quickly lose hope, develop negative perceptions, and struggle to accept the long-term nature of their illness. This lack of acceptance can lead to stress, which exacerbates the disease. The more severe the illness, the worse the physical and mental health conditions of the patient, resulting in a decreased quality of life (Hidayat, et al., 2015).

Relationship between marital status and quality of life after PCI

The results of statistical analysis in this study showed no significant relationship between marital status and quality of life (p = 0.922). These findings are consistent with the research by Lestari & Sunaryo (2018), which also found no significant relationship between marital status and quality of life (p = 0.416). Similarly, Eryando, et al (2020) Eryando, et al. (2020) also reported no significant relationship between marital status and quality of life. However, these findings contrast with the research by Dhindsa et al. (2020), which stated that there is a significant relationship between social support and quality of life after PCI. Their study found that unmarried patients, including those who were divorced, separated, widowed, or never married, had higher rates of adverse cardiovascular events compared to their married counterparts.

Quality of life can be influenced not only by a life partner but also by strong family social support, which can help reduce stress and facilitate stress coping mechanisms, leading to successful adaptation. The results of this study show that post-PCI patients generally have high social support, with 66.7% reporting high levels of support. Even elderly individuals who do not live with their partner often have family members, such as children or grandchildren, who provide social support, which in turn does not negatively affect their quality of life.

The researcher's assumption is that not all elderly individuals require a partner to improve their quality of life. However, having family or friends with whom to talk, confide in, and share both happiness and sadness can also significantly improve their quality of life.

Relationship between education and quality of life after PCI

The results of statistical analysis in this study showed a significant relationship between education and quality of life after PCI (p = 0.042). These findings are consistent with research by Guo & Shan, (2023), which found that there is a relationship between education and quality of life after PCI. In their study, they discovered that patients with higher health literacy were more likely to improve their quality of life through adequate knowledge about medications, while patients with poor health literacy were more likely to make conflicting clinical decisions. Similarly, a study by Tsoulu et al. (2023) also found a significant relationship between education and quality of life after PCI (p = 0.030).

The educational levels of the respondents in this study varied widely, ranging from elementary school, middle school, high school, and some even up to bachelor's level. The level of education can also enhance the quality of life in heart patients. The findings of this research are supported by previous research by Tsalissavrina et al. (2018), which showed that a person's level of education influences their quality of life: the higher the education level, the higher the quality of life. Conversely, lower education levels were associated with lower quality of life. The researchers agree with the results of previous studies, as higher education leads to greater knowledge, which in turn improves the quality of life. High knowledge increases understanding and awareness of healthy living practices and the risks associated with diseases such as heart disease. It is also well-established that lower education levels are linked to lower health knowledge.

Relationship between Gender and Quality of Life after PCI

In this study, statistical analysis revealed a significant relationship between gender and quality of life after PCI (p = 0.037). These findings are consistent with research by Emery et al. (2004), which showed a significant relationship between quality of life and gender in heart patients (p = 0.010). Similarly, Shih et al. (2020) also found a relationship between gender and quality of life, with their results indicating that men had a significantly higher quality of life than women. Lee & Wu, (2020) also found a significant relationship between gender and quality of life, where elderly

men generally reported a better quality of life than elderly women.

The researcher concurs with Bonsaksen (2012) regarding the relationship between gender and quality of life in patients with severe mental illness. In his study titled "Exploring Gender Differences in Quality of Life," it was suggested that the level of quality of life may be higher in women than in men, even among inpatient samples with mixed and severe mental illness. The reasons for gender differences in levels of depression remain speculative, but one prominent perspective is that affective responses—such as the expression of feelings—tend to be higher in women than in men. This difference can be attributed to the fact that women are generally more likely to express their emotions and may experience their illness differently from men (Bonsaksen, 2012).

Relationship between age and quality of life after PCI

The research results showed a p-value < 0.05, indicating that age is related to quality of life after PCI. These findings align with the research by Yuniati & Kamso (2021), which found a relationship between age and quality of life in patients suffering from chronic heart disease. Similarly, Eryando, et al (2020) stated that there is a relationship between age and quality of life. Their research highlighted that age is one of the factors influencing quality of life, with pre-elderly individuals reporting a better quality of life compared to the elderly.

Trends in quality of life worsen with age, indicating a negative correlation between age and quality of life. These results are consistent with the findings of Kristofferzon et al. (2019). In their study on quality of life, a strong correlation was found between age and functional decline. The research also revealed that, among respondents, the majority (70%) of individuals under 65 years of age reported experiencing a low quality of life. The ability of individuals under 65 to continue their daily activities is influenced by various non-physiological factors, such as a history of repeated relapses, coping abilities, anxiety levels, and gender, as measured in the research by Eryando, et al (2020).

Relationship between Occupation and quality of life after PCI

The results of statistical analysis show that there is no significant relationship between work and quality of life (p = 0.465). These findings are inconsistent with the research by Tsoulu et al. (2023), which states that there is a significant relationship between work and quality of life after PCI. Similarly, the findings of this study do not align with the research by Lamanuw et al. (2017), which found a relationship between employment status and the quality of life of residents in Kinilow Village, North Tomohon District, Tomohon City. However, these findings are consistent with the research conducted by Eryando, et al (2020), which revealed no significant relationship between employment status and quality of life in the elderly, with a p-value > 0.05. Likewise, research by Masliati et al. (2022) also found no significant relationship between work and quality of life (p = 0.132).

The analysis conducted by the researchers indicates that the majority of post-PCI patients, particularly the elderly, are still working. This is due to various reasons, including physical and mental capability, and the primary reason being economic necessity. The majority of elderly workers are involved in farming, planting, or trading to meet their daily needs, and their families, including children and grandchildren, often live with them due to economic dependence. However, a significant number of elderly individuals are no longer working due to health conditions that prevent them from continuing employment. Work is often associated with income, which is linked to fulfilling basic human needs. By working, an individual can provide for themselves and their family. Working elderly individuals are defined as those aged 60 years and older (young elderly), who are still capable of engaging in activities to meet their daily needs. On the other hand, elderly individuals who are no longer working tend to experience higher levels of anxiety, fear, and economic dependency.

Dominant factors associated with quality of life after PCI

The most influential variable on quality of life after PCI is education. The strength of the relationship can be observed from the odds ratio (OR = 10.595, with a 95% confidence interval [CI]: 1.587–70.717). This finding is in line with research by Alharbi et al. (2022), which reported that illness perception had an OR of 3.00, with a 95% CI of 1.46–6.17. Additionally, research by Ronoatmodjo and Sudarto, titled "Factors Related to the Quality of Life of the Elderly in Cipasung Village, Kuningan Regency, 2017" (Ronoatmodjo, 2019), also highlighted education as the most influential factor on quality of life, with an OR of 4.9 and a p-value of 0.022.

The results of this study are consistent with previous research that states education has a significant relationship with quality of life. Jason D. Edgerton & Below. (2012) also found that education and knowledge influence quality of life. It is possible that individuals with a low level of

education but extensive knowledge can still experience a better quality of life. Barbareschi et al. (2011) suggested that education level is a significant factor influencing quality of life. Their findings showed that participants with less than a high school education had poor physical component summary (PCS) scores, indicating poorer physical function compared to those with a higher level of education. This supports previous evidence that education level is positively correlated with knowledge and awareness of one's physical health (Alkatheri & Albekairy, 2013) . This may occur because less-educated patients might have difficulty following medical instructions and procedures, leading to poorer quality of life. Higher education is associated with better general health knowledge and more positive lifestyle choices (Barbareschi et al., 2011).

The study showed significantly better improvements in functional limitations related to emotional problems over time for highly educated patients compared to less-educated patients. Highly educated patients also demonstrated a better quality of life in the physical and functional domains, particularly in physical functioning, energy/fatigue, social functioning, and limitations in role functioning related to emotional problems. A low level of education is often linked to a decline in a person's health, as insufficient knowledge may hinder the ability to prevent diseases related to health behavior, especially among the elderly. Similarly, research by Yulianti and Risma Agustina (2015) found that the higher a person's education level, the more likely they are to develop knowledge related to elderly health behaviors and self-management. Higher education is associated with greater knowledge, skills, and abilities (Saputra et al., 2021).

These findings suggest the need for additional interventions, such as medical or psychological counseling by healthcare professionals, to improve the functional and physical status of heart patients with low education levels, ultimately leading to better nursing outcomes. By increasing post-PCI patients' knowledge about their disease, healthcare professionals can provide educational support, thereby improving their quality of life. Improving quality of life remains the primary and most important goal in nursing management.

CONCLUSIONS

This study found that most respondents were elderly (aged 46–65 years), male, had elementary school education, were employed, and married. The majority did not experience anxiety, reported high social support, and had poor perceptions of their illness. Regarding quality of life, most respondents fell into the moderate category. Several factors were found to be associated with quality of life after Percutaneous Coronary Intervention (PCI). Anxiety showed a significant negative correlation, indicating that higher anxiety levels were associated with a reduction in quality of life. Illness perception also had a significant negative correlation, with poorer perceptions of illness linked to lower quality of life. Age exhibited a similar negative correlation, with older patients reporting decreased quality of life. Gender demonstrated a significant relationship with quality of life, whereas social support, employment, and marital status did not show significant associations. Education showed a positive correlation, with higher education levels associated with better quality of life. Among all the factors, education emerged as the most dominant determinant, with an odds ratio (OR) of 9.392 and a 95% confidence interval (CI) of 1.252–70.434, underscoring its critical role in influencing post-PCI quality of life.

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AUTHORS' CONTRIBUTIONS

Il collected the research data, drafted the manuscript, and performed data analysis and interpretation. Mr. Ren developed the research idea, assisted in the study design, provided input on data analysis and interpretation, and contributed to the journal publication submission process. Mr. Tr validated the data, assisted in data analysis, and contributed to the interpretation of the results. Ms. Nov assisted in revising the final manuscript and participated in the journal publication submission process.

CONFLICT OF INTEREST

The authors declare that this research was conducted independently, without any commercial relationships, financial support, or other affiliations that could be interpreted as potential conflicts of interest.

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