

Quality of Life Result after Underwent Percutaneous Coronary Intervention (PCI): Literature Review

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Abstract

Percutaneous coronary intervention is a non-surgical procedure that aims to open up the blockage in coronary artery. Some clinical indication of coronary artery disease (CAD) includes STEMI, NSTEMI, unstable angina, stable angina, and anginal equivalent should require a PCI to prevent the worsening condition of the patient. The discomfort that is experienced by CAD patient affect the quality of life since the symptoms of CAD can disturb the daily activity as one of the most life-threatening diseases. Percutaneous coronary intervention can be conducted in CAD patient by some method to increase the blood supply so that the cause of chest discomfort which is inadequate oxygenation of the myocardium no longer appears. After carrying out PCI, patients are expected to have a better quality of life. This literature review aims to collect data and articles to find out the quality of life of the patient after undergoing PCI.

Keywords: quality of life; percutaneous coronary intervention; coronary artery disease

1. Introduction

Coronary artery disease is one of the most common diseases with high mortality rate in Indonesia and worldwide. It is a condition where the blood that flows to the myocardium is lacking of oxygen. One of the causes is because there is atherosclerosis in the artery so that the lumen become narrow (Shahjehan and Bhutta, 2020). Thus, pharmacological or non-pharmacological treatment should be given to the patient to prevent myocardial infarction and mortality (Cassar et al., 2009). One of the choices of non-pharmacological treatment is PCI which it is included as non-surgical procedure with aims to open up the blockage in coronary artery wall that it is the causing lacking oxygen in blood (Ahmad et. Al., 2023). One of the purposes of conducting PCI is to improve the quality of life that has been affected by the disease. The necessity of assessing the quality of life is to see whether there is an improvement or decrease in some aspects of life (Bahramnezhad et al., 2015). Decreasing the incidence of infarction, chest discomfort, and mental distress after receiving PCI were reported in some studies (Aulia, Nuraeni, and Harun, 2020), thus this study is needed to elaborate and conclude the study results of quality of life in patients after undergoing PCI.

2. Method

A literature finding was carried out using Pubmed, ScienceDirect, and Google Scholar. The keyword that used to simplify the field of searching were: 'quality of life', 'percutaneous coronary intervention', 'coronary artery disease'. Grey article also used to maximize the exploration of the materials. There were 10 articles that were analyzed in this study.

3. Findings

3.1. Coronary Artery Disease

A condition where the blood lacking of oxygen flows into myocardium that caused by the narrowing vessels called as coronary artery disease (Shahjehan and Bhutta, 2020). Angina or chest discomfort is the most common symptoms that occurs to the patients who are diagnose with CAD. Patient with CAD may experience Myocardium Infarction (MI) that have the symptoms of shortness of breath, weakness of the body, heavy body, nausea, abnormal heart beating, and discomfort in extremities (CDC, 2019). It is included as one of the most life-threatening disease with over 9 million deaths worldwide (Manjari Regmi and Siccardi, 2019) while in Indonesia CAD has become the second cause of death. The prevalence of CAD is the highest compared to other cardiovascular disease (Khan et al., 2020). The factors that influence CAD is distinguished into modifiable and non-modifiable factor (Shahjehan and Bhutta, 2020). Male are tends to have CAD than female and the increasing prevalence in people over 40 years old are higher (Gomar, et al., 2016). Clinical presentation that can be found in CAD are includes stable angina and acute coronary syndrome (ACS). Acute coronary syndrome consist of unstable angina, non ST elevation myocardial infarction (NSTEMI), and ST elevation myocardial infarction (STEMI). (Anumeha, Singh, and Grossman, 2019). There are some choices for CAD treatments based on the disease condition including lifestyle modification, pharmacological, and revascularization (Cassar et al., 2009).

3.2. Percutaneous Coronary Intervention

Percutaneous coronary intervention (PCI) is a procedure to reduce the clot or blockage in the artery. This is non-surgical and invasive that aims to enhance the blood flow. One of the most common methods of PCI is using balloons to keep the artery open (Ahmad et al., 2020). Another procedure of PCI is to put a stent in the artery in order to open up the blockage vessel. The stent will keep the form of the artery so that the collapse would not happen (Bonaventura, Montecucco, and Liberale, 2017). Percutaneous coronary intervention ideally is conducted in patient that fail in pharmacological therapy. The indication of PCI in CAD patient is based on the clinical condition and it is highly recommended in the condition that CAD affect quality of life (Abubakar et al, 2023). Primary PCI is a treatment that given to STEMI patients within 12 hours since the symptoms occur (Talreja et al., 2020). Also, in unstable angina patient, time become very important to conduct PCI in order to prevent MI in the patient. In patient with chronic total occlusions (CTOs), PCI is advised to be given to them especially who already experiencing the symptoms and has an indication of myocardial ischemia and viable myocardium. Drug-eluting stents (DES) is one of the major investments in PCI devices that can prevent the blood clot and scar tissue formation because the surface come up gradually (Abubakar at al, 2023).

3.3. Quality of Life

Quality of life is a concept that has a broad dimension in aspects of life, it includes positive and negative perspectives. Even though healthy is the main domain of quality of life, the measurement of other aspects of life such as culture, values, and spirituality also have their own complexity (CDC, 2019). Quality of life has dimensions including physical, emotional, social, and environment. Clinical study that asses the condition of chronic disease can be measured using quality of life (WHO). On the individual level, correlation of health perception such as physiological condition, energy level, functional status, social support, physical condition is included in health-related quality of life (HRQOL). Quality of life is associated with the outcome and

treatment of the disease. Quality of life is a form of subjective evaluation as the reflection to the goals. The significance of QOL measurement is to find the variability results of the individual disease processes, symptoms, prognosis, and improvement (Teoli and Bhardwaj, 2023). Quality of life is important to find the condition based on they experienced to determine the best therapy, care, and rehabilitation of the patients. HRQOL is an assesment that related to the duration of life in terms of functional states, impression, opportunities after the illness (Haraldstad et al., 2019). QOL describe overall aspect of well-being based on subjective experiences of the respondent.

3.4. Result

Table 1. Result findings

| Study | Sample Population | Method | Instrument | Result |
|--|---|-----------------|------------------------|---|
| Mujtaba et al., 2020 | Rural population | Cross sectional | HeartQol Questionnaire | 84.22% had excellent QOL results (Median: 31 [23 -37]) |
| Tsolou, 2023 | All patients that underwent PCI in a public hospital | Cross sectional | SF-36 | Significant increase after 12 months (Median: 45 [IQR: 30 -65]) |
| Aulia, Nuraeni, and Harun, 2020 | Post PCI patient in Hasan Sadikin Hospital | Cross sectional | Macnew Questionnaire | 95% of the total population had high QOL |
| Li, Ruijie, et al., 2012 | Elderly | Cross sectional | SF-36 | Significantly higher after 6 months than the baseline |
| Fakhrzad et al., 2016 | CAD patients in Iraq | Cohort study | SAQ | There's an improvement after PCI in the mean result: Before: 59.97 ± 13.33 After: 70.51 ± 14.64 |
| Bakhsh et al., 2016 | All patients that underwent coronary revascularization at Chamran Heart Center (March – September 2010) | Cross sectional | Macnew Questionnaire | Significantly higher in 6 months after treatment (mean: 53.52 ± 15.63 .) |
| Anggraini and Andani, 2018 | 3 months post PCI patients | Cross sectional | WHOQOL Questionnaire | Domain physical: 26.3% high results Domain Psychological: 78.9% high results Domain Social: 63.2% high result Environment domain: 63.2% high results |
| Salsabila, Nurnusna, and SUBandi, 2023 | All patients that underwent PCI at Raden Matta Her Hospital (December 2022 – January 2023) | Cross sectional | WHOQOL BREF | Very good QOL: 75.93% Good QOL: 24.07% |
| Kumar et al., 2021 | 6 months post PCI patients | Cross sectional | SF-36 | 52.9% had better QOL and 24.7% much better QOL after 1 year |

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|------------------------------|-------------------------------|--------------------|-------|--|
| Lestari and Sunaryo, 2018 | 3 months post PCI patients | Cross sectional | SF-36 | receiving PCI Good QOL: 60% Very good QOL: 40% |
|------------------------------|-------------------------------|--------------------|-------|--|

All the studies above shows that the quality of life results after underwent percutaneous coronary intervention (PCI) is excellent. Only one study dominance in low particularly in the aspect of physical. According to the result of the study itself, it is mentioned because of the respondents were coming from elderly in which they tend to have physical predominance factors that affect quality of life such as decrease in physical cognitive. According to the Gomar, et.al. (2016), the lifetime risk of CHD increases up to 49% in people aged 40 years especially in male. Based on AHA journal, these phenomena emerge because the serum totalcholesterol increases together with the increase of age.

However, the good results that gained by other studies indicate that PCI has successfully increase the quality of life of the patients. This could be happened since the narrow vessel caused by plaque getting wider so that the flow returns to normal as its function. Thus, the patient does not or less in experiencing the chest discomfort and prevent the mortality and morbidity that caused by coronary artery disease. Quality of life of the patient should be increased in score since they expected to experience better abilities as the patients used to (Nuraeni et al, 2016). As health is includes in the aspects of quality of life, this condition is able to influence the QOL result. Nevertheless, a study conducted by Tsolou, 2023 stated that there were some clinical factors such as gender, age, education, and employment that could affect the result of quality of life. For example, in participants with primary educations shows worse results because the role of education that develop the adaptive mechanism are able to handle the needs of the participants better. Also, the factors of low socio-economic had correlation with the major-adverse cardiac effect in PCI thus affecting quality of life.

4. Conclusion

The result of quality of life in CAD patients shows enhancement after underwent percutaneous coronary intervention (PCI). Thus, this condition occurs because the patients experience less symptoms after PCI that impact the score of QOL. However, there are some underlying factors that might affect the QOL result.

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