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Quality of Life Patients with CAD after Percutaneous Coronary Intervention at Cardiac Center of Central Public Hospital Dr. Hasan Sadikin Bandung

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ABSTRACT
Quality of life of patients CAD after PCI needs to be seen as an evaluation of the interventions carried out, which need to be studied continuously by looking at health status, socioeconomic, and differences in the measurement tools used can be found differences from each item measured. This study aims to look at the quality of life of patients with CAD after PCI at the cardiac center of Central Public Hospital Dr. Hasan Sadikin Bandung. This study uses a quantitative descriptive method with a cross-sectional approach. The samples in this study were all patients CAD after PCI who were outpatient at Central Public Hospital Dr. Hasan Sadikin Bandung. Samples were taken using purposive sampling technique and obtained 100 respondents. Data is collected using Macnew Heart Disease instruments by analyzing data using frequency distribution. The results showed that 95 respondents (95%) had a high quality of life. The quality of life results based on subvariables from highest to lowest are obtained as follows; emotional subvariable (94%) with a mean of 5.90, social subvariable (94%) with a mean of 5.84 and physical subvariable (93%) with a mean of 5.60. In conclusion, almost all respondents have a high quality of life which is reinforced by the results of high social and emotional aspects, but the physical aspects still need to be improved by providing adequate information regarding the patient's disease and the benefits of attending cardiac rehabilitation to improve the quality of life. In addition, physical, emotional and social management plays an important role in improving the quality of life of patients.

Introduction

Non-communicable diseases that become the number one cause of death every year are cardiovascular disease. The World Health Organization in 2018 stated that as many as 35% of the causes of death in Indonesia were caused by cardiovascular disease. Coronary Artery Disease (CAD) is the most common cardiovascular disease suffered by the people of Indonesia. The prevalence of CAD in Indonesia based on a doctor's diagnosis in 2013 was 0.5% or estimated to be around 883,447 people, while based on symptoms diagnosis of 1.5% or about 2,650,340 people. West Java Province as the province that has the highest prevalence, which is around 0.5% or 160,812 people (Ministry of Health Republic of Indonesia & Litbangkes, 2014). Based on the medical records of Central Public Hospital Dr. Hasan Sadikin, the number of CHD patients from 2014-2016 obtained data on outpatients as many as 2,289 people (Chaerunnisa, Nuraeni, & Hernawaty, 2017).

Coronary Heart Disease interferes with the lives of sufferers. According to the Indonesian Cardiovascular Specialist Association (PERKI), it states that CAD patients will feel chest pain in the middle (retrosternal) such as being crushed by a heavy object or feel hot, tightness, discomfort in the solar plexus, weakness and others (PERKI, 2018). This is certainly disturbing in the process of the patient's life, so it is necessary to take an action to return the patient to life as before illness.

Revascularization is an action to restore blood flow and myocardial reperfusion so that the blood supply to the heart increases (PERKI, 2015). Patients who undergo cardiac revascularization have a much better physical condition compared to patients who do not revascularize. Nuraeni et al., (2016) stated that the factors that influence the quality of life of CAD patients include depression, anxiety and revascularization, with revascularization as a positive influencing factor.

Revascularization consists of three types. Medically using fibrinolytic agents and mechanically using Primary Percutaneous Coronary Intervention (PCI) or Coronary Artery Bypass Surgery (CABG). Percutaneous Coronary Intervention, hereinafter referred to as PCI, is a non-surgical intervention procedure that uses a catheter to dilate or open narrowed coronary vessels due to atherosclerosis or thrombosis using a balloon or stent. This can improve perfusion in the heart muscle so that it can improve the quality of life of patients (Anggraini & Andani, 2018; Nuraeni et al., 2016; PERKI, 2016). In line with research conducted by Patel et al., (2010) and Sipötz et al., (2013) who reported that after PCI there was a decrease in the incidence of infarction, improved vascularization, reduced recurrence frequency and reduced bleeding complications and decreased mental distress.

Other research also states that PCI provides lower mortality rates than other therapies (Palmerini, Serruys, Kappetein, Genereux, & Riva, 2018). Thus, this PCI is one of the interventions chosen at this time. On the other hand a study conducted by Caggegi et al (2018) with the number of respondents (n = 583) showed that after one year after the intervention, the incidence of Major Adverse Cardiac Events (MACE) was higher in PCI patients compared to the CABG projected by an increase in revascularization events (Wihanda et al., 2014). However, data related to revascularization in Indonesia is not yet available.

Another phenomenon related to insurance available in Indonesia, one of which is BPJS. The burden of BPJS costs for CAD patients continues to increase every year, where to finance one CAD patient requires 5,883 healthy class III BPJS participants (BPJS, 2017; Kemenkes RI, 2017). Seeing the amount of costs required, the BPJS limits the number of stent installations for one patient, regardless of how many stent installations are needed by CAD patients. To be able to get a chance for a second stent, the patient needs at least 6 months. This is certainly very influential on the quality of life of patients, so that the quality of life of patients after PCI needs to be seen.

Quality of life is a multidimensional concept consisting of physical, emotional, social

and well-being of a person towards their health conditions that are influenced by values and culture in the surrounding environment (Wahyuni Aziza, 2010). The World Health Organization in 2012 defines quality of life as individual perceptions of health status, psycho-social status, life satisfaction and well-being that they are experiencing in accordance with the values and culture in which they live in relation to their goals, hopes, standards and concerns. Quality of life is a dynamic thing because there are many factors that influence it, seen from the progress in management, health insurance, service system improvement, economic status, social life, patient and family awareness and educational programs that continue to be developed (Denvir et al., 2006 ; Wahyuni Aziza, 2010). This is the basis for research related to quality of life must be carried out continuously.

IHE in 2008 in (Tias Endarti, 2015) stated that the benefits of measuring the quality of life among others were to evaluate the extent of the success of health care / actions that have been given and to identify possible problems that will arise after health management of CAD patients. Vecchis and Ariano (2016) report that high quality of life can significantly reduce the risk of unscheduled hospitalization. While low quality of life according to Höfer, Benzer, and Oldridge (2018) is the highest cause of death in CAD patients, so this quality of life needs to be seen continuously as an effort to reduce deaths due to CAD.

A nurse must assesment patients holistically, viewed from biological, psychological, social and spiritual aspects. These four aspects are reflected in the quality of life of patients. At present, many measurements have been developed related to the specific quality of life in patients with cardiovascular disease including Seattle Angina and MacNew Heart Disease. MacNew Heart Disease looks holistically at what Seattle Angina cannot explain. Seattle Angina tends to study more physical aspects compared to other aspects (Chan, Jones, Arnold, & Spertus, 2014), in contrast to MacNew Heart Disease which examines three aspects as a whole including physical, social and emotional aspects (Höfer, Lim, Guyatt, & Oldridge, 2004; Yazdani-Bakhsh et al., 2016).

Central Public Hospital Dr. Hasan Sadikin Bandung is a referral hospital in West Java which has adequate resources and facilities and is continuously being developed as a teaching hospital. This hospital has many installations, one of which is a Heart Service installation. Based on data from the Central Public Hospital Dr. Hasan Sadikin Bandung, the number of adult patients undergoing PCI action was 557 patients. These PCI actions have a fairly large number of other actions. Based on the phenomena previously described, researchers feel the need to do research related to the quality of life of CAD patients after PCI.

Method

The research method used in this research is quantitative descriptive which aims to describe the description of the quality of life of CAD patients after percutaneous coronary intervention (PCI) in the Cardiovascular Hospital Installation Dr. Hasan Sadikin Bandung. The study design used was cross sectional. This study involved 100 respondents who had done PCI.

The variable in this study is quality of life. Quality of life consists of 3 sub-variables; physical, emotional and also social sub-variables. Quality of life is measured using the MacNew Heart Disease instrument which is a development of the QLMI instrument. This instrument consists of 27 items consisting of 13 physical domain items, 13 social domain items and 14 emotional domain items. The maximum score for all domains is 7 and the minimum score is 1. The highest score in each item represents a high quality of life condition, and the lowest score in each item represents a low quality of life condition. The validity of the instrument was tested with construct validity which showed that 27 questions in this questionnaire were in the range of 0.202 - 0.716, so the instrument was declared valid. Researchers conducted a reliability test using the Cronbach Alpha test on all respondents (n = 100) with a result of 0.897,

where the significance value used was> 0.60, so the instrument was considered reliable to measure the quality of life for coronary heart patients after revascularization therapy.

In this study, data analysis was performed using univariate analysis. Univariate data analysis is used to determine the characteristics of respondents (demographic data and disease status) and quality of life. Univariate analysis results are described with minimum, maximum, average, standard deviation, frequency and percentage results. Researchers have tested data normality using the Kolmogorov-Smirnov method on 100 respondents (n = 100) with results ≤ 0.05, where these results indicate that the data are not normally distributed, so the statistical analysis used by researchers to categorize the results of research is the middle value (median). To interpret the results of this study, the researchers categorized respondents into 2 groups: high quality of life and low quality of life.

Results

Characteristics of Respondents can be seen in Table 1 to Table 5 as follows:

Table 1 demographic characteristics of respondents (n = 100)

Characteristics	Frequency *(f)*	Percentage *(%)*
Age		
Middle Adult (36 – 45 years)	1	1
Late Adulthood (46 – 55 years)	4	4
Early elderly (56 – 65 years)	27	27
late elderly (> 65 years)	68	68
Gender		
Male	87	87
Female	13	13
Marital Status		
Married	95	95
single	1	1
Divorce	4	4
Last Education		
Basic (SD, SMP, SMA)	62	62
high (D3, S1,S2, S3)	38	38
Employment		
Work	50	50
Don't work	50	50
Insurance		
Yes	96	96
No	4	4

Table 1 shows that the majority of respondents were over 65 years old (late elderly) and had a basic education background. Almost all respondents were male and married. The number of respondents who work together with the number of respondents who do not work is 50 respondents. Almost all respondents who routinely do outpatient treatment at this hospital use BPJS facilities or other insurance.

Table 2 disease status and respondent behavior (n = 100)

Characteristics	Frequency *(f)*	Percentage *(%)*
Last received PCI (Post PCI)		
< 6 Bulan	40	40
> 6 Bulan	22	22
> 1 Tahun	38	38
Body Mass Index		
Normal	49	49
Overweight	40	40
Obesitas	11	11
Smoking History		
Yes	44	44
No	14	14
No, since diagnosed CAD	42	42
Medication (1 bulan terakhir)		
Routine, according to the recipe	91	91
Several times do not consume	9	9
Chest Pain		
Never	50	50
1-2 times/ week	41	41
> 2 times/ week	1	1
1-3 times/ week	5	5
> 3 times a day	3	3
Cardiac Rehabilitation		
Always attend meetings	28	28
Several times absent	10	10
Never attend	62	62

meetings		
Dietary/ eating patterns		
Bad Diet (Consumption of foods high in salt, fat and sugar)	77	77
Good Diet (Not consuming foods high in salt, fat and sugar)	23	23

Table 2 shows that almost half of the respondents had received ring or PCI less than 6 months, had a history of smoking, had a normal BMI and nearly half of the respondents had overweight. Almost all respondents have adherence to taking good medicines. Clinical manifestations of coronary heart disease in the form of chest pain are not felt by some of the respondents, but almost half of respondents still complain of chest pain, they complain of chest pain 1-2 times a week. Nearly half of the respondents always follow cardiac rehabilitation and most of the others do not attend cardiac rehabilitation. In managing the diet, only a small proportion of respondents who already have good diet management, most of the others still show inadequate prevention behavior, where respondents still consume foods high in salt, fat and sugar.

Table 3. Frequency distribution of overall quality of life (n = 100)

Quality Of Life	Frequency (*f*)	Percentage (%)
Low	5	5
High	95	95
Total	100	100

According to the data presented in table 3, it shows that almost all respondents have a high level of quality of life (95%) and a small proportion of respondents have a low level of quality of life (5%).

Table 4. Frequency distribution of quality of life based on 3 sub-variables (n = 100)

Sub variabel	High		Low		Mean	SD	Min	Max
	f	%	*f*	%				
Physic	93	93	7	7	5,60	0,93	2,08	6,92
Emotional	94	94	6	6	5,90	0,92	2,93	6,86
Social	94	94	6	6	5,84	0,95	2,08	7,00

The above table shows that almost all respondents have a high quality of life in each subvariable. Emotional and social sub-variables are the highest quality of life compared to physical sub-variables, although the difference is not so significant.

Table 5. Distribution of Frequency of Quality of Life for each sub-variable based on analysis of respondents' answers (n = 100)

Subvariabel	Respondents Answers	High		Low		Mean	SD
		f	%	*f*	%		
Physic	Respondents do not feel limited or restricted as a result of heart problems	89	89	11	11	5,16	1,623
	Respondents do not feel chest pain when doing daily activities	88	88	12	12	5,95	1,533
	Respondents feel able to carry out social activities as usual or social activities with their families	87	87	13	13	5,97	1,344
	Respondents felt they were still involved in activities with other people despite having heart problems	66	66	34	34	5,91	2,096
	Respondents did not experience shortness of breath during daily physical activities	63	63	37	37	5,69	1,600
	Respondents feel able to socialize despite heart problems	60	60	40	40	6,81	1,939
Emotional	Respondents did not feel like they wanted to cry or shed tears	94	94	6	6	6,40	1,082
	Respondents feel useful and feel capable	91	91	9	9	6,34	1,472
	Respondents feel confident in themselves or confident	91	91	9	9	6,34	1,257
	Respondents do not feel anxious or afraid	80	80	20	20	5,81	1,762
	Respondents did not feel very tired or underpowered	60	60	40	40	4,86	1,939
	Respondents feel happy, satisfied and happy with their personal lives	50	50	50	50	4,63	1,079
Sosial	Respondents feel useful or capable	91	91	9	9	6,34	1,472
	Respondents feel confident in themselves or confident	91	91	9	9	6,34	1,435
	Respondents felt that other people still believed him as they did before they had heart problems	90	90	10	10	6,42	1,224
	Respondents did not feel that they encountered many physical obstacles or limitations as a result of their heart problems	68	68	32	32	5,40	1,443
	Respondents do not feel limited or restricted as a result of heart problems	63	63	37	37	5,16	1,600
	Respondents do not feel that the family protects it too much	57	57	43	43	4,35	2,354

Discussion

Based on the results as many as 95 patients had a high quality of life and as many as 5 patients had a low quality of life. The results of the study showed that almost all respondents had a high quality of life. These results are in line with research conducted by Nuraeni et al. In 2016 who reported that the quality of life of patients after revascularization was far higher than those who did not. This happens because after doing revascularization therapy, the narrowed coronary arteries will return to open causing blood flow to the heart to return to normal so that the heart can return to work according to its function. Furthermore, this can reduce physical complaints such as chest pain, shortness of breath and activity intolerance, so that it will improve the physical abilities of patients approaching the condition before illness, this condition will affect the increase in quality of life scores of patients.

Various studies state that the quality of life of patients is affected by age, sex, marital status, education, comorbidity and cardiac rehabilitation (Darvishpour, Javadi-pashaki, Salari, Sadeghi, & Taleshan-nejad, 2017; Salazar, Dueñas, Fernandez-palacin, & Failde, 2016; Taghadosi, Arani, & Gilasi, 2014). When viewed from the data distribution, this high quality of life is almost experienced by all the characteristics of respondents such as gender, educational background, marital status, employment, compliance in taking drugs, rehabilitation, eating patterns/ diet, body mass index (BMI) and also the length of time after PCI.

Various studies have revealed that the quality of life of patients after percutaneous coronary intervention significantly improved compared to patients who did not take an PCI. Even though almost all respondents in this study had high quality of life, a small portion of respondents was found that as many as 5% had low quality of life, this is certainly a problem if related to the results of previous studies which stated that quality of life Post PCI patients tend to increase. When viewed from the results of the distribution of data, the low quality of life tends to be experienced by demographic characteristics in the form of age, marital status, medication, chest pain, rehabilitation, the length of time after PCI, eating patterns/diet and body mass index (BMI). However, on these demographic characteristics the number of respondents with high quality of life is more dominant.

When seen in the age category, the results showed that all patients who had a low quality of life were included in the early and late elderly categories (≥ 56 years). This happens because of the influence of physical factors on the quality of life of the elderly, where in the elderly a person will experience changes in physical, cognitive, and psychosocial aspects (Rohmah, Purwaningsih, & Bariyah, 2012). The low quality of life globally in the elderly is also supported by the results of the three aspects that are equally low, so that these three aspects are an interrelated condition.

Physically, low quality of life experienced by many respondents in the late adult category (Pralansia). This is in line with research Blankenship et al., (2012) which states that elderly patients have improved quality of life that is equal or even greater than young patients. This happens because of the many physical obstacles they feel at their productive age to do so many activities, supported by the data shown in (table 5) that there are respondents who feel they encounter many physical obstacles or limitations as a result of their heart problems.

Emotionally, the low emotional quality is entirely felt by the elderly (100%). This happens because the physical condition is increasingly frail, physical capacity has been reduced and the illness suffered makes the elderly feel their lives are meaningless and despair with the life they live so they can not enjoy their old age with satisfaction and happiness, according to the findings The researcher presented in (Table 5) where the respondent felt irritable, impatient, dissatisfied, unhappy and unhappy with his life.

Furthermore, the social aspect shows that the low quality of life is also entirely experienced by the elderly (100%). This is due to the inactivity of the elderly in their social interactions caused by physical impairments as a

result of their illness and physical setbacks due to increasing age and low emotional quality, according to the findings in this study presented in (Table 5) that respondents feel limited to move as a result of his heart disease and respondents feel that as if the family is too protective of themselves, so they feel they do not have the freedom to do activities including social activities.

To improve the quality of life of the elderly after PCI, it can be started by improving its social aspects by providing high social support both from family, relatives or the surrounding community. Chaerunnisa et al., (2017) reported that the relationship of social support with depression in CAD patients was a negative relationship, so the higher the social support in patients, the lower depression experienced by patients. This means that social support can be an alternative in controlling the incidence of depression in CAD, which will later lead to emotional improvement as well. Evidence shows that improving mental well-being can contribute substantially to improving physical health, reducing morbidity and mortality (Ford et al., 2008; Mykletun et al., 2007).

Based on research conducted (Table 1) it is known that almost all respondents as many as 95% have marital status. Marriage is included in one of the support systems that can improve the quality of life of patients, so that divorced individuals or widows have a lower quality of life compared to individuals who have a partner. Kuhl, Fauerbach, Bush, and Ziegelstein, (2009) stated that patients who live alone show higher levels of anxiety than patients who live with their families. Evidence has shown that individuals with loneliness have lower quality of life compared to individuals who have sources of support such as spouses and children (Salazar et al., 2016; Taghadosi et al., 2014). However, these results are different from those that researchers found that this low quality of life tends to be experienced by respondents who have married status. Respondents with married status have a high quality of life that is as much as 94.7% and respondents with marital status divorced / unmarried have a high quality of life as much as 100%. This might happen because the patient feels a burden to his family with the disease he suffered for a lifetime. Physically, emotionally and socially all married patients have a low quality of life. This is because physically they still feel chest pain (Table 2) which causes them to have high physical limitations to move so that they cannot carry out their role in family or community life, this will certainly also affect the social aspects. In addition, Panthee and Kritpracha (2011) stated that the presence of problems in coronary arteries can affect the quality of sexual activity in married individuals, according to what researchers found that respondents felt their heart problems affected their sexual relations, so this could affect their emotional state.

Respondents who routinely consume drugs routinely and according to prescriptions have a high quality of life as much as 96.7%, while respondents with adherence to medication that have not been good have a high quality of life as much as 77.8%. This study shows that low quality of life is more experienced by respondents with poor treatment adherence, which is as much as 22.2%. Physically, those who do not take drugs regularly will often experience relapses such as chest pain (Table 2) which can trigger feelings of anger, impatience, anxiety, so that it will have an impact on his emotional state and hinder the process of social interaction. Lunelli, Portal, and Esmerio (2009) revealed that patients who are aware of their illness, physiopathological mechanisms, triggers and risks, logic and benefits of their treatment will show better medication adherence. This information means that the low level of adherence of a person to the treatment can be caused by unconsciousness and ignorance of the disease they are experiencing, so to improve this needs to be increased awareness and knowledge of patients and families about the disease and how the impact will arise if they are not compliant in taking drugs through education.

Another factor that influenced the low quality of life of patients post PCI in this study was the low participation of patients in participating in cardiac rehabilitation in 62

patients (62%). Although, as much as 91.9% of this number have a high quality of life, the results show that 8.1% of them experience a low quality of life, this result is supported by the same results in each subvariable. This happens because of the low level of participation and knowledge related to the benefits obtained from attending cardiac rehabilitation or the presence of other inhibiting factors in the form of ignorance that the patient is recommended to attend cardiac rehabilitation by a doctor.

Patients who do not participate in cardiac rehabilitation programs are more likely to experience dysrhythmias or more frequent heart rate (Chou et al., 2014), tend to have a low level of compliance with the consumption of drugs such as beta blockers, Angiotensin Converting Enzym Inhibitors (ACE- I) which is based on ignorance of the rules in the use of drugs and the right time in taking drugs (Doll, Hellkamp, Thomas, Ho, & Kontos, 2010). This is consistent with what researchers found that there were still respondents who were not compliant in taking drugs, which was 9% (Table 2). in addition, the impact caused by inactivity in participating in cardiac rehabilitation programs is the recurrence of metabolic syndrome which tends to be unstable in CAD patients so that re-hospitalization also increases (Siegmund, Naylor, Bena, & Mcclelland, 2016). This is supported by data that found that respondents who complained about chest pain were 50% (Table 2).

Research conducted by Stevani, Nuraeni, and Sari in 2017 regarding differences in inhibiting factors in patients who are active and non-active in undergoing cardiac rehabilitation at the cardiac clinic Dr. Hasan Sadikin said that the inhibiting factors in the inactive patient group were time, logistics, health services and functional status. This is confirmed again by the results of Saripudin, Emaliyawati and Somantri's research (2018) that distance and ignorance of patients regarding cardiac rehabilitation are the two most common obstacles. Therefore, providing information directly during discharge planning (when the patient completes post-treatment hospitalization) becomes very important. This information can be given directly or through media in the form of leaflets containing all information related to cardiac rehabilitation which is expected to increase patient knowledge. In addition, the application of cardiac rehabilitation in community and home-based cardiac rehabilitation settings needs to be considered in addressing the low participation of patients in participating in cardiac rehabilitation due to distance.

The next factor is the time span after the PCI action, where researchers divide it into 3 categories namely; ≤ 6 months,> 6 months and> 1 year. The results show that respondents post PCI ≤ 6 months have a lower quality of life with a higher percentage of 7.5%. In another sense, when compared between the three, this low quality of life is more experienced by patients who are ≤ 6 months after the PCI action both from the physical, emotional and social aspects. This is not in line with research conducted by Blankenship et al., (2012) who reported that the quality of life of patients post PCI increased significantly in 3-5 months post-treatment. It is also different from the research conducted by Sipötz et al., (2013) which explains that between 1-6 months post PCI there was a significant increase in physical aspects ($p = 0.038$) and social aspects ($p < 0.001$) but not with emotional aspects . This could have happened because respondents did not follow the rehabilitation program, especially for patients who were recommended to attend cardiac rehabilitation by a doctor. In accordance with the data found that as many as 5 patients (8.1%) who did not attend cardiac rehabilitation had a low quality of life from all three aspects. Other causes can be in the form of disobedience in taking drugs, have a high body mass index (abnormal) and a lifestyle that has not changed completely (Table 2). Darvishpour et al., (2017) states that the number of diseased blood vessels affects the quality of life outcomes, patients with mono vessel disease tend to have a high quality of life. However, researchers did not bring up these data in the characteristics of respondents so there is no data to support the previous research.

The results of this study indicate that as many as 51 respondents in this study had a high

or abnormal Body Mass Index (BMI). This study shows that patients in the overweight category experienced more low quality of life (7.5%) compared to patients in the obesity category (0%). This is probably due to differences in the number of samples between patients in the overweight category and patients in the obesity category. Similar results were reported by Bertrand, Pimenta, and Mograbi in 2015 which showed that the group with a low body mass index (BMI) had a better quality of life compared to the group with a high BMI.

The accumulation of body fat, especially in the central part of the body can increase the risk of heart disease and blood vessels. Fat cells in the abdominal wall have a larger size that is dominated by Low Density Lipoprotein (LDL) cholesterol which is harmful to the body and is more ready to release fat into the blood vessels compared to fat cells elsewhere, so the risk of formation is Atheroscelerosis's return will increase. In addition, weight gain can increase the incidence of angina pectoris (Rahayu, 2015). Some of these conditions cause low quality of life in patients with high BMI both physically, emotionally and socially.

The results showed that 77% of respondents in this study still did not have a good diet (Table 2), and as many as 6.5% of this number had a low quality of life. This poor dieting pattern has more influence on the physical aspects compared to other aspects, although the difference is not too significant. The results of this study occurred because of the lack of knowledge possessed by patients, where the majority of respondents in this study had a basic education background of 62% (Table 1). Patients Post PCI will always be encouraged to adopt a healthy lifestyle to reduce the risk of CAD, patients who are not compliant in living a healthy lifestyle including a diet low in fat, salt and sugar will tend to re-experience blockages in their blood vessels which have an impact on increasing morbidity and mortality. Harun et al., (2016) explained that there is a relationship between knowledge and adherence to running a healthy lifestyle. So to improve this condition, the health service should pay attention to the patient's knowledge when providing interventions related to the importance of living a healthy lifestyle in order to improve adherence to running a healthy lifestyle in patients after PCI.

1. Quality of life of patients post PCI based on physical subvariables

Physical subvariable is the lowest aspect of the results of this study, although the difference is not too far from other aspects. Almost all respondents have a high quality of life (93%) and a small proportion of respondents have a low quality of life (7%). After analyzing the distribution of the respondents' average answers, it was obtained that data answers were more experienced by respondents in this aspect, namely; Even though they have heart problems, respondents do not feel limited or restricted in their activities, they do not feel chest pain so they are able to carry out social activities as usual. This is because respondents already have good physical quality so this needs to be maintained in maintaining the quality of life of patients. But on the other hand, there were still some respondents who complained of tightness when on the move, felt not involved in activities with other people and felt unable to socialize due to heart problems. So to improve the quality of life of patients on this aspect, physical complaints of patients need to be minimized by providing adequate information related to the benefits provided from following a routine cardiac rehabilitation program. In addition to increasing physical capacity gradually, cardiac rehabilitation also provides benefits to increase the level of patient compliance with medication consumption and a healthy lifestyle, including weight control, which is the thing that affects the low quality of life of patients in this study.

2. Quality of life of patients post PCI based on Emotional subvariables

Emotional sub-variable is the highest aspect of the results of this study, although the difference is not too far from other aspects. Almost all respondents have a high quality of life (94%) and a small proportion of respondents have a low quality of life (6%). After analyzing

the distribution of respondents' answers, it was found that the answers experienced by respondents in this aspect were; respondents did not feel sad let alone to want to cry or shed tears, respondents felt useful and capable, also many of the respondents felt confident with themselves. This is considered the most influential on the high quality of life of patients in this study, so this needs to be maintained in maintaining the quality of life of patients. But on the other hand, there are still some respondents who feel anxious, afraid, feel very tired, and feel dissatisfied with their lives because they have heart problems. So as to improve the quality of life of patients on this aspect, patients are encouraged to make lifestyle changes to avoid stress and give sincere attention from those around. In addition, provide relaxation training to patients, stress management and provide social support for patients.

3. Quality of life of patients post PCI based on Social subvariables

Social sub-variables are the second highest aspect of the results of this study, although the difference is not too far from other aspects. Almost all respondents have a high quality of life (94%) and a small proportion of respondents have a low quality of life (6%). After an analysis of the average distribution of respondents' answers, the answers obtained were more experienced by respondents in this aspect, namely; respondents feel useful and capable in living their lives, respondents feel they still get the trust of others despite having heart problems, and are confident in themselves or confident. This is considered the most influential on the high quality of life of patients in this study, so this needs to be maintained in maintaining the quality of life of patients. But on the other hand, there are still some respondents who feel that they encounter many physical obstacles or limitations, feel constrained or limited due to their heart problems and feel as if their family is overprotecting themselves. So to improve the quality of life of patients in this aspect, nurses and other health workers need to master how to motivate patients to avoid psychosocial disorders and help patients to meet their social support needs. Nurses can involve the family as well as those closest to the patient to provide support to CAD patients such as sending patients to a routine heart rehabilitation program, reminding time to take medication and supporting patients to adopt a healthy lifestyle.

Conclusions

Based on the results of research conducted on 100 respondents post PCI in Central Public Hospital Dr. Hasan Sadikin Bandung found that almost all respondents (95%) had a high quality of life overall, which was also supported by high results in each subvariable namely physical, emotional and social. The highest quality of life results based on subvariables are in the emotional aspect (94%), followed by the social aspect (94%) and the last is the physical aspect (93%). However, a small proportion of respondents still have a low quality of life especially in their physical sub-variables (7%) due to non-compliance with taking medication (22.2%), never following a cardiac rehabilitation program (8.1%) and patterns unhealthy eating (67.3%).

So to improve the quality of life of patients in this aspect, patients need to be given adequate information regarding the benefits provided from attending a routine cardiac rehabilitation program. In addition to increasing physical capacity gradually, cardiac rehabilitation can also provide benefits to increase the level of patient compliance with medication consumption and a healthy lifestyle, including weight control, which is the thing that affects the low quality of life of the physical aspects of patients in the study.

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