



## MALE OR FEMALE, WHO IS THE HIGHEST? LIFE OPTIMISM IN CARDIOVASCULAR DISEASE PATIENTS

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### Abstract :

This study aims to analyze optimism in coronary heart patients and optimism in coronary heart patients based on gender differences as the novelty of this research compared to previous studies and it is the result of applied science in the field of public health. This type of research is survey research with a quantitative approach. The population in this study were 213 patients with coronary heart disease who had been clinically diagnosed by a doctor and were undergoing outpatient treatment at the Arifin Achmad Hospital in Pekanbaru. The number of samples in this study was 139 people. The data analysis technique used in this research is descriptive statistical analysis and inferential data analysis using the t-test. The results of the study show that there are differences in optimism in terms of gender in coronary heart patients. Therefore, these findings are useful for the development of positive psychology in the context of coronary heart patients.

Keywords: Cardiovascular Disease, Gender, Optimism

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## INTRODUCTION

World Health Organization (WHO) experts estimate in 2016 that 17.6 million people in the world die each year. In developed countries, the cause of death caused by coronary heart disease ranks first every year. Coronary heart disease (CHD) is the first leading cause of death followed by cancer in developed countries such as Europe and America (Schwingshackl, et al., 2017). Along with increasing life expectancy around the world, including Indonesia as a developing country, coronary heart disease (CHD) mortality has also increased, especially in the middle and old age groups in the population (Hall, et al., 2020). Approximately one third of all adults over 35 years are faced with the threat of coronary heart disease (Zhang, et al., 2021), and in Indonesia itself CHD is the main cause of death in the age group over 40 years (Ghani, et al., 2016). At the Pekanbaru City Hospital, the number of visits for heart sufferers who underwent outpatient care in 2018 was 1046 people, in 2019 there were 2372 patients, in 2020 there were 2873 patients. The data shows that the number of heart sufferers has increased from year to year and has been suffered by many people with a large number of sufferers.

According to WHO, CHD is heart failure, either acute or chronic, which arises due to a lack of blood supply to the myocardium associated with disease processes in the coronary artery system. The medical term acute means sudden and chronic means a long time. Myocardium is the name of all the muscles that make up the heart, coronary blood supply is a network of blood vessels that carry blood to the heart muscle (Wihastuti, et al., 2016). Coronary heart disease is mainly caused by the process of atherosclerosis, namely narrowing of the coronary arteries, caused by atheroma spots consisting of accumulation of fatty connective tissue in the intima of blood vessels (Wihastuti, et al., 2016). CHD is influenced by many factors, according to Wihastuti, et al., (2016) there are two major risk factors that affect CHD, The first thing is risk factors related to diet, such as increased fat in the blood,



carbohydrates, excessive body weight, and protein-mineral factors. The second is non-dieter risk factors, namely family history (possible genetic relationship, related diseases such as diabetes and high blood pressure, sedentary body, smoking and psychological stress such as feelings of helplessness, depression, lack of family support, income Low blood pressure, not having a life partner, are things that can increase mortality due to heart problems. Fear of heart disease stems from the fear of death that comes to everyone who has had a coronary heart attack, for the sufferer it will be prolonged stress or depression (Cosselman, et al., 2015; Townsend, et al., 2015)

The impact of a heart attack on the psyche includes, after a period of heart attack, the psychological impact of a coronary heart attack is that 20-40% experience anxiety and 30-50% experience depression (Pedersen, et al., 2017). The results of this study are in line with the results of a study put forward by DuBois, et al., (2015) that nearly 50% of patients who experience disorders due to cardiac muscle factors show symptoms of depression and 16-20% of them then experience major depression. Patients who experience major depression within six months will have a five times greater risk of death than a group of patients who do not experience depression. From the results of these studies it appears that the biggest psychological impact after a coronary heart attack is stress.

Many of those who had a heart attack or coronary bypass surgery experienced quite severe trauma, so that sometimes for months, even years afterward, they still show signs, in the form of various psychiatric symptoms such as depression and feeling depressed. helplessness, for example, a large number of female and male patients experience difficulty sleeping, depression, limited movement, chest pain, and fear of another attack. (Iswahyudi, 2020). Most patients (80%) are able to resume normal activities if there are no serious complications. Most sufferers succeed in getting improvement through systematic and regular effort. This effort is known as a rehabilitation program (Susanti, et al., 2019).

Rehabilitation programs for coronary heart patients are mostly carried out with medical approaches such as increasing the frequency of exercise, regulating food nutrition to avoid diabetes and obesity, avoiding smoking, routine health checks, and monitoring blood pressure (Susanti, et al., 2019; Halewijn, et al., 2017). The conditions for the patient to return to health and work successfully depend on his own opinion. The tendency of a person's thinking, both optimistic and pessimistic, will have an influence on the adjustment of his psychological life (Bennett, 2015).

Optimistic people are more resistant to disease, have healthier habits than pessimistic people, and the body's defense system also works better in people who are optimistic (Craig et.al, 2021). A realistic and optimistic person takes the problems they face and handles them properly. This means that coronary heart sufferers who use a positive mindset when faced with their illness problems, will be optimistic and able to survive so they will avoid stress. Conversely, a coronary heart patient who uses a negative mindset when faced with a problem, will be pessimistic, give up on problems, feel helpless, hopeless and ultimately stressed because feelings of helplessness and hopelessness are the essence of stress (Segerstrom, Carver, & Scheier, 2017). Optimistic sufferers think that their illness is caused by something that can be changed so that they can successfully deal with problems that will occur in the future. It can be said that coronary heart sufferers who are optimistic in life are those who have confidence that they can overcome everything they face with hope and positive thoughts.

In line with the discussion above, this study refers to research from Sulistiyoningrum (2019) where optimism affects the quality of life of hemodialysis or patients who do routine dialysis, then to research conducted by Applebaum et.al (2014) where optimism significantly helps cancer patients so that able to reduce symptoms of anxiety and depression, reduce patient hopelessness, and increase quality of life for the better. Finally, there is research by Ciria-Suarez et.al (2021) regarding optimism which is a contributing factor to the spirituality of cancer patients. From all previous studies, both in terms of subject and disease, this is a differentiator and update in this study. In addition, there is a gender comparison to be examined which is an update.

## RESEARCH METHOD

This study uses a quantitative research approach. Quantitative methods such as questionnaires are commonly used to analyze data (Alshenqeeti, 2014; Apuke, 2017; Choy, 2014; Suud et al., 2022). The population in this study is coronary heart disease patients who have been clinically diagnosed by

doctors and are currently undergoing outpatient treatment at Arifin Achmad Hospital in Pekanbaru, with a total of 213 people, and the sample size in this study is 139 people. The sampling technique used in this study is non-probability sampling, which means that the sampling technique is not randomly selected. In this study, the sampling technique used was purposive sampling. The characteristics of the sample in this study are: Male and female, Suffering from coronary heart disease for more than 6 (six) months, Aged 35 years and over, and Domiciled in Pekanbaru City.

The data in this study were obtained from quantitative data using a questionnaire. Questionnaires are a useful method for easily collecting data from participants in studies using rating scales (Cagetti et al., 202 CE; Woerkom et al., 2016; Megavitri et. al, 2023). The questionnaire used in this study was made using a Likert scale. Research questionnaires given to coronary heart disease have different scores, namely Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS), and Strongly Disagree (STS). The life optimism scale using dimensions proposed by Seligman (1995) which includes permanence, pervasiveness, and personalization.

Table 1. Optimism Instrument Grid

No	Aspects	Indicator	Favorable	Unfavorable	Total
1	Permanence	Convinced that the good is permanent	1,2	3,4,5	5
		Convinced that the bad is temporary	6	7,8,9	4
2.	Pervasiveness	The ability to absorb the positive side of an event, even a bad one.	10,11,12, 13	14,15,16,17,18,19	10
3.	Personalization	Believing that bad things happen because of external factors.	20,21	22,23,24	5
		Believing that good things are due to internal factors.	25,26	27	3
Total					27

Data analysis technique in this study used descriptive statistical analysis and analytical statistics. Descriptive statistical analysis was carried out with statistical calculations which included mean, mode, median, standard deviation, minimum value and maximum value (Winarsunu, 2017; Odhier et al., 2019; Nurwulandari & Darwin, 2020). Analytical statistical analysis was carried out using a different test, namely the t test, which was then focused on the comparison of perceptions per gender of each class (Zhu, et.al, 2019; Masni, Ralmugiz, & Rukman, 2020; Ramdahan, 2020). The t-test is used if the data is normally distributed and homogeneous (Kurniawan, et.al, 2019; Huda et al., 2020).

## RESULTS AND DISCUSSION

### 1. Products of the Pucak Tinggan Tourism Village

The Pucak Tinggan (Dewi cakti) Tourism Village, which is managed by the Banjar Tinggan Tourism Awareness Group, has a rural tourism product in the form of trekking packages visiting agricultural-based objects such as honey beekeeping on coffee plantations, biogas production from cow manure, and processing of taro chips.

The study was conducted at Arifin Achmad Hospital in Pekanbaru, Riau. The subjects of this study were 139 individuals with coronary heart disease who met the following criteria: male or female, had been diagnosed with coronary heart disease for more than 6 months, aged 35 years or older, and resided in Pekanbaru.

Table 2. Statistical Description of Research Data

Statistical Description	Variable Optimism
Hypothetical Standard Deviation	18
Empirical Standard Deviation	5.502
Hypothetical Min Score	27
Hypothetical Max Score	135
Empirical Min Score	82
Empirical Max Score	114
Hypothetical Range	108
Empirical Range	32

Based on the table above, it can be seen that the hypothetical mean, the empirical mean of life optimism is 81 and the empirical mean of life optimism variable is 96.66. The empirical standard deviation of life optimism is 5.502, while the hypothetical standard deviation of life optimism is 18. The hypothetical minimum score for life optimism is 27 and the hypothetical maximum score is 135. The empirical minimum score for life optimism is 82 and the empirical the maximum score is 114. The hypothetical range of life optimism is 108, and the empirical range of life optimism is 32.

Table 3. Description of Optimism Statistics by gender of Coronary Heart Patients

Optimism	Means	Median	Mode	Minimum	Maximum
Male	97.93	98.00	98	82	114
Female	94.73	95.00	92	84	105

Based on the data description of optimism based on gender, the mean male is 97.93 and the female is 94.73, the median male is 98.00 and the female is 95.00, the male mode is 98 and the female is 92, the minimum male is 82 and the minimum female is 84, the maximum male is 114 and the female is 105. The next is the categorization of optimism variables for coronary heart patients and based on gender differences in coronary heart patients.

Table 4. Categorization Optimism of Coronary Heart Patients

No	Score	Frequency	Categories	Percent
1.	$X < 63$	0	Lower	0
2.	$63 \leq X < 99$	92	Moderate	66.2%
3.	$99 \leq X$	47	High	33.8%
Total		139		100%

Based on the table above, it can be seen that out of 139 coronary heart disease patients in the city of Pekanbaru, there were 92 subjects categorized as having moderate levels of life optimism with a percentage of 66.2%, and 47 subjects categorized as having high levels of life optimism with a percentage of 33.8%. Thus, it can be concluded that the level of life optimism among coronary heart disease patients in Pekanbaru, Riau is in the moderate category.

Table 5. Categorization Optimism of Male Coronary Heart Patients

No	Score	Frequency	Categories	Percent
1.	$X < 93$	12	Lower	14%
2.	$93 \leq X < 103$	58	Moderate	69%
3.	$103 \leq X$	14	high	17%
Total		84		100%

Based on the table above, it can be seen that out of 84 male coronary heart disease patients in Pekanbaru, there are 12 subjects who are included in the low optimism category with a percentage of 14.3%, 58 subjects who are included in the moderate optimism category with a percentage of 69%, and 14 subjects who are included in the high optimism category with a percentage of 16.7%. It can be concluded that the level of optimism in male coronary heart disease patients in Pekanbaru, Riau is included in the moderate category.

Table 6. Categorization Optimism of Female Coronary Heart Patients

No	Score	Frequency	Categories	Percent
1.	$X < 90$	8	Lower	15%
2.	$90 \leq X < 100$	38	Moderate	69%
3.	$100 \leq X$	9	high	16%
Total		55		100%

Based on the table above, it can be seen that out of 55 female coronary heart disease patients in Pekanbaru, there are 8 subjects who are included in the low optimism category with a percentage of 14.5%, 38 subjects who are included in the moderate optimism category with a percentage of 69.1%, and 9 subjects who are included in the high optimism category with a percentage of 16.4%. It can be concluded that the level of optimism in female coronary heart disease patients in Pekanbaru, Riau is included in the moderate category. After conducting descriptive statistical tests on the variables used, the researchers conducted preliminary tests, namely by conducting normality tests and homogeneity tests. This normality test is carried out to see whether the data is normally distributed or not. The results of the normality test can be seen in table 7.

Table 7. Normality Test Results

	Score
Kolmogorov-Smirnov Z	0.776
asyp. Sig. (2-tailed)	0.584

In table 7 about the results of the normality test, it is known that the significance value of Asymp. Sig. (2 –tailed) of 0.584 where the value is greater than 0.05. So according to the basis for decision making in the Kolmogorov-Smirnov normality test above, it can be concluded that the data are normally distributed. Thus, the assumptions or requirements for normality in the regression model have been met. After the normality test was met, the researcher conducted the final prerequisite test, namely by conducting a homogeneity test. This homogeneity test serves to see whether the data is homogeneous or not. The results of the data homogeneity test can be seen in table 8.

Table 8. Homogeneity Test Results

Lavender's Test for Equality of Variances	Sig.
Value	0.939

In table 8 about the results of the homogeneity test, it is known the value of Sig. Levene's Test for Equality of Variances for the student perception variable is 0.305 (this value is the same as the results of the homogeneity test with the first and second values). Because the value of Sig.  $0.939 > 0.05$ , so it can be concluded that the variance of optimism data in men and women with coronary heart disease is homogeneous.

After completing the prerequisite test, namely testing normality and homogeneity. The next researcher tested the hypothesis, namely the independent t-test. The t-test is an example of a parametric test that works on normally distributed scale data and compares the two most frequently used means (Fathy et al., 2016; Gerald, 2018; Astalini et al, 2022). As presented in the results of the data table below.

Table 9. Group Statistics

	Gender	N	Means	std. Deviation	std. Error Means
Optimism	Male	84	97.93	5,430	.593
	Female	55	94.73	5,072	.684

Based on the table above, it is known that the number of optimism data in men is 84 people, while for optimism in women is 55 people. The average value of the results of optimism in men or the mean for optimism in men is 97.93, while for optimism in women is 94.73. Thus, descriptive statistics can be concluded that the difference is significant (meaningful) or not, so it needs to be interpreted in the independent sample t-test table below.

Table 10. Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Optimism	Equal variances assumed	0.006	.0939	3,488	137	0.001
	Equal variances not assumed			3,538	121,104	0.001

Independent sample t-test can be calculated using formulas or SPSS. The first thing to do under the variable view is to write the variable being tested in the first column under the first row. Under the data view: In the data view we click analyze and then click compare means. From compare means we go to independent sample t-test. Under t-test input, move the tested score into the test variable box. Write the test score (population mean) into the test score box and finally click ok (Choudhary, 2018; Gerald, 2018). By comparing the significance, if the probability  $> 0.05$  then the hypothesis ( $H_0$ ) is rejected and if the probability  $< 0.05$  then the alternative hypothesis ( $H_a$ ) is accepted (Agustina, 2018; Bhatti et al., 2019). Based on table 8, it is known that the Sig. Levene's Test of Equality of Variance of  $0.939 > 0.05$ , this means that the data variance between men and women is homogeneous or the same. In the 'Equal Variance Assumed' section, it is known that the Sig. (2-tailed) of  $0.001 < 0.05$ , so as a basis for decision making in the independent sample t test it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted. Thus, it can be concluded that there is a significant difference between the results of optimism in men and women with coronary heart disease.

The steps taken by researchers to determine the comparison of gender optimism is by using prerequisite tests. Prerequisite tests are carried out using normality tests and homogeneity tests (Nurvianti & Syarkowi, 2018; Kurniawan et al., 2019; Suprianto et al., 2019). The normality test is conducted to test whether a series of observations come from some fully defined continuous distribution or normally distributed data (Das & Imon, 2016; Fillion, 2015; Kwak & Park, 2019; Lilliefors, 2017). To test normality, it can be done using Kolmogorov-Smirnov with the provision that if the significance value  $> 0.05$  then the data can be said to be normally distributed (Razali et al, 2012; Ghasemi and Zahediasl, 2012; Kurniawan et al, 2022 ). The homogeneity test is carried out using Levene's test to see whether the data is homogeneous or not, if the Sig. value is greater than  $\alpha = 0.05$ , then this indicates that  $H_0$  can be accepted so it can be concluded that the data variance is homogeneous (Fuad et al., 2017; Laurens et al., 2018; Tekedere & Göker, 2016). Based on the results that have been obtained, the normality test for optimism is 0.584. Meanwhile, for the homogeneity test, the Sig. Levene's Test for Equality of Variances is 0.939. With the sig value of the normality and homogeneity tests being greater than the requirement of 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is fulfilled, the data is processed using descriptive statistics and independent sample t-test hypothesis testing. then this indicates that  $H_0$  can be accepted so it can be concluded that the data variance is homogeneous (Fuad et al., 2017; Laurens et al., 2018; Tekedere & Göker, 2016). Based on the results that have been obtained, the normality test for optimism is 0.584. Meanwhile, for the homogeneity test, the Sig. Levene's Test for Equality of Variances is 0.939. With the sig value of the



normality and homogeneity tests being greater than the requirement of 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is fulfilled, the data is processed using descriptive statistics and independent sample t-test hypothesis testing. then this indicates that H<sub>0</sub> can be accepted so it can be concluded that the data variance is homogeneous (Fuad et al., 2017; Laurens et al., 2018; Tekedere & Göker, 2016). Based on the results that have been obtained, the normality test for optimism is 0.584. Meanwhile, for the homogeneity test, the Sig. Levene's Test for Equality of Variances is 0.939. With the sig value of the normality and homogeneity tests being greater than the requirement of 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is fulfilled, the data is processed using descriptive statistics and independent sample t-test hypothesis testing. Meanwhile, for the homogeneity test, the Sig. Levene's Test for Equality of Variances is 0.939. With the sig value of the normality and homogeneity tests being greater than the requirement of 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is fulfilled, the data is processed using descriptive statistics and independent sample t-test hypothesis testing. Meanwhile, for the homogeneity test, the Sig. Levene's Test for Equality of Variances is 0.939. With the sig value of the normality and homogeneity tests being greater than the requirement of 0.05, it can be concluded that the data is normally distributed and homogeneous. After the prerequisite test is fulfilled, the data is processed using descriptive statistics and independent sample t-test hypothesis testing.

Based on the results that have been obtained, it is known that the value of optimism tends to be moderate, which means that from the whole data, coronary heart patients are generally optimistic in passing their illness and optimistic to stay alive while in the healing phase of coronary heart disease. Based on cognitive theory, there is positive hope, it can be said that intensive positive thinking always accompanies an episode of coronary heart patients. Thinking processes that try to be positive will produce positive behavior, otherwise negative thought processes will produce negative behavior. In relation to optimism, Shapiro (1997) states that it is a habit of positive thinking, a positive and realistic way of looking at a problem. Coronary heart sufferers who are optimistic will feel confident that every problem must have a solution, and will not be easily discouraged by their illness so that the possibility of stress that accompanies it can be overcome. The existence of this optimism will help individuals psychologically to be able to get through the challenges and obstacles that may be faced while going through this difficult period with coronary heart disease. Some research results state that aspects of a person's personality determine his tolerance for stress. Optimism is one aspect of personality that is a positive element for dealing with problems. This relates to strategies for dealing with problems and being more resilient in facing obstacles. Gottschling, et al., (2016) reinforces the above assumptions with the opinion that personal characteristics such as self-esteem and a positive outlook help individuals cope with stress. This means that if a coronary heart patient uses a negative explanatory style in the sense of being pessimistic about the events that occur, then the coronary heart patient prefers to give up or refuse to face the problem (Scheier dkk, 1986). Conversely, if a coronary heart patient uses a positive explanatory style or attribution style in the sense that the coronary heart patient has the belief that he can overcome the problems faced with positive thoughts and expectations, then the patient will avoid stress. because they feel the problem as a challenge that motivates them to try harder and not easily give up (Peale in Lestari, 1994). Furthermore, research conducted by Seligman (1991) shows that optimistic people are more resistant to disease, have healthier habits than pessimistic people, and the body's defense system also works better in optimistic people.

The results of research by Sabouripour and Roslan (2015) concluded that optimism is a strong predictor of individual success in adapting to heavy pressure. Optimistic people tend to be problem-oriented, and pay attention to the positive aspects of situations with negative feelings, whereas pessimists will focus on negative feelings, away from solving problems. The theory of behavioral self-regulation explains that positive expectations for success cause individuals to have negative views of unpleasant consequences, tend to lead to despair, thereby hindering efforts to achieve goals (Carver, et al., 2010). This research will have a big impact on the wider community, especially those who are in a difficult phase in dealing with problems, including coronary heart disease. It is hoped that individuals can develop awareness within themselves that in dealing with all the problems that arise before us, we must always be optimistic and have a positive outlook in order to achieve the desired positive goals. This means that with the growth of optimism in individuals, patients will have enthusiasm in going



through the stages and the recovery process and avoid feelings of fear, anxiety, and other negative emotions and speed up the healing process and in the long term can reduce mortality from coronary heart disease. Gender will also provide a big impact for health workers to be able to provide proper treatment for patients to be able to always be optimistic It is hoped that individuals can develop awareness within themselves that in dealing with all the problems that arise before us, we must always be optimistic and have a positive outlook in order to achieve the desired positive goals. This means that with the growth of optimism in individuals, patients will have enthusiasm in going through the stages and the recovery process and avoid feelings of fear, anxiety, and other negative emotions and speed up the healing process and in the long term can reduce mortality from coronary heart disease. Gender will also provide a big impact for health workers to be able to provide proper treatment for patients to be able to always be optimistic It is hoped that individuals can develop awareness within themselves that in dealing with all the problems that arise before us, we must always be optimistic and have a positive outlook in order to achieve the desired positive goals. This means that with the growth of optimism in individuals, patients will have enthusiasm in going through the stages and the recovery process and avoid feelings of fear, anxiety, and other negative emotions and speed up the healing process and in the long term can reduce mortality from coronary heart disease. Gender will also provide a big impact for health workers to be able to provide proper treatment for patients to be able to always be optimistic

Based on several studies (Bjuggren & Elert, 2019; Jacobsen et.al, 2014; Bharti & Rangnekar, 2019; Dawson, 2020) there are usually quite significant differences in the level of optimism based on a person's gender, gender will significantly affect the level of optimism , in socialization theory, gender shapes how a person shapes his mindset or perception, values, and behavior that might be shown. Men tend to be goal-oriented to recover from coronary heart disease, while women are oriented to the recovery process from disease, so that men have the highest level of optimism in their recovery from coronary heart disease. From the research that researchers have done on patients with coronary heart disease who have been grouped by gender, the results are the same as above. In addition to these factors, optimism itself is actually influenced by how a person perceives the conditions he faces, as in research conducted by (Bharti & Rangnekar, 2018; Puskar et.al, 2010; Kataria, 2017; Prasetyawati et.al, 2021), in this case we know that women tend to use their emotions when facing or responding to something in this case, namely coronary heart disease, while men tend to use their minds more often or it can be said to be realistic in seeing their life goals, the goal to recover from their illness.

This study seeks to answer previous research by looking at updates in coronary heart disease patients, even though it is still in a small area in Pekanbaru but it is hoped that the results will bring benefits, the use of the gender variable is also an update from this study compared to previous studies. However, this study certainly still has many shortcomings in terms of the variables studied, as well as research subjects who have not been able to generalize all patients with the same disease, therefore it is hoped that future researchers can examine additional supporting variables such as age, illness period, social support that patients receive. as well as the patient's religiosity level so that it will produce even greater benefits in the world of health and psychology.

## CONCLUSION

Based on the results of research on optimism in coronary heart patients, it was found that the results tend to be moderate, which means that from the whole data, coronary heart patients are generally optimistic in passing their illness and optimistic to stay alive while in the healing phase of coronary heart disease. If then reviewed by gender there is a significant difference between female patients and male patients after conducting assumptions and hypothesis tests. Patient optimism can be seen in descriptive data analysis, while gender differences are based on the results of the t-test that has been done by looking at the difference in the mean optimism score between patients.

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