

DIFFERENCES IN LEVELS OF ANXIETY AND DEPRESSION IN PATIENTS WITH CARDIOVASCULAR DISEASE BEFORE AND AFTER PARTICIPATING THE CARDIOVASCULAR REHABILITATION PROGRAM PHASE II

Catlyne Renata¹*, Dyana Sarvasti²), Inge Wattimena³)

*Corresponding author's email: med.catlyne.r.20@ukwms.ac.id

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ABSTRACT

Introduction: Cardiovascular disease continues to experience an increase in cases nationally and globally. Anxiety disorders and depression are psychological disorders that are often experienced by patients which can worsen the conditioner. Components in the phase II cardiovascular rehabilitation program can help increase functional capacity and improve psychological conditions (anxiety and depression) in patients with cardiovascular disease.

Objective: This study aims to determine differences in levels of anxiety and depression in patients with cardiovascular disease before and after participating in the phase II cardiovascular rehabilitation program.

Methods: The research uses analytical observational studies with technique *total sampling* in the medical records of patients with cardiovascular disease. HADS Questionnaire (*Hospital Anxiety and Depression Scale*) in the patient's medical records before and after participating in the phase II cardiovascular rehabilitation program will be compared using a comparative test *Wilcoxon* two paired samples to determine differences in patient levels of anxiety and depression.

Results: The largest distribution was found to be male patients, aged 51-60 years who suffered from CHD (Coronary Heart Disease) after CABG (Coronary Artery bypass Graft). This study shows that there are significant differences in levels of anxiety and depression in patients with cardiovascular disease before and after participating in the phase II cardiovascular rehabilitation program ($p < 0.001$).

Conclusion: A comprehensive phase II cardiovascular rehabilitation program can improve psychiatric conditions (anxiety and depression) in patients with cardiovascular disease.

Keywords: triglycerides, acne vulgaris

¹) Student of Faculty of Medicine Widya Mandala Surabaya Catholic University Indonesia

²) Department of Cardiology and Vascular Medicine, Faculty of Medicine, Widya Mandala Surabaya Catholic University

³) Department of Public Health, Faculty of Medicine, Widya Mandala Surabaya Catholic University

INTRODUCTION

The disease that causes the most deaths in the world and is one of the health problems that needs attention is cardiovascular disease. Data from *World Health Organization* (WHO) in 2019, it is estimated that the number of people who died as a result of cardiovascular disease was 17.9 million and this represents 32% of global deaths, 85% of the most cardiovascular disease deaths were caused by heart attacks and *stroke*.¹

According to National Basic Health Research (Riskesdas) in 2018, the incidence of cardiovascular disease has increased, around 15% of 1,000 people or 2,784,064 people suffer from cardiovascular disease in Indonesia.² The increase in cases of cardiovascular disease in Indonesia shows the need for treatment and support from the health sector to minimize morbidity and undesirable negative effects through cardiovascular rehabilitation programs.^{3,4}

Individuals with cardiovascular disease have risk factors that can be intervened by doing physical exercise and lifestyle modifications, as well as counseling on the patient's psychological factors, if there is anxiety (*anxiety*) and depression, which also contribute to patient morbidity and mortality.

Anxiety is a cause of depression in patients and can worsen cardiovascular disease patients because it plays a role in

physiological responses and influences heart health.⁵

METHOD

This research uses an analytical observational study with data collection techniques *total sampling* in the medical records of patients with cardiovascular disease who participated in the phase II cardiovascular rehabilitation program at the Husada Utama Hospital in Surabaya for the 2012-2019 period and the Dharmahusada Premier Main Clinic for the 2022-2023 period.

The inclusion criteria were (1) Patients who filled out the HADS questionnaire completely before and after participating in the phase II cardiovascular rehabilitation program, (2) Patients who completed 11 sessions of the phase II cardiovascular rehabilitation program. Exclusion criteria are (1) Patients who did not fill out the HADS questionnaire completely, (2) Patients *dropout* who did not complete the phase II cardiovascular rehabilitation program.

Data analysis uses comparative tests *Wilcoxon* two paired samples to determine differences in levels of anxiety and depression in patients with cardiovascular disease before and after participating in the phase II cardiovascular rehabilitation program.

RESULTS

Table 1 Distribution of Number of Patients on Anxiety Levels Before and After Rehabilitation

Anxiety Levels	Before	After
	Rehabilitatio n n (%)	Rehabilitatio n n (%)
Normal (Score 0-7)	93 (74)	114 (90)
<i>Borderline</i> <i>abnormal/moderate</i> anxiety (Score 8-10)	19 (15)	11 (9)
<i>Abnormal/severe</i> anxiety (Score 11-21)	14 (11)	1 (1)
Total	126 (100)	126 (100)

Table 1 above shows the distribution of the number of patients and anxiety levels before and after participating in the rehabilitation program. After participating in the rehabilitation program, patients who did not experience anxiety disorders increased.

Patients with moderate levels of anxiety before rehabilitation (15%) decreased to 9% after rehabilitation. Patients with severe levels of anxiety before rehabilitation (11%) decreased to 1% after rehabilitation. This shows that the phase II cardiovascular rehabilitation program provides improvements in patient anxiety levels.

Table 2. Distribution of Number of Patients on Level of Depression Before and After Cardiovascular Rehabilitation

Depression Levels	Before	After
	Rehabilitatio n (%)	Rehabilitatio n (%)
Normal (Score 0-7)	104 (83)	118 (94)
<i>Borderline</i> <i>abnormal/moderate</i> depression (Score 8-10)	13 (10)	8 (6)
<i>Abnormal/severe</i> depression (Score 11-21)	9 (7)	0 (0)
Total	126 (100)	126 (100)

The table above shows the distribution of the number of patients and the patient's level of depression before and after participating in the cardiovascular rehabilitation program. Patients who did not experience depressive disorders before rehabilitation were 83%, and this increased to 94% after rehabilitation.

Patients with moderate depressive disorders before rehabilitation were 10%, decreasing to 6% after rehabilitation, and patients with severe depressive disorders before rehabilitation were 7%, decreasing to 0% after rehabilitation. This distribution shows an improvement in the patient's depression level after participating in the phase II cardiovascular rehabilitation program.

Table 3. Test Results of Differences in Anxiety Levels in Patients with Cardiovascular Disease Before and After Participating in the Phase II Cardiovascular Rehabilitation Program

	Anxiety Levels of Patients Participating in a Phase II Cardiovascular Rehabilitation Program						Total	p-value	
	Normal		Moderate Anxiety		Severe Anxiety				
	(n)	(%)	(n)	(%)	(n)	(%)			
Before Rehabilitation	93	74	19	15	14	11	126	100	<0,001
After Rehabilitation	114	90	11	9	1	1	126	100	

The table above shows that there is a significant difference in anxiety levels in patients with cardiovascular disease before

and after participating in the phase II cardiovascular rehabilitation program with $p < 0.001$.

Table 4. Test Results for Differences in Depression Levels in Patients with Cardiovascular Disease Before and After Participating in the Phase II Cardiovascular Rehabilitation Program

	Depression Rates of Patients Following a Phase II Cardiovascular Rehabilitation Program						Total	p-Value	
	Normal		Moderate Depression		Severe Depression				
	(n)	(%)	(n)	(%)	(n)	(%)			
Before Rehabilitation	104	83	13	10	9	7	126	100	<0,001
After Rehabilitation	118	94	8	6	0	0	126	100	

The table above shows that there is a significant difference in the level of depression in patients with cardiovascular disease before and after participating in the

phase II cardiovascular rehabilitation program with $p < 0.001$.

DISCUSSION

In this study, it was found that most patients were in normal condition (without anxiety disorders or depressive disorders) after participating in the rehabilitation program, meaning that there were benefits from the rehabilitation program that the patients participated in in the form of the effects of music, physical activity, as well as education and counselling on the psychological aspects of the patient.

Research by Nurhaeni and colleagues (2022) states that intervention and education regarding anxiety in patients with cardiovascular disease can reduce the patient's anxiety level and the majority of patients are in a normal condition after being given psychological intervention.⁷

Research by Martiningsih and colleagues (2022), shows that psychological

interventions which also include education to prevent the risk of cardiovascular disease from getting worse, are included in efforts to reduce morbidity and mortality from cardiovascular disease.⁹

Differences in Anxiety Levels Before and After Participating in the Phase II Cardiovascular Rehabilitation Program

In this study, it was found that there were differences in anxiety levels before and after rehabilitation. These results are supported by the theory that good psychological conditions can increase the production of endorphins (happy hormones), serotonin and dopamine which can prevent worsening anxiety levels in patients.⁶

When a patient participates in a rehabilitation program, there are components of the rehabilitation program in the form of physical and psychological interventions that can influence the results of cardiovascular rehabilitation program therapy.^{4,6}

Research by Nurhaeni and colleagues (2022) shows that anxiety therapy in the form of good intervention can improve the condition caused by cardiovascular disease suffered by patients. Interventions for anxiety disorders are also included in the phase II cardiovascular rehabilitation program.⁷

Differences in Depression Levels Before and After Participating in the Phase II Cardiovascular Rehabilitation Program

In this study, it was found that there were differences in the level of depression in patients who had cardiovascular disease before and after rehabilitation. This is supported by the theory regarding the production of endorphins or happy hormones, as well as the hormones serotonin and dopamine, which is caused when a person does not experience psychological stress or other psychological disorders such as depression so they are in a good and positive mood and thoughts.⁶ Education and counselling carried out

simultaneously with well-coordinated physical exercise will provide good results for patients because it influences bio-psycho-social-spiritual and can reduce levels of depression in patients participating in the phase II cardiovascular rehabilitation program.⁸

CONCLUSION

Cardiovascular disease can cause mental disorders in patients, one way to reduce these disorders is by following a phase II cardiovascular rehabilitation program.

In this study, there were significant differences in levels of anxiety and depression in patients with cardiovascular disease before and after participating in the phase II cardiovascular rehabilitation program.

The results of this study indicate that a comprehensive phase II cardiovascular rehabilitation program can improve the mental condition (anxiety and depression) of patients with cardiovascular disease.

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