

Case Report

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G Combination Benson's Relaxation Technique and Energy Management to Overcome Activity Intolerance Nursing Problems in Coronary Artery Disease Patients: A Case ReportUmy Riskyani¹, Nita Fitria², Nursiswati³¹Faculty of Nursing, Universitas Padjadjaran, Indonesia²Departement Fundamental of Nursing, Faculty of Nursing, Universitas Padjadjaran, Indonesia³Departement Medical Surgical Nursing, Faculty of Nursing, Universitas Padjadjaran, Indonesia**ARTICLE INFO****Article history:**

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Other information:

Email of Author:

Umy17001@mail.unpad.ac.id

Corresponding Author:

Nitra Fitria

Website:

[https://jurnal.unpad.ac.id/
pacnj/](https://jurnal.unpad.ac.id/pacnj/)

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ABSTRACT

In patients with Coronary Artery Disease (CAD), activity intolerance is a major issue. Energy management is a non-pharmacological intervention that is commonly used in patients with activity intolerance. The problem of activity intolerance can be overcome with complementary or alternative relaxation therapy, namely the Benson relaxation technique. The goal of this case study is to describe how a combination of Benson relaxation techniques and energy management helped CAD patients with activity intolerance nursing problems. The method used in this study is a case report. Data collection techniques include observation, interviews, physical examinations, and hospital medical records. Interventions are carried out to address the main problem of activity intolerance. In this study, the Benson relaxation technique was given together with energy management, namely, gradual physical activity for 3 days for 20 minutes per day. The results of this case study show that after the Benson relaxation technique intervention, which was given in conjunction with the energy management intervention, these outcomes improved, namely subjective data, complaints of fatigue after decreased activity, and objective data showing improved pulse rate and ease of doing daily activities. In conclusion, the Benson relaxation technique can be applied as a complementary and alternative intervention that is given together with energy management interventions to address the problem of activity intolerance in CAD patients.

Introduction

Cardiovascular disease is the leading cause of death globally (WHO, 2021). In 2019, an estimated 17.9 million people died from cardiovascular disease, or 32% of all deaths globally (WHO, 2021). Around 19.1 million deaths in 2020 will be associated with cardiovascular disease globally, and an estimated 244.1 million people are living with ischemic heart disease, which is more common in men. 141.0 million more men than women, 103.1 million people (American Heart Association, 2021).

Coronary artery disease (CAD) is a problem in the cardiovascular system. CAD is a condition in which fatty substances accumulate abnormally in fibrous tissue in blood vessels, causing blockages and reducing blood flow to the myocardium (Smeltzer, 2018). CAD is reported as the main cause of death in Indonesia, four times greater than the death rate due to cancer, with a percentage of 26.4% (Kemenkes RI, 2019). According to a report from Riset Kesehatan Dasar (Riskesdas) in 2018, it states that the prevalence of heart disease based on doctor's diagnostics is at 1.5%. (Kemenkes RI, 2018). In addition, in West Java, the prevalence of heart disease reached 1.6% with an incidence in women of 1.8% and 1.4% in men, with the highest rate at the age of 75 and over with an incidence rate of 5.93% (Laporan Provinsi Jawa Barat Riskesdas, 2018). The incidence of CAD in the heart disease inpatient room at a West Java provincial hospital was obtained from data as of September 2022, which was quite high, reaching 65.06% and being the most common disease suffered by patients.

The high incidence of CAD is influenced by several risk factors. The risk factors for CAD are divided into two categories: factors that can be modified and factors that cannot be modified (Smeltzer, 2018). Factors that cannot be modified include age, gender, family history, and race. In addition, modifiable risk factors include high blood cholesterol, smoking, increased blood

pressure, diabetes mellitus, metabolic syndrome, obesity, and physical inactivity. According to research, the incidence of cardiovascular disorders is also caused by failure to maintain a healthy lifestyle, such as working a lot in a long sitting position and rarely exercising, accompanied by an unhealthy diet (Pahlawi & Sativani, 2021).

CAD greatly impacts health, especially physical problems, and if left untreated for a long time, CAD will result in heart failure and even sudden cardiac death (Harding & Kwong, 2019). Symptoms of the physical aspects that appear in CAD patients are angina pectoris, or chest pain, shortness of breath, and weakness (Smeltzer, 2018). Weakness and fatigue in CAD result in patients experiencing insufficient energy to carry out daily activities, giving rise to activity intolerance problems. According to Heshmati et al (2020), fatigue in patients can significantly reduce physical activity. This shows that fatigue can cause activity intolerance problems.

Activity intolerance is a nursing issue that frequently occurs in CAD patients. Activity intolerance is the inability to obtain sufficient energy to carry out activities of daily living (PPNI, 2017). Activity intolerance can cause a loss of independence in activities of daily living, impair self-care, and increase dependence on others, which can further reduce the quality of life (Seifi et al., 2018). In the inpatient room for heart disease at a hospital in West Java province on October 23, 2022, most patients complained of being easy during and after activity, and the most common problem raised in CAD patients was activity intolerance.

Prolonged physical problems cause psychological problems. Psychological problems that arise in CAD patients include anxiety, which, if left untreated for a long time, can lead to depression in patients. (Rosidawati, 2016 ; Davidson et al., 2013).

Most CAD patients who receive treatment experience complications, so the application of alternative and complementary interventions is recommended (Seifi et al., 2018). Research shows the occurrence of hypertension complications caused by inappropriate drug

dosing, which is 20% of the therapy given to CAD patients in inpatient installations (Taroreh et al., 2017).

As a nurse, you must know and be able to overcome the problem of activity intolerance in nursing by using appropriate non-pharmacological therapy. This is done to minimize the risk of more severe complaints.

Non-pharmacological therapy for overcoming activity intolerance in CAD patients can be done with complementary therapy, namely the Benson relaxation technique. The Benson relaxation technique is a development of a relaxation response by incorporating elements of belief so as to provide a comfortable internal environment for patients to achieve better health (Muliantino et al., 2018). The Benson relaxation technique can be used as a complementary therapy to treat fatigue and in patients with CAD (Muliantino et al., 2020). Fatigue reduction can increase tolerance to activity. This is supported by a study that says that fatigue reduction is considered the main factor that influences individuals' daily living activities (Pehlivan et al., 2019). The therapy used in general is a deep breathing relaxation technique. This Benson relaxation technique is a new variation that can be applied in the room. This piqued the researcher's interest in carrying out a case report to report on the combined application of Benson's relaxation technique and energy management in CAD patients with activity intolerance nursing problems

Method

This study's method is a case report with a nursing care process approach that focuses on the main nursing problem in cases, namely activity intolerance in Coronary Artery Disease patients receiving treatment in a heart disease inpatient room at a hospital in West Java province. Data collection techniques include observation, interviews, physical examinations, and hospital medical records. The data obtained is then analyzed and grouped so that it becomes a nursing diagnosis. The nursing diagnoses that

emerge serve as a guide for researchers in determining interventions and evaluations that are appropriate for the patient's condition.

The Benson's relaxation technique intervention was given for 20 minutes per day combined with energy management for 3 days, namely October 23–25, 2022. Leaflet media was also used by the researchers to aid in the intervention process. The evaluations were formative immediately following the intervention, summative after the entire intervention, and pre- and post-intervention using the interview method and physical examination of the patient.

In conducting this case study, the researcher pays attention to the ethical principles of nursing. Consent sheets to become research respondents were given to patients and their families through written informed consent.

Result

Case Overview

The female patient, Mrs. A., 30 years old, ethnic Malay and Muslim, was treated in a heart disease inpatient room with a medical diagnosis of coronary artery disease. The study of the history of the disease is obtained directly from the patient, his or her family, and also from the patient's medical record.

The main complaint is that patients feel weak and tired after activities. The client has complained of weakness throughout the course of the current illness, which has worsened since being referred. Patients say they feel tired after activities that are reduced by resting. The patient says that the heart palpitations increase after activity. Patients also complain that they often wake up at night and have less time to rest. In addition, the patient also reported a little tightness after walking a long way.

The patient has had a history of shortness of breath on exertion since 3 years ago. The patient also stated that sleeping 2-3 hours with one pillow at night improved his complaints. The patient was admitted to the nearest hospital to undergo the treatment process. Then the patient is referred to a hospital that has more complete and

larger facilities for cardiac ablation procedures and further treatment. The patient had a history of frequent fainting since he was 17 years old. The patient says he rarely does sports.

The family history has no history of disease similar to that of the patient. But in the family environment, many smoke inside the house. The patient's psychosocial history says that he has accepted the situation but is a little anxious, and he hopes to recover. On the spiritual aspect, the client says the illness he is suffering from is a test and willingly undergoes it. Regarding daily physical activity, the client feels that she is experiencing changes, namely in physical activity and sleep breaks. They are limited in their activities because they tire easily and sleep is disturbed. Classification of patients based on the New York Heart Association (NYHA) in class II.

The physical examination included the client's general condition of looking restless and mentally aware, weight 45 kg, height 50 cm, and a Body Mass Index (BMI) of 17.7: thin. At rest, blood pressure was 136/90, pulse rate was 109 times per minute, respiratory rate was 19 times per minute, oxygen saturation (SpO_2) was 97%, and vital signs after activity revealed blood pressure was 138/92 mmHg, respiratory rate was 20 times per minute, heart rate was 120 beats per minute, SpO_2 was 97% without additional oxygen support, and temperature was 36.4 °C. The focus of the examination of the cardiovascular system is to obtain non-anemic conjunctiva, warm upper extremity acral temperature and cold lower extremities, strong palpation, CRT 3 seconds, no increase in JVP ($\text{JVP} = 5 + 2 \text{ cmH}_2\text{O}$), normal heart sound auscultation, and no additional heart sounds. In addition, the client also complains of chest palpitations, which have begun to decrease.

Examination of the respiratory system showed no lesions in the nose and nasal cavity and was symmetrical; the chest was symmetrical; there were no intercostal retractions; the use of additional respiratory muscles was not palpable; crepitus was heard; there were no masses or lesions; there was symmetrical right-left lung expansion; sonor sounds were heard in the lung fields; and there was dullness in the area of the

heart (ICS II-V on the left); and there were no abnormal breath sounds. Shortness of breath during and after activity is sometimes felt when walking long distances. Furthermore, on examination of the musculoskeletal system, results showed that in the upper extremities, muscle strength was 5/5 and in the lower extremities, muscle strength was 5/5.

The results of the clinical examination carried out included an electrocardiographic (ECG) examination, namely sinus tachycardia. On chest X-ray examination, cardiomegaly was found. In addition, laboratory tests showed low erythrocytes (4.28 million/L), low hematocrit (35.3%), low urea (12.8 mg/dL), total cholesterol examination of 159 mg/dL, HDL cholesterol (37 mg/dL), LDL cholesterol (116 mg/dL), triglyceraldehyde (79 mg/dL), and fasting glucose of 106 mg/dL. The patient was given Ivabradine twice at 7.29 grams orally, Bisoprolol once at 10 grams orally, KSR orally, Trinexyphenidine orally, and CaCo_3 three times at 500 grams.

Nursing Care

Stages of nursing care include assessment, data analysis, preparing nursing care plans, implementing actions, and conducting evaluations and re-assessments. The nursing care in this case study is focused on handling patient complaints in a non-pharmacological manner.

The main problem that arises from the results of the study is activity intolerance. Another problem that arises is the risk of decreased cardiac output, sleep pattern disturbances, and anxiety. The problem of activity intolerance has major and minor signs or symptoms. (PPNI, 2017). The most common signs and symptoms of activity intolerance are fatigue and an increased heart rate of more than 20% from rest. Furthermore, minor signs and symptoms include shortness of breath during or after activity, complaining of discomfort after activity, feeling weak, blood pressure changes greater than 20% from resting conditions, ECG arrhythmias during or after activity, ECG ischemia, and cyanosis. The cause of activity intolerance is an imbalance between oxygen supply and demand, bed rest,

weakness, immobility, and a monotonous lifestyle (PPNI, 2017).

From the problems found, the researchers raised the main nursing diagnosis, namely activity intolerance related to an imbalance in oxygen supply and demand, marked by patients and clients saying they were tired after activities, patients looking weak, activities being assisted by part of the family and nurses, and vital signs at rest: blood pressure 136/90 mmHg, pulse 109 times per minute, respiratory rate 19 times per minute, oxygen saturation (SpO_2) 97%, temperature 36.4°C, and vital signs after activity: blood pressure 138/92 mmHg, respiratory rate 20 times per minute, heart rate 120 times per minute, 97% SpO_2 without additional oxygen support, and also a temperature of 36.4°C.

The goals of nursing on the problem of activity intolerance that have been made include complaints of decreased fatigue, improved pulse frequency, and increased ease of carrying out activities of daily living (PPNI, 2019). To achieve the stated goals, the interventions provided are based on PPNI (2018), namely energy management, which includes identification of impaired body functions that result in fatigue, monitoring of physical fatigue, monitoring sleep patterns and hours, and recommending gradual activities. In addition to energy management interventions, Benson relaxation technique therapy is also given based on the evidence-based practice obtained (Muliantino et al., 2020).

This Benson relaxation technique is given for 3 days at 20 minutes per day. This therapy is given in conjunction with energy management, namely gradual physical activity. The patient's family also participated in this intervention. Patients are given leaflets that serve as a guide for implementing Benson relaxation therapy, allowing them to assist patients in performing Benson relaxation techniques on their own. In addition, the nursing actions taken also pay attention to patient comfort and safety and involve decision-making and active listening.

The outcomes of Mrs. A's implementation include Benson relaxation technique therapy and routine energy management interventions for three days, each lasting 20 minutes. On the first

day, the patient was cooperative and enthusiastic because the intervention would be carried out. The patient cooperatively participates in the exercise, namely Benson's relaxation technique, followed by gradual physical activity, namely sitting in a bedside chair. The results of the formative evaluation on the first day of the patient's subjective data said that they were more comfortable when, after doing Benson relaxation, the patient still complained of fatigue but that it was slightly reduced after moving to sit in a chair beside the bed, and the objective data on vital signs after the intervention showed that blood pressure was 130/80 mmHg, pulse 110 times per minute, as well as a respiratory rate of 20 breaths per minute, and activities of daily living were partially assisted.

On the second day, the Benson relaxation technique intervention was carried out, followed by walking beside the bed for 10 minutes. The results of the formative evaluation of the client's subjective data said that he was comfortable after doing Benson relaxation, had complaints of fatigue after reduced activity, and objective data on vital signs showed blood pressure of 128/80 mmHg, pulse 109 times per minute, and respiratory rate 18 times per minute after walking beside the bed. The client looks fresher, the patient says activities are still partially assisted, such as going to the bathroom, and activities of daily living are partially assisted.

On the third day, the patient was also given the intervention of the Benson relaxation technique independently by going to the bathroom with physical activity. The results of the formative evaluation showed that the patient's subjective data said he felt comfortable, tired from activity, and after reduced activity, and objective data for vital signs showed blood pressure 125/80 mmHg, pulse 107 times per minute, and respiratory rate 19 times per minute after going to the bathroom but still under family supervision and independent in activities of daily living. In addition, patients say they can sleep soundly at night.

The results of a 3-day summative evaluation of the patient's implementation showed that the intervention provided had a positive impact on

the patient. The implementation carried out can achieve nursing goals, as indicated by subjective data on complaints of patient fatigue after decreased activity, and objective data shows that the pulse rate improves and the ease of carrying out daily activities increases.

Patients become more cooperative when undergoing treatment and are able to intervene independently. The family looked enthusiastic and participated in the intervention. The role of the family is very necessary and important in accompanying the patient during the Benson relaxation technique process because it can provide psychological peace to the patient. In addition, the patient said the body felt comfortable and fresher, and there were no side effects reported by Mrs.A.

Data	Variable	Pre	Post
Subjective	Fatigue after activity	Fatigue	Fatigue reduced
Objective	Blood Pressure	138/90 mmHg	125/80 mmHg
Objective	Heart Rate	120 time per minute	107 time per minute
Objective	Respiratory rate	20 time per minute	19 time per minute
Objective	Activity Daily Living	Partial Care	Self Care

Table 1. Pre-intervention and post-intervention results of the combination of Benson relaxation techniques and energy management in Mrs.A

From the table of pre-intervention and post-intervention results above, it is clear that subjective data before and after the intervention decreased complaints of fatigue. Then, based on the objective data of blood pressure, pulse frequency, and respiratory frequency, there were improvements, and daily activities increased from being partially assisted to being independent. Overall, the results obtained achieve the goals of nursing that have been made so that the problem of activity intolerance is resolved

Discussion

This nursing problem of activity intolerance is common in CAD patients and is the main issue for Mrs. A in this case study. Weakness in CAD patients is caused by coronary artery obstruction due to plaque, decreased coronary blood flow, and decreased blood flow to the myocardium, which results in the supply of oxygen and nutrients not being properly distributed to cells, resulting in anaerobic metabolism (Smeltzer, 2018). This results in patients experiencing insufficient energy when carrying out activities of daily living, giving rise to activity intolerance problems. Activity intolerance is a complex clinical syndrome characterized by reduced oxygen intake during physiological stimulation. This is in accordance with what Mrs. A's patient complained of, namely fatigue after activities. There are many nursing interventions that can be applied to patients to overcome the problem of activity intolerance, one of which is energy management (SIKI, 2018) and also evidence-based complementary therapy, namely the Benson relaxation technique (Muliantino et al., 2020).

The nursing intervention that is generally given to patients with activity intolerance is energy management. Energy management is identifying and managing energy use to overcome and prevent fatigue and optimize the recovery process (PPNI, 2018).

The energy management carried out in this study is to encourage gradual activities such as moving to sit in a chair, walking slowly beside the bed, and also going to the bathroom. This intervention is given because it can provide control over the heart, increase muscle strength, and prevent fatigue gradually (Doenges et al., 2014). In addition, energy management is an energy conservation application that will involve changes in fatigue so that the energy management provided can manage fatigue properly (Vatwani & Margonis, 2019).

Along with energy management, an evidence-based complementary therapy was given in this study, namely the Benson relaxation technique. The Benson relaxation technique is a

development of a relaxation response by incorporating elements of belief so as to provide a comfortable internal environment for patients to achieve better health (Muliantino et al., 2018). Based on research by Alzaghmouri et al (2021), the Benson relaxation technique is a popular relaxation technique used to reduce fatigue, improve emotional status, and improve sleep quality in individuals with chronic diseases.

In this study, the Benson relaxation technique was performed on Mrs. A for 3 days, 20 minutes each day. (Muliantino et al., 2020). First, the patient is instructed to choose a word that becomes a belief, and then the client chooses the word "healthy." The patient is positioned comfortably; the patient is comfortable in a sitting position on the bed. The eyes are closed slowly, and then the client is instructed to relax the muscles of the body starting from the lower extremities, abdomen, upper extremities, and face while maintaining relaxation. The patient was instructed to start breathing through the nose for 3 seconds and to say silently the word "healthy" when inhaling, holding the breath for 3 seconds, and repeating the word "healthy" when exhaling for 4 seconds. This was then repeated for 20 minutes. Then the patient performs activities gradually, starting with sitting in a bedside chair, walking beside the bed, and going to the bathroom. Furthermore, the client is instructed to apply the Benson relaxation technique that has been taught independently.

The Benson relaxation technique has a positive effect on the patients in this study. The results of formative and summative evaluation and pre- and post-intervention, namely subjective data, showed a decrease in complaints of fatigue after activity. Then the objective data shows that the pulse frequency has improved and the ease of doing daily activities has increased. This is in accordance with previous research, which states that the Benson relaxation technique can reduce fatigue in patients with coronary heart disease (Muliantino et al., 2020). This is also supported by the research of Seifi et al (2018), which stated that the Benson relaxation technique was found to be effective in managing fatigue in individuals with heart failure. In addition, these results are

also supported by research that says that the Benson relaxation technique can improve the daily living activities of hemodialysis patients (Heshmati et al., 2020).

The mechanism of action of this Benson relaxation technique is to focus on one particular word that the patient believes in and chooses, which is then said repeatedly with a regular breathing rhythm so that it can provide sufficient energy. Physiologically, relaxation will respond to decreased sympathetic nerve activity and increase parasympathetic nerve activity so that the body becomes more relaxed, and the body's response causes a decrease in heart rate, blood pressure, and oxygen consumption (Black & Hawks, 2014). Muscle oxidative metabolism will run smoothly with a sufficient oxygen supply. This will reduce fatigue and progressively relax the skeletal muscles, and it will store energy for cellular processes that can result in physiological recovery of the body (Black & Hawks, 2014).

The results of this study indicate that the Benson relaxation technique can also overcome sleep problems. Patients report that the body becomes more relaxed and sleep is not disturbed. This is supported by research by Muliantino et al (2018) that shows the Benson relaxation technique can reduce pain, overcome sleep pattern disturbance problems, and also control muscle strength.

Psychologically, Benson's relaxation will suppress the release of epinephrine and cortisol so that it can reduce stress. Besides that, the relaxation method will also stimulate the release of hormones, namely endorphins, so that the body becomes comfortable and relaxed. (Rambod et al., 2013). Then endorphins are also related to the neurotransmitter serotonin, which affects the hypothalamus, which stimulates the release of the hormone melatonin so that it can maintain sound sleep and improve sleep duration and quality (Rambod et al., 2013).

Based on patient recognition and evaluation results in this study, no side effects were found during the administration of the Benson relaxation technique intervention. This can be seen from the vagal reflex. In this study, vagal reflex symptoms did not appear either during or

after Benson's relaxation. Vagal reflex is a condition in which the vagus nerve is stimulated, causing symptoms such as dizziness, sweating, blurred vision, nausea, and even fainting (Powley, 2021). The causes for the emergence of a vagal reflex include emotional stress, pain, trauma, and standing too long or too fast (Powley, 2021). This is supported by research, which states that the use of relaxation techniques has advantages compared to other techniques, namely that they are easy to do and do not have any side effects (Manurung et al., 2019). Benson relaxation therapy costs nothing and is easy to administer and implement. This suggests that the Benson relaxation technique can be used by nurses as a complementary therapy along with energy management interventions.

The limitation in this study is the short span of time, namely the provision of interventions that are given only three days per week for 20 minutes per day. Interventions carried out by patients independently during the study could not be monitored by researchers because of limited hours of service; only 5 hours of pharmacological management were still given so that they could affect the results of this study. In addition, this study did not use specific instruments, so the risk of bias might occur.

Kesimpulan

Benson relaxation therapy, given for three days at a time for 20 minutes each, has a positive effect on patients. The results obtained showed that subjectively, the patient's complaints of fatigue after reduced activity improved, and objective data on pulse frequency improved, blood pressure improved, and the ease of doing daily activities increased. Furthermore, this Benson relaxation therapy has no side effects, no costs, and is simple to administer and apply, allowing nurses to use it as a complementary therapy alongside energy management.

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