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Analysis Of Nursing Practices For STEMI Patients With The Innovational Intervention Of A Combination Of Swedish Massage With Olive Oil And Warm Water

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ABSTRACT (10 PT)

ST-Elevation Myocardial Infarction (STEMI) is part of Acute Coronary Syndrome (ACS), a cardiovascular condition in which a coronary artery is completely occluded, preventing oxygen from reaching the heart muscle. This study aimed to determine the effect of Swedish massage therapy combined with warm water on hemodynamic stability. This study employed a case study design comparing an intervention patient and a control patient diagnosed with STEMI who had unstable hemodynamic status in the ICCU. After the implementation of Swedish massage and warm water therapy in the intervention patient for three consecutive days, the patient's hemodynamic parameters such as blood pressure, heart rate, mean arterial pressure, and respiratory rate remained within stable limits, showing no significant increases or decreases. This outcome differed from the control patient, who received only pharmacological therapy. The analysis demonstrated a difference in hemodynamic outcomes between patients who received the combined intervention and those in the control group.

Keywords: STEMI, Swedish Massage, Warm Water, Hemodynamics

1. INTRODUCTION

Cardiovascular disease (CVD) is a group of heart and blood vessel disorders including coronary heart disease, cerebrovascular disease, and other heart diseases. According to World Health Organization (WHO) data from 2021, cardiovascular disease is a non-communicable disease (NCD) that causes death worldwide, accounting for 17.9 million deaths annually [1]. Data from Survei Kesehatan Indonesia (SKI) (2023) indicate that the prevalence of cardiovascular disease throughout Indonesia reached 0.85 percent, with the highest prevalence in Daerah Istimewa Yogyakarta (DIY) at 1.67 percent, and the lowest in Papua Pegunungan at 0.11 percent [2].
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Survei Kesehatan Indonesia (SKI), in 2023, found that East Kalimantan ranks fourth in Indonesia for the population with cardiovascular disease, with a prevalence of 1.08 percent. The high prevalence of cardiovascular disease can pose a health threat, particularly in the form of complications and even death. Acute Coronary Syndrome (ACS) is one of the most common cardiovascular problems, resulting in the highest hospitalization and mortality rates. Globally, more than 7 million individuals are diagnosed with ACS each year, with more than 1 million cases requiring hospitalization in the United States. One example of ACS is ST-Elevation Myocardial Infarction (STEMI), which occurs due to complete blockage of the coronary artery and accounts for approximately 30 percent of all ACS cases [3].

Patients with STEMI are generally hemodynamically unstable owing to low cardiovascular reserve, dysfunctional feedback loops, or poor blood vessel elasticity. In some cases, STEMI is not caused by a single coronary artery blockage, but can involve multiple acute coronary thromboses, which can worsen the patient's clinical condition. When more than one coronary artery is blocked, the blood flow to the heart muscle is significantly reduced. This condition causes the heart muscle to lack oxygen, decreasing its ability to pump blood and triggering the body to

compensate, such as increasing the heart rate and constricting blood vessels. This leads to hemodynamic instability [4].

Various medications are often used to control agitation and prevent physiological changes caused by hemodynamic instability. However, inappropriate or excessive medication use can lead to unstable physiological parameters. To avoid the side effects of medications, non-pharmacological interventions can be considered a complementary approach to drug therapy. Swedish massage therapy is one of several complementary therapies believed to induce a relaxation response while also lowering blood pressure and pulse rate [5]. Swedish massage was performed in a comfortable position, starting with the feet, thighs, waist, hands, shoulders, neck, head, and face. A study conducted by Oktavianti and Podesta showed that 90 respondents with hypertension in the experimental group experienced improvements in hemodynamics (blood pressure, pulse, and respiration rate) after receiving Swedish massage [6].

Furthermore, warm-water immersion therapy can improve vasodilation and blood circulation. Momeni, Arab, and Dehghan (n.d.) explain that warm water is effective in lowering blood pressure due to the transfer of heat from warm water throughout the body through the extremities, which contain most of the acupuncture sites, thereby increasing blood flow by dilating blood vessels, which can increase the supply of oxygen and nutrients to the tissues [7] [8]. This finding aligns with a study conducted by Prasetya, Putra, and Gati (2024) which showed a difference in blood pressure before and after warm water immersion (hydrotherapy) in hypertensive patients [9]

Based on the description that has been presented, the combination of heat and massage also reduces muscle tension and stress hormone levels (such as cortisol), so that the heart's workload is reduced and the cardiovascular response becomes more controlled [10]. Therefore, a study was conducted with the title Analysis of Nursing Clinical Practice in Patients with St. Elevation Myocardial Infarction (STEMI) with the Innovation Intervention of a Combination of Swedish Massage on Distal Extremities Using Olive Oil and Warm Water in the Intensive Cardiovascular Care Unit (ICCU) of A. M. Parikesit Tenggarong Regional General Hospital.

2. METHOD

This study applied a case study method to determine the effect of Swedish massage and warm water therapy on hemodynamic stability in intervention and control patients. The data used were primary data obtained from observations and experiments. This research instrument used the concept of nursing care for patients with ST elevation myocardial infarction (STEMI). The study was conducted in the Intensive Cardiology Care Unit (ICCU) of the A. M. Parikesit Tenggarong Regional General Hospital from December 2025 to January 2026. The sample in this study was 2 people, including one patient who would be given an intervention and one other as a control patient. Data collection was carried out through observation, interviews, and case studies (anamnesis, physical examination, and other assessments), and then ECG examinations were conducted on patients. The results of the study were presented descriptively to compare hemodynamic stability between the intervention and control groups.

3. RESULTS AND DISCUSSION

Subject 1 was an intervention patient who was assessed on December 27, 2025. Mr. J, 40 years old, married, works as a security guard, is Christian, has an elementary school education, resides in Bukit Layang Kembang Janggut, and was diagnosed with STEMI, CHF, and DM. Subject 2 was a control patient who was assessed on January 2, 2026. Mr. M, 49 years old, married, works as a farmer, is Muslim, has an elementary school education, resides in Sebulu, and is diagnosed with STEMI and ADHF. Nursing problems in both patients were identified based on the assessment results. Mr. J complained of chest and neck pain, occasional shortness of breath after prolonged sitting, and frequent dry coughs. Blood pressure was 115/75 mmHg, MAP was 88 mmHg, respiratory rate 21x/minute, oxygen saturation was 99%, and body temperature was 36.5°C. Electrocardiogram (ECG) results showed ST elevation in the ST segment in leads V1-V4 with an HR of 113 times per minute, Gel P duration (0.08 s), PR interval (0.16 s), and QRS duration (0.10 s) within the normal range, but ST elevation was confirmed as Anteroseptal STEMI with positive troponin cardiac enzymes. Mr. J received ISDN, Atorvastatin, Ramipril, Arixtra, CPG, Aspilet, and bisoprolol drug therapy with additional non-pharmacological innovative interventions, namely Swedish massage and warm water therapy on the distal extremities. Mr. Mr. M reported experiencing chest pain and shortness of breath with prolonged strenuous activity. ECG showed sinus rhythm, ST elevation in leads V1-V4, no abnormal heart sounds, and only received pharmacological therapy, including Atorvastatin, ISDN, Ramipril, Arixtra, CPG, Aspilet, and Spironolactone, without additional innovative interventions.

The nursing problems experienced by Mr. J and Mr. M were similar, namely, a diagnosis of decreased cardiac output (hemodynamic stability) due to physiological factors experienced by the clients. By providing positioning to maintain a normal respiratory rate, Swedish massage therapy to the distal extremities combined with warm water to maintain hemodynamic stability, such as lowering blood pressure, pulse rate, and level of consciousness, and recommending lifestyle modifications such as smoking cessation and diligent medication intake, the nurse must also take independent action when addressing the hemodynamic complaints reported by clients.

Based on the clinical and hemodynamic conditions of both clients, Swedish massage intervention was more appropriate for Mr. J. J, a client with STEMI and CHF, was in a relatively stable hemodynamic state. In contrast, in Mr. M, with STEMI and ADHF, although blood pressure may appear stable, acute heart failure is present, which poses

the risk of rapid hemodynamic changes and requires intensive medical treatment as a top priority. Therefore, this intervention is not prioritized because of the potential to disrupt unstable hemodynamic balance.

Implementing Swedish massage and warm water therapy to stabilize Mr. J's hemodynamics resulted in the resolution of decreased cardiac output, indicated by decreased weakness and fatigue, no shortness of breath during light activity, and no complaints of chest pain. The patient appeared calmer and more relaxed, supported by stable hemodynamic values, with no significant increases or decreases in blood pressure, MAP, and HR before and after therapy.

Following the Swedish massage and warm water intervention, blood pressure, heart rate, MAP, and respiratory rate were immediately measured, revealing a non-significant difference in Mr. J's and Mr. M's hemodynamics. Several hemodynamic measurements before and after the intervention were performed by Mr. J. In Mr. J, it can be seen that there was a decrease in blood pressure and heart rate compared to Mr. M, who did not receive Swedish massage therapy and only received pharmacological therapy. Objective data also showed that Mr. J appeared to be able to rest comfortably after the therapy, compared to Mr. M, who frequently woke up once or twice during the day.

The table below documents the hemodynamics of Mr. J, who received the standard intervention and the innovative intervention of Swedish massage and warm water therapy, as well as Mr. M, who only received the standard intervention without the innovative intervention.

Table 1 Analysis Before and After Intervention

Before Intervention		**Meeting**	**After Implementation**	
Tn. J (Intervention)	**Tn. M (Control)**		**Tn. J (Intervention)**	**Tn. M (Control)**
BR:131/78mmHg HR: 94x/minute MAP: 96 mmHg RR: 17x/minute **Interpretation:** hemodynamics are relatively stable	BR:143/89mmHg HR: 84x/minute MAP: 107 mmHg RR: 17x/emnit **Interpretation:** hypertension and increased MAP	1st Meet	BR:125/88mmHg HR: 78x/minute MAP: 100 mmHg RR: 17x/minute **Interpretation:** hemodynamics are stable	BR:145/99mmHg HR: 80x/minute MAP: 114x/minute RR: 17x/minute **Interpretation:** hemodynamically stable, but there is an increase in BP and MAP
BR:130/85mmHg HR: 86x/minute MAP: 100 mmHg RR: 19x/minute **Interpretation:** hemodynamically stable but there is a mild increase in BP and MAP	BR:136/95mmHg HR: 86x/minute MAP: 108 mmHg RR: 17x/minute **Interpretation:** unstable hemodynamics, hypertension and increased MAP	2nd Meet	BR:125/80mmHg HR: 81x/minute MAP: 95mmHg RR: 17x/minute **Interpretation:** hemodynamics are stable	BR:123/78mmHg HR: 78x/minute MAP: 93 mmHg RR: 18x/minute **Interpretation:** hemodynamics are stable
BR:131/88mmHg HR: 74x/minute MAP:102 mmHg RR: 17x/minute **Interpretation:** hemodynamics are relatively stable	BR:133/86mmHg HR: 94x/minute MAP: 101 mmHg RR: 19x/minute **Interpretation:** hemodynamically stable, but there is an increase in HR and MAP	3rd Meet	BR:123/79mmHg HR: 78x/minute MAP: 93 mmHg RR: 16x.minute **Interpretation:** hemodynamics are stable	BR:133/78mmHg HR: 87x/minute MAP: 96 mmHg RR: 17x/emnit **Interpretation:** hemodynamically stable, but there is an increase in BP

Several studies have proven that Swedish massage therapy combined with warm water can maintain hemodynamic stability by lowering blood pressure and pulse rate, and maintaining MAP values within normal limits. Research conducted by Posbindu, Pati, and Pertama (2024) conducted on 40 respondents with hypertension showed that there was an effect of blood pressure before and after Swedish massage therapy where blood pressure before being given Swedish massage therapy was the highest systolic value of 170 mmHg and diastolic 145 mmHg, but after being given therapy there was a decrease in blood pressure, namely the highest systolic value of 160 mmHg and diastolic 112 mmHg [11]. This is further supported by research conducted by Moghadasi, Mohebbi, Homayouni, and Nikoo (2021) on 41 patients divided into experimental and control groups. The experimental group, who received Swedish massage therapy for 10 min, experienced significant changes in systolic and diastolic blood pressure, heart rate, temperature, and respiratory rate compared to the control group that received no intervention [12].

Positioning can alsmo influence the success rate of Swedish massage therapy. A study conducted by Aprilia (2022) showed a significant difference in oxygen saturation between the semi-Fowler's position and Fowler's position in patients with heart failure [13]. This is because when patients feel shortness of breath, they are usually unable to sleep lying down, but must instead adopt a semi-sitting position to relieve airway constriction and replenish oxygen in the blood by utilizing gravity to support lung expansion and reduce abdominal pressure.

Swedish massage therapy using effleurage/petrissage techniques affects the parasympathetic nervous system and can induce a relaxation response. Relaxation in the body indicates a decrease in the hormone cortisol, which influences stress and improves blood circulation by increasing vasodilation or widening of blood vessels. This vasodilation reduces vascular resistance, resulting in a lower workload on the heart to pump blood and lower systolic and diastolic blood pressures. In a study conducted by Silva, Tatiana, and Robert (2022) on ICU patients, hemodynamic measurements were taken immediately after Swedish massage therapy and within 30 minutes to assess hemodynamic

stability. The use of oils as massage oils and aromatherapy can help improve the success rate of Swedish massage [14].

Some oils that can be used and have been proven effective in Swedish massage therapy include olive, lavender, and rose oils. Olive oil is used as a lubricant in Swedish massage therapy because it is a good emollient and is safe for the skin. It also provides a relaxing effect through stimulation of the parasympathetic nervous system, thus supporting increased comfort and muscle relaxation [14]. This statement is similar to that of a study conducted by Supa et al. (2025), which showed that the combination of Swedish massage and olive oil therapy is effective in lowering blood pressure and managing hemodynamics. The combination of Swedish massage and olive oil therapy can have a synergistic effect on lowering blood pressure in patients with hypertension. The main mechanisms include physical and mental relaxation, influences on the autonomic nervous system, reduction of stress hormones, and improved sleep quality, thus helping patients with hypertension manage their condition [10].

The use of warm water can also support the effectiveness of Swedish massage because exposure to warm water causes vasodilation of peripheral blood vessels, increasing blood flow to the skin and muscles, which helps supply oxygen and nutrients, and accelerates the elimination of metabolic waste. Furthermore, warm temperatures decrease muscle tone and spasms, making tissues more relaxed and elastic [15]. This theory is supported by the findings of a study conducted by Kim, Lee, Schreiber, Im, and Kim, (2022) which concluded that combining warm water with massage provides a superior effect compared to massage alone. Applying warm water before or during massage increases vasodilation and blood flow, leading to optimal muscle relaxation, decreased sympathetic nervous system activity, and increased parasympathetic responses [16]. The impact is a reduction in pain, stress, and muscle tension as well as an increased sense of overall comfort and relaxation.

4. CONCLUSION

Research has shown that an innovative combination of Swedish massage and warm water interventions can maintain hemodynamic stability by lowering blood pressure, heart rate, and level of consciousness. This therapy increases relaxation and parasympathetic activity, thereby reducing excessive sympathetic stimulation, stress and pain, improving peripheral circulation, and stabilizing the heart rate. This innovative intervention can be implemented in hospitals as an alternative to hemodynamic stability, provided that it is closely monitored by a physician. Therefore, it is crucial for patients and their families to understand the importance of maintaining hemodynamic stability, such as stable blood pressure, which can increase patient comfort and relaxation without causing rhythm disturbances or hemodynamic instability.

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