

The Effect of Light Massage on Hemodynamic in Patients with Heart Failure

A Systematic Review

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Abstract: Massage is a general body skin stimulation, centered on the back and shoulders, or can be done on one or several parts of the body and performed about 10 minutes of each part of the body to achieve maximum relaxation results. Light Massage (soft touch) is the basis of massage therapy and also combines science and art. Determining the exact amount of pressure for each person and finding the area of tension and other soft tissue problems can use a sense of touch. Touch also conveys caring, an important component in relation to healing. The purpose of this systematic review is to determine the effect of light massage on hemodynamic changes in heart failure patients. The article search was done on 7 data base to answer the purpose of this review. From some articles that have been reviewed can be said that massage therapy is one good alternative choice in stabilizing hemodynamic patients with heart failure. While to conclude massage therapy light is one of the best alternatives requires a lot of random clinical studies that compare light massage with various other therapies.

1 BACKGROUND

Heart disease is the number one cause of death in the world. This disease is not only a problem in developed countries, but also developing countries including Indonesia. Based on research conducted by a health agency in Indonesia, it turns out heart disease is also the number one killer in Indonesia today.

World Health Organization (WHO) in 2012 showed 17 million people die every year due to heart disease and blood vessels around the world. A total of 83.6 million people in the United States have heart attacks and 478,000 people die from coronary heart disease, even in 2030 by 40.8% of Americans suffering from heart disease (AHA, 2013).

One of the most common heart disorders is heart failure. Heart failure is a major health problem, where the prevalence of heart failure in developing countries is high and increasing. Half of patients diagnosed with heart failure still have a life expectancy of 5 years but about 250,000 patients die by heart failure either directly or indirectly each year, the rate has increased 6 times in the last 40

years. The risk of death each year is 5 - 10%, patients with mild symptoms will increase to 30-40% until the onset of disease (Joesoef, 2007).

Heart failure consists of six clinical classifications according to the 2008 European Society of Cardiology (ESC) guidelines, which include decompensated heart failure, acute pulmonary edema, hypertensive heart failure, cardiogenic shock, isolated right heart failure, and heart failure with acute coronary syndromes (SKA). Diagnosis of heart failure is based on anamnesis, clinical judgment, and investigation of electrocardiogram (ECG), chest X-ray, laboratory examination, and Doppler echocardiography (Manurung, 2009). The electrocardiogram is a graphic representation of the electrical potential variations generated by cardiac muscle excitation and is detected on the surface of the body (Dorland, 2012).

Early detection and recognizing features quickly can help prevent deterioration and maximize the healing process. One of the measures to recognize such traits is regular and rigorous hemodynamic monitoring (Gwinmut, 2006 in Jevons and Ewens, 2009).

One of the therapies to help to stabilize hemodynamics is by relaxing muscles, one with massage. Massage is a general body skin stimulation, centered on the back and shoulders, or can be done on one or several parts of the body and performed about 10 minutes of each body part to achieve maximum relaxation results (Tamsuri 2006). Massage can also correct problems in the muscle joints, flexing the body, restoring tension and easing pain. In addition massage can improve blood circulation, and reduce anxiety and depression (Handoyo, 2000).

Light Massage is the basis of massage therapy and also combines science and art. Determining the exact amount of pressure for each person and finding the area of tension and other soft tissue problems can use a sense of touch. Touch also conveys caring, an important component in relation to healing (Situmorang, 2009).

2 METHODS

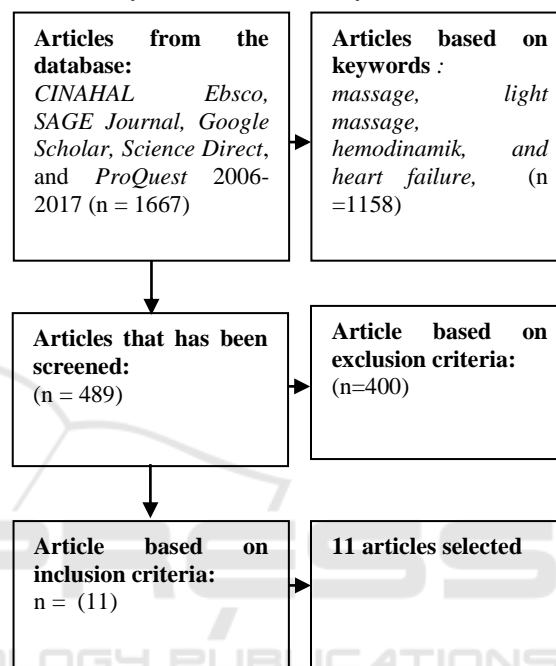
2.1 Article Search

In search of this first scientific article by formulating a PICOT framework. The population is a patient suffering from heart failure. The intervention is massage therapy (massage massage) to stabilize hemodynamics in patients with heart failure, outcomenya is the effectiveness of massage therapy (light massage) to stabilize hemodynamics in patients with heart failure. So the research question questionnaire is obtained, how the effectiveness of massage therapy (light massage) to stabilize hemodynamics in patients with heart failure?

The next stage is to search the scientific articles conducted by using electronic databases namely Sage journal, google scholar, proquest, Ebsco and science direct. In the search of this scientific article carried out restrictions only on articles that speak English only and published between 2000 to 2016. Search articles using keywords that is massage, light massage, hemodynamics, and heart failure. Before starting the literature search first determine the inclusion and exclusion criteria. The inclusion criteria are (a) abstract and full text articles (b) the main research articles dealing with heart failure with massage therapy. The exclusion criterion is (a) not English (b) contains no abstract (c) discusses heart failure with other therapies.

In determining an article selected by the researcher the main thing to do is to look at the search-related keyword in electronic data-based,

then by determining whether the inclusion and exclusion criteria are achieved, followed by a review of the full-text version. Articles found as many as 1667, and 489 articles discussing therapeutic massage therapy/ light massage and heart failure. Articles that enter inclusion criteria and reviewed as many as 11 articles. Schematically can be seen in the following PRISMA diagram (Preferred Reporting Items for Systematic Meta-Analyses):



2.1.1 Quality and Level Assessment of Articles

In this case to determine the quality and level of articles of all articles that have been selected dilakuan assessment in accordance with the tools of each research design and carried out critical appraisal using tools from The Joanna Briggs Institute Critical Appraisal tools for use in JBI Systematic Reviews. The next step is to assess the quality of existing articles that depend on the design used and the methods in the article. In this assessment, the criteria of articles with high quality are 80% -100%, the articles with the middle quality is 70% -79%, and the low quality articles are <69%. The next step was an assessment of the quality of the eviden and strength of the recommendation using GRADE, a system used by BMJ (Atkins et al., 2004).

Table 1: Quality and level assessment of articles.

Author/Country	Research Design	The Quality and Strength of Recommendation
(Yang, Xiaochen et al, 2014) China	A Systematic Review and Meta-Analysis	82 % & 3
(Bennett, Surussawadi et al, 2015), Thailand	RCT	78 % & 3
(Muller, Jasmin et al, 2016), Sweden	An exploratory pilot study	80 % & 3
(Nelson, Nicole L, et al 2015), Florida	A Scoping Review	80 % & 3
(Supa'at, Izreen et al, 2013), Malaysia	RCT	80 % & 3
(Eguchi, Eri et al, 2016) Japan	RCT	83 % & 3
(Cambron, Jerrilyn A. Et al, 2006) Lombard	A Preliminary Study	78 % & 3
(Ejindu, Anna, 2007) UK	Crossover pilot study	80 % & 3
(Heeyoung oh, Myung-haeng hur, et al, 2007) Korea	Observational study	80% & 3
(Cutshall, Susanne M. Et al, 2010) United States	A pilot study	82% & 3
(Trihartini Mira, et al, 2010) Indonesia	Pre experimental design	80 % & 3

3 RESULTS

From the literature study conducted, found 10 articles that discuss about massage and gentle massage to hemodynamic changes of patients with heart failure. The following will be described the results of the article review.

Yang Xiaochen et al (2014) investigated about chinese massage (tuina) for the treatment of essential hypertension, Seven randomized trials involving 479 patients were included. The results of Meta-analysis showed superior effects of Tuina plus antihypertensive drugs compared to antihypertensive drugs alone, however, Tuina alone was not superior to antihypertensive drugs. The safety of Tuina for

EH was still unclear because adverse effects were not assessed in most of the original trials.

Bennett, Surussawadi et al, (2015) investigated about Acute effects of traditional Thai massage on cortisol levels, arterial blood pressure and stress perception in academic stress condition. There were no significant differences in cortisol level between the two groups. The results suggest the need for further study into other possible physiological effects on stress of TTM.

Muller, Jasmin et al (2016)) investigated the Mechanical massage and mental training programs effect employees' heart rate, blood pressure and fingertip temperature. Within-group analysis showed that mechanical massage decreased heart rate ($p = 0.038$) and blood pressure (systolic $p = 0.019$, diastolic $p = 0.026$) and increased fingertip temperature ($p = 0.035$). Mental training programs reduced heart rate ($p = 0.036$). Combining the two methods increased diastolic blood pressure ($p = 0.028$) and decreased fingertip temperature ($p = 0.031$). The control group had a significant decrease in systolic blood pressure during the first four weeks of the study ($p = 0.038$).

Nelson, Nicole L, et al (2015) investigated about massage therapy: understanding the mechanisms of action on blood pressure. Based on this analysis, six potential blood pressure mediating pathways were identified. Current theories suggest that massage therapy exerts sympatholytic effects through physiologic and psychological mechanisms, improves hypothalamus-pituitaryadrenocortical (HPA) axis function, and increases in blood flow, which, in turn, may improve endothelial function.

Supa'at, Izreen et al (2013), investigated about effects of swedish massage therapy on blood pressure, heart rate, and inflammatory markers in hypertensive women. Massage group ($n = 8$) showed significant systolic BP (SBP) reduction of 12mmHg ($P = 0.01$) and diastolic BP (DBP) reduction of 5mmHg ($P = 0.01$) after four sessions with no significant difference between groups. Reductions in HR were also seen in massage group after sessions 1, 3, and 4 with significant difference between groups. Therewere no changes in ICAM-1. In conclusion, SMTor resting an hourweekly has effects on reducing BP, HR, and VCAM-1 in hypertensive women.

Eguchi, Eri et al, (2016) investigated about the effects of aroma foot massage on blood pressure and anxiety in japanese community-dwelling men and women. Aroma foot massage significantly decreased the mean SBP ($p = 0.02$), DBP ($p = 0.006$), and state

anxiety ($p = 0.003$) as well as the proportion of participants with anxiety ($p = 0.003$).

Research by Cambron, Jerrilyn A. Et al (2006) about changes in blood pressure after various forms of therapeutic massage. Swedish massage had the greatest effect at blood pressure reduction. Trigger point therapy and sports massage both increased the systolic blood pressure, and if both forms of massage were included in a session, both the systolic and diastolic blood pressure readings significantly increased.

Ejindu, Anna (2007) investigated about the effects of foot and facial massage on sleep induction, blood pressure, pulse and respiratory rate. A drop in systolic blood pressure of 8.5mmHg was recorded immediately after facial massage compared to that of 1mmHg recorded after foot massage. Both treatments were equally effective in reducing subjective levels of alertness during the interventions, with face massage marginally better at producing subjective sleepiness.

Research by Heeyoung oh, Myung-haeng hur, et al (2007) about effects of aromatherapy massage on blood pressure and lipid profile in korean climacteric women. The subjects comprised 58 climacteric women: 30 in the experimental group and 28 in the control group. The intervention produced significant differences in the systolic blood pressure compare to pretreatment and significant differences in systolic and diastolic blood pressures at posttreatment between the two groups.

Cutshall, Susanne M. Et al (2010) investigated about effect of massage therapy on pain, anxiety, and tension in cardiac surgical patients. Statistically and clinically significant decreases in pain, anxiety, and tension scores were observed for patients who received a 20-minute massage compared with those who received standard care. Patient feedback was markedly positive.

Trihartini Mira, et al (2010), about cutaneous stimulation: slow-stroke back massage reduces the intensity of osteoarthritis pain of elderly. The Result showed that the message intervention was significantly affect the elder's level of osteoarthritis pain in Panti Werdha Hargo Dedali Surabaya ($p = 0.003$).

4 DISCUSSION

Massage is a general body skin stimulation, centered on the back and shoulders, or can be done on one or several parts of the body and performed about 10 minutes of each body part to achieve maximum relaxation results (Tamsuri 2006). Massage can also

correct problems in the muscle joints, flexing the body, restoring tension and easing pain. In addition massage can improve blood circulation, and reduce anxiety and depression (Handoyo, 2000). Massage also affects the flow of lymph, muscle, nerves, and the digestive tract and stress (B. Mahendra, Yoan Destarina, 2009). Massage is a touch of the soft tissues of the body by the use of the hands as a means to positively affect the blood vessels, muscles, and nervous system of the body (Clay & Pounds, 2008).

Light massage can provide a greater sense of pleasure and relaxation. Speed and pressure during massage is done in a subtle way, much like a mother calms her baby. The nerve sends a pleasure signal to the brain when massaged at 1-10 cm. The benefit of a light massage is to stimulate the afferent nerve that leads to the brain. It mainly works on the peripheral nervous system, the nerve C-tactile nerve fibers. This nerve sends signals related to emotions and positive feelings (Situmorang, 2009). Light massage for 15 minutes can increase delta waves and decrease alpha and beta waves. The delta waves indicate very relaxed conditions (Field, et al., 1996). Light massage for 15 minutes also decreases the right frontal asymmetry EEG associated with affective and negative mood (Davidson, 2006).

Furthermore, from 10 articles reviewed revealed the effect of massage on hemodynamic changes (blood pressure, breathing, and heart rate). According to (Yang Xiaochen et al, 2014) the effects of chinese massage (tuina) for the essential treatment of hypertension show significant results on the decrease in blood pressure in the treatment group. It is also suggested by (Cutshall, Susanne M. Et al, 2010), who examined the effects of massage therapy on pain, anxiety, and blood pressure on patients' heart surgery, statistically and clinically significant decreases in pain scores, anxiety, and blood pressure. Ejindu, Anna (2007) significantly the massage affects against blood pressure, pulse and respiration. (Cambron, Jerrilyn A. Et al, 2006) said that overall, systolic blood pressure decreased 1.8 mmHg and diastolic blood pressure increased 0.1 mmHg, massage therapy associated with changes in blood pressure had the greatest effect on reducing blood pressure. From some articles that have been reviewed on average show a positive effect of massage therapy on blood pressure, breathing, and heart rate. Research using massage therapy has been widely performed which proves to be safe and has a positive effect in lowering blood pressure, breathing, and heart rate.

This is consistent with the results of this review integrative of 10 articles all of which concluded that massage therapy is effective against hemodynamic changes although there are articles that do not show any significant influence. However, massage therapy shows a positive effect and can accelerate in lowering blood pressure, breathing and heart rate.

5 CONCLUSIONS

Massage therapy is one of the alternative therapies that have good results in stabilizing hemodynamics (blood pressure, breathing, and heart rate) according to some articles that have been reviewed. However, to be regarded as one of the best alternatives compared to other alternatives requires other randomized clinical studies, which compare alternative therapy with massage therapy.

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