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Reduction Blood Pressure by Neck Massage Therapy Using Virgin Coconut Oil (VCO) and Dry Cupping Therapy



Nurul Faidah¹, Ni Kadek Muliawati²

¹RMIK Department, STIKes Wira Medika Bali, Indonesia

²Nursing Department, STIKes Wira Medika Bali, Indonesia

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Abstract

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Hypertension is a non-communicable disease which increases every year, with the increasing incidence of Hypertension will have an impact on society, namely a decrease in health status which results in a decrease in the quality of life. Management of hypertension can be done with non-pharmacological therapy, one of the non-pharmacological therapies chosen by the community, namely complementary therapy, neck massage therapy using VCO and cupping is a complementary therapy that aims to reduce hypertension. The sampling technique used was purposive sampling. The sample in this study 16 respondents were given neck massage therapy with VCO and 16 respondents were given dry cupping therapy. The data analysis used was the Spearman rank because the data were not normally distributed. Before being given neck massage therapy with a mean VCO, systolic blood pressure was 156.25, diastolic blood pressure was 87.50 after being given a mean value of 124.38 and diastolic 81.25 with a systolic p value of 0.000 while for diastolic blood pressure of 0.008. Whereas in the group given dry cupping therapy systolic blood pressure with a mean of 158.82 and diastole a mean of 90.59, after being given dry cupping therapy, systolic blood pressure was 124.71 while diastole was 78.82 with a systolic p value of 0.000 and diastole of 0.009. The difference in blood pressure in the two interventions for the system p value was 0.968 while for diastole the p value was 0.625, which means there was no difference between the two interventions. So it can be concluded that both neck massage therapy with VCO and dry cupping therapy can reduce blood pressure in patients with hypertension.

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✉ Correspondence Address:

STIKes Wira Medika Bali – Bali, Indonesia

Email: nurulfaidah1208@gmail.com

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INTRODUCTION

Hypertension is a condition where the pressure of blood systolic equal to or more than 140 mmHg and pressure of blood diastolic equal to or more than 90 mmHg. Hypertension is estimated to cause a 7,5 million deaths or approximately 12.8% of total deaths. The prevalence of hypertension in the world is about 84.749 million people, or about 64,9% (Yoon, Sung, Margaret, et al, 2015). The incidence of hypertension in Indonesia in the elderly reaches 14.435 in habitants or approximately 13.2% of the total population in Indonesia (Kesehatan RI, 2013). In 2016, Health Department of Bali Province recorded the visits of patients with hypertension as many as 31.166 in habitants. Based on the data of Basic Health Research (Riskesdas) in the year of 2018, the prevalence of the hypertension disease in national as many as 34%, while in the province of Bali as many as 13.2%. Hypertension is the number 2 disease in the working area of public health center III, North Denpasar. Management of hypertension can be done by non pharmacological therapy, because it will minimize complications such as kidneys and liver damage. One of the non-pharmacological therapies chosen by the community is complementary therapy, neck massage therapy using VCO and dry cupping. The effect of neck massage therapy with VCO puts pressure on the cutaneous and subcutaneous area, releases histamine and has an impact on vasodilation of blood vessels and increases venous return which can reduce the work of the heart, by decreasing the work of the heart, the blood pressure will decrease. In addition to massage therapy, cupping therapy can also reduce hypertension with the cupping therapy method using a pulling device or suction device and a cup that aims to suck the skin and tissue under the skin, so that blood components can collect under the skin, which has an impact on the excretion of substances in the body such as serotonin, histamine, bradykinin, slow reaching substance (SRS). From the excretion of these substances, the capillaries and arteries expand so that there is an improvement in the microcirculation of blood vessels, which has an impact on muscle relaxation resulting in vasodilation which can lower blood pressure (Hikayati, Flora, R, & Purwanto, 2014). Based on the above phenomenon, researchers are interested in taking the

title Reduction Blood Pressure by Neck Massage Therapy Using Virgin Coconut Oil (VCO) and Dry Cupping Therapy.

METHOD

The design in this study was a quasi-experimental one group pre and post-test. The number of population in this study was 930 respondents. The sampling technique used was *purposive sampling*, so that the number of samples was determined in the study because the intervention study with a sample size of 32, 16 respondents were given neck massage therapy and 16 respondents were given dry cupping therapy. The inclusion criteria in this study were patients with HT, The inclusion criteria in this study were patients with HT, the exclusion criteria were DM patients, burns in the back area, cervical fractures. The dependent variables in this study were neck massage therapy using VCO and dry cupping and the independent variable was blood pressure in hypertension. The data collection technique in the study was carried out by measuring blood for the two groups then given neck massage using VCO for 2 times a week for 3 weeks. Massage techniques used were three movements; stroking (sliding), kneading (massaging), friction (circular movements) in the cervical area, right and left neck, using VCO maximum 5 times each movement. Meanwhile, dry cupping therapy is given 2 times a week for 2 weeks using a special cup for point cupping, which is done cupping GB 20 (nape), and the entire upper back to lower back, for women, cupping is done for 5-7 minutes, while for men 7-10 minutes. The tools used in this study were a sphygmomanometer to measure blood pressure, VCO oil and cupping tools. The data were analyzed after data normality test was carried out using *Wilcoxon* because the data were not normally distributed with the criteria if the p value was <0.05 , which means that there was an effect of VCO and dry cupping massage. For data on differences in the results of the study using *Mann Withney*, the data was not normally distributed with the criteria if p value <0.05 , this indicates that the therapy is more effective. This research received ethical clearance from the Ministry of Health Denpasar Poltekkes.

RESULT

Table 1 Blood Pressure Before and After Neck Massage using VCO at UPT Kesmas North Denpasar III

| Blood pressure | Mean | SD | Min | Max | p value |
|----------------|--------|-------|-----|-----|---------|
| Systolic | | | | | |
| Pre | 156,25 | 10,87 | 140 | 180 | 0,000 |
| Post | 124,38 | 8,13 | 110 | 140 | |
| Diastolic | | | | | |
| Pre | 87,50 | 8,56 | 70 | 100 | 0,008 |
| Post | 81,25 | 7,188 | 70 | 90 | |

Based on Table 1, the results of the mean value of systolic blood pressure (156, 25) before being given neck massage. Based on Table 1, the result of the mean (mean) systolic blood pressure (156, 25) before neck massage was greater than the mean post-test (124.38) so that it can be concluded that the patients systole after neck massage intervention

with VCO decreased by 31, 87 points. As for diastolic blood pressure, the mean value (87.50) was greater than the mean post-test (81.25), so it can be concluded that the patients diastole after neck massage intervention with VCO decreased by 6.25 points.

Table 2 Blood pressure before and after given dry cupping therapy at UPT Kesmas North Denpasar III

| Blood pressure | Mean | SD | Min | Max | p value |
|----------------|--------|-------|-----|-----|---------|
| Systolic | | | | | |
| pre | 158,82 | 22.04 | 140 | 230 | 0,000 |
| post | 124.71 | 5.15 | 120 | 130 | |
| Diastolic | | | | | |
| pre | 90.59 | 15.60 | 70 | 130 | 0,009 |
| post | 78.82 | 4.851 | 70 | 90 | |

Based on Table 2, the mean value of systole before giving dry cupping therapy (158.82) was greater than the mean after dry cupping therapy was given (124.71), so it can be concluded that the patients systole after cupping intervention decreased

by 34.11 points. As for diastolic blood pressure, the mean value before intervention (90.59) was greater than the mean after intervention (78.82), so it can be concluded that the patients diastole after cupping intervention decreased by 11.77 points.

Table 3 Differences in systolic and diastolic blood pressure in patients who were given neck massage therapy with VCO and dry cupping

| | Group Variables | N | p-value |
|----------|------------------------|----|---------|
| Systole | Neck Massage Using VCO | 16 | 0,968 |
| | Dry Cupping | 16 | |
| Diastole | Neck Massage Using VCO | 16 | 0,255 |
| | Dry Cupping | 16 | |

The results showed systolic blood pressure in both groups with p value $(0.968) > \alpha (0.05)$, while for diastolic p value $(0.255) > \alpha (0.05)$. So it can be stated that there is no significant difference between neck massage VCO intervention with cupping intervention on changes in either systole or diastole.



Figure 1 Neck Massage Therapy

DISCUSSION

Pre and Post Blood Pressure Given Neck massage therapy using VCO

Based on Table 1, the mean systolic blood pressure for pre neck massage therapy with VCO was 156.25 and post neck massage therapy with VCO was 124.38 with a p value of 0.000. Whereas for diastolic blood pressure pre neck massage therapy with VCO was a mean of 87.50 and post neck massage therapy with VCO was 81.25 with a p value of 0.008. The results of this study showed that there was an effect of neck massage with VCO on blood pressure. The results of this study are in line with the research of Eguchi, Funakubo, Tomoka, et al (2016) which showed that the mean systolic blood pressure after foot massage treatment with aromatic oil was 108.01 mmHg and the mean diastolic blood pressure was 67.03 mmHg. The results of this study are also in line with Wijayanto's (2015) study of the difference in the effect of massage therapy with aromatherapy oil and VCO oil on reducing blood pressure. The results showed that the average value of systolic blood pressure after treatment was 145.78 mmHg, while the average value of diastolic blood pressure after treatment was 82.61 mmHg. The mechanism of neck massage with Virgin Coconut Oil (VCO) in lowering blood pressure is related to pressure on

cutaneous and subcutaneous tissues which causes the release of histamine which in turn produces vasodilators of blood vessels and increases venous return which in turn reduces the work of the heart. The use of VCO can help the massage process. VCO shows significantly antithrombotic effects compared to ordinary coconut oil. The level of antioxidants contained in VCO is higher than sunflower seed oil, which means that VCO is effective for improving endothelial cell function (Widiyanti, 2015). The VCO component itself is in the form of medium chain fatty acids which are commonly called Medium Chain Fatty Acid (MCFA). Fatty acids classified as MCFA are easily absorbed into the mitochondria so that it will increase the body's metabolism. The most MCFA contained in VCO are lauric acid. This lauric acid content is proven to be able to overcome many diseases such as heart disease and hypertension (Djaelani, 2015).

Blood pressure after being given neck massage therapy with virgin coconut oil (VCO) from the massage or self-massage movement causes the release of acetylcholine and histamine which cause vasodilators in blood vessels and increase venous return, thereby reducing heart performance, besides that the content of virgin coconut oil is an ingredient Medium Chain Fatty Acid (MCFA). Fatty acids classified as MCFA are easily absorbed into the mitochondria so that it will increase the body's metabolism. The most MCFA contained in VCO are lauric acid. This lauric acid content is proven to be able to overcome many diseases such as heart disease and hypertension.

Blood Pressure Pre and Post Dry Cupping Therapy

Based on Table 2, the mean systolic blood pressure before intervention was 158.82 after the intervention was given the mean systolic blood pressure was 124.71 with a p value of 0.000. Whereas for the diastolic blood pressure was 90.59, after being given intervention the mean blood pressure was 78.82 with a p value of 0.009. This study is in line with research conducted by Pratama, Rasni, and W (2018) which showed a decrease in blood pressure in the group given dry cupping therapy as indicated by a p value of 0.004. In addition to the above research, research by Eliyana, Y., Nooryanto, M., & Poeranto, S. (2019) showed the results after being given dry cupping therapy to pregnant women with pre-eclampsia with a p value

of 0.002, which means that there is an effect of dry cupping therapy intervention. Blood pressure increases with age. Systolic blood pressure increases before age 50 years and diastolic pressure increases after age 50 years. Increased systolic pressure and decreased diastolic pressure is called isolated systolic hypertension (Hussain, 2016). Isolated systolic hypertension (HST) is the most common hypertension in the elderly. Systolic hypertension is caused by arterial stiffness (Heart foundation, 2016). Arterial stiffness often causes an increase in both systolic and diastolic blood pressure (Kuswardhani, 2006). Dry cupping therapy is done by vacuuming the skin and removing blood. This definition includes two main mechanisms of cupping, namely the process of vacuuming the skin then followed by removing blood from the skin that has been previously vacuumed (Kasmui, 2012). According to Ayuningtyas (2019), cupping is a type of Chinese massage that uses a type of glass or special cup that is placed on the body. Cupping is a form of treatment in which the method of suction is done using a special cup. The goal is to help the flow of blood and energy.

Cupping at one point causes the skin (cutis), subcutaneous tissue (sub cutis), fascia and muscle to be damaged from mast cells or others. This damage causes the release of several substances such as serotonin, histamine, bradykinin, slow reaching substance (SRS) and other unknown substances. These substances cause capillary and arteriolar dilation as well as flare reactions in the affected area. Capillary dilation can also occur at a site far from the site of cupping, which results in improved microcirculation of blood vessels. As a result, there is a relaxing effect (relaxation) of stiff muscles and due to general vasodilation will stably lower blood pressure (Hikayati, Flora, R, & Purwanto 2014). Cupping healing mechanism in hypertension is based on the theory of organ activation, where cupping will activate organs that regulate blood flow such as the liver, kidney and heart so that these organs remain active in regulating blood circulation so that blood pressure is maintained. In addition, cupping also tries to balance naturally when there is increased blood pressure. By choosing the right point, cupping can help treat hypertension (Almi and Al-Muqsith 2015).

Based on the results of the above research on dry cupping therapy hypertension, with this technique there is a breakdown of the skin cells which have

an impact on the secretion of substances in the body such as serotonin, histamine, bradykinin, slowreaching substance (SRS). From the excretion of these substances, the capillaries and arteries expand so that there is an improvement in the microcirculation of blood vessels, which has an impact on muscle relaxation resulting in vasodilation which can lower blood pressure. In addition, it will stimulate the activation of other organs such as the liver, kidneys and heart and stimulate the sympathetic nerve (simpatico nervous system) so that it secretes an enzyme that acts as the angiotensin renin system. Once the system is calm and reduced in activity, blood pressure will drop. Cupping plays a role in reducing the volume of blood flowing in the blood vessels, thereby reducing blood pressure.

Differences in systolic and diastolic blood pressure in patients who were given neck massage therapy using VCO and dry cupping

Based on Table 3, the results of this study indicate that both interventions are effective in lowering blood pressure. The results showed systolic blood pressure in both groups with P value (0.968) > α (0.05), while for diastole P value (0.255) > α (0.05). So it can be stated that there is no significant difference between neck massage VCO intervention with cupping intervention on changes in either systole or diastole. The results of this study are in line with research conducted by Yoganita, Sarifah, and Widyastuti (2019) which showed that massage therapy lowers blood pressure with a p value of 0.001. In addition, the effectiveness of neck massage or massage is also effective in reducing pressure, as in research conducted by Fitriani (2015) with a p value of 0.000.

According to therapeutic theory, massage induces an acceleration of venous blood flow and lymphatic drainage mechanisms, impairs pathological accumulation mechanisms (for example, soft tissue calcification), and passively trains soft tissues. Massage movements on the skin, connective tissue, muscle tissue and periosteum will stimulate the receptors located in the area. These impulses are delivered by afferent nerves to the central nervous system, and then the central nervous system provides feedback by releasing aceticolin and histamine through efferent nerve impulses to stimulate the body to act through the vasodilation reflex mechanism of blood vessels, which reduces sympathetic nerve activity and increases

parasympathetic nerve activity. Increased parasympathetic activity causes a decrease in heart rate and pulse rate and results in activation of the relaxation response. Meanwhile, a decrease in sympathetic nerve activity increases arteriolar and venous vasodilation, which causes peripheral vascular resistance to decrease, thereby lowering blood pressure (Sherwood, 2012).

Neck massage therapy with virgin coconut oil (VCO) from the massage or self-massage movement causes the release of acetylcholine and histamine which results in vasodilators in blood vessels and increases venous return, thereby reducing heart performance, besides that the content of virgin coconut oil is Medium Chain Fatty Acid (MCFA). Fatty acids classified as MCFA are easily absorbed into the mitochondria so that it will increase the body's metabolism. The most MCFA contained in VCO are lauric acid. This lauric acid content is proven to be able to overcome many diseases such as heart disease and hypertension.

Blood pressure after being given cupping therapy also decreased, dry cupping therapy has a stimulating effect. Cupping at one point causes the skin (cutis), subcutaneous tissue (sub cutis), fascia and muscle to be damaged from mast cells or others. This damage causes the release of several substances such as serotonin, histamine, bradykinin, slow reaching substance (SRS) and other unknown substances. These substances cause capillary and arteriolar dilation as well as flare reactions in the affected area. Capillary dilation can also occur at a site far from the site of cupping, which results in improved microcirculation of blood vessels. As a result, there is a relaxing effect (relaxation) of stiff muscles and due to general vasodilation will stably lower blood pressure (Hikayati, Flora, R, & Purwanto 2014). Cupping plays a role in stimulating special receptors associated with contraction and stretching of blood vessels (baroreceptors) so that blood vessels can respond to various stimuli and increase their sensitivity to factors that cause hypertension (Almi and Al-Muqsith 2015).

The theory above is in line with the results of the mean systolic blood pressure of 158.82 before intervention and after intervention, the mean systolic blood pressure was 124.71 with a p value of 0.000. Whereas for the diastolic blood pressure was 90.59, after being given intervention the mean blood pressure was 78.82 with a p value of 0.009. This

research is in line with research conducted by Pratama, Rasni, and W (2018). In addition to this research, research conducted by Eliyana, Nooryanto, and Poeranto (2019) also showed a decrease in blood pressure in the group given dry cupping therapy as indicated by a p value of 0.004.

Dry cupping therapy is effective in reducing blood pressure due to the method of cupping which initially causes damage to the skin cells which results in the release of substances in the body such as serotonin, histamine, bradykinin, and slowreaching substance (SRS). From the excretion of these substances, the capillaries and arteries expand so that there is an improvement in the microcirculation of blood vessels, which has an impact on muscle relaxation resulting in vasodilation which can lower blood pressure. In addition, it will stimulate the activation of other organs such as the liver, kidneys and heart and stimulate the sympathetic nerve (simpatico nervous system) so that it secretes an enzyme that acts as the angiotensin renin system. Once the system is calm and reduced in activity, blood pressure will drop. Cupping plays a role in reducing the volume of blood flowing in the blood vessels, thereby reducing blood pressure.

The two interventions above, both neck massage with VCO and dry cupping are both effective in lowering blood pressure, the difference is the method and mechanism of lowering blood pressure in patients suffering from hypertension. For neck massage, apart from the massage movement coupled with the VCO content which can reduce blood pressure effectively, the content of fatty acids which are classified as MCFA is easily absorbed down to the mitochondria so that it will increase the body's metabolism. The most MCFA contained in VCO are lauric acid. This lauric acid content is proven to be able to overcome many diseases such as heart disease and hypertension. For dry cupping therapy is a technique by pulling the skin with a special glass or cup that from the outset is damaged cells so that it can secrete substances such as histamine, bradykinin which can relax the blood vessels, both capillaries and arteries, which results in a decrease in the patient's blood pressure. In addition, dry cupping therapy will maximize the work of the organs in the body, one of which is the kidneys and heart, the kidneys will maximize the release of RAA which affects the decrease in blood pressure.

CONCLUSION

The results of the above research indicate that neck massage therapy with VCO and Dry Cupping Therapy can reduce blood pressure in hypertension and there is no difference between the two interventions.

SUGGESTION

The results of this study are expected to be continued by further researchers for dry cupping therapy and neck massage with virgin coconut oil by taking the treatment group without using drugs to see the effects of cupping and neck massage interventions with virgin coconut oil on lowering blood pressure.

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