Reduce Headache Levels with Cupping Therapy Methods in Hypertensive Patients

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ABSTRACT

Headaches are one of the most common signs of symptoms complained by people with hypertension. This study aims to find out the effect of cupping therapy on the headaches of people with hypertension in Tsabita Nursing Health Care Clinic (TNHC), Kampar Regency, Indonesia. This study uses quasi-experiment methods with non-equivalent pretest-posttest designs. The sample was a hypertensive sufferer who experienced headaches and visited to get cupping therapy at the TNHC clinic and was willing to be respondents to a total of 31 people. The sampling method used is consecutive sampling which is taking the entire population into samples. The study used univariate and bivariate analysis methods. The results of the univariate analysis showed that most of the respondents were female 22 people (71%), the age range was at 36-45 years 12 people (38.7%), work in general as housewives 16 people (51.6%), the scale of headaches before cupping therapy is moderate pain 23 people (74.2%) and severe pain 8 people (25.8%), the scale of pain after cupping therapy is mild pain 26 people (83.9%) and moderate pain 5 people (16.1%). The results of the statistical test analysis dependent T-test p-value < 0,000 means that there is a significant difference in the average headache scale before and after cupping therapy. Cupping therapy can be used as one of the implementations in reducing pain/headache in people with hypertension.

Keywords: Cupping therapy; headache; hypertension

INTRODUCTION

Hypertension is classified as a non-communicable disease and is one of the causes of death in the world. The prevalence of hypertension continues to increase and is expected to exceed 500 million by 2025 (Ibrahim & Damasceno, 2012). Due to the high incidence of hypertension, the World Heart Federation has set an increase in the level of control to hypertensive patients globally by 25% by 2025 (Bloch, 2016). The prevalence of hypertension according to WHO in general is 22% of the total world population and accounts for 9.4 million deaths worldwide every year and is responsible for 45% of deaths from heart disease (Haldar, 2013). Hypertension significantly increased COVID-19 mortality (OR: 2.59; 95% CI: 1.91 −3.51; P <0.001) with moderate heterogeneity (Q = 33.59, P < 0.001, I2 = 67.3%). Hypertension was also an independent risk factor for COVID-19 mortality (aOR: 2.17; 95%CI: 1.67 − 2.82; P<0.001) (Du et al., 2021)

Hypertension is defined as systolic blood pressure ≥ 140 mm Hg, average diastolic blood pressure ≥ 90 mmHg (Mills et al., 2016). As a result of increased blood pressure can cause the appearance of several symptoms of hypertension that may occur including chest pain, confusion, ringing in the ears, irregular heartbeat, nosebleeds, fatigue, vision changes, and headaches (Shukuri et al., 2019). Headaches are one of the most common symptoms complained by people with hypertension when getting health care assistance. The incidence of headaches is quite high in Indonesia. Data shows, 90% of the human population has experienced diseases that cause a sense of headache. Data in 2020 from the Kampar Regency health office recorded 3535 cases from adult men and women complaining of tension headache.

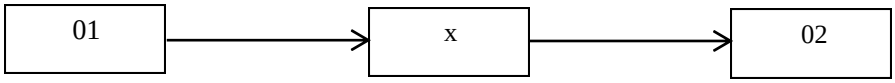
Management of headaches due to increased blood pressure in general can be overcome in two ways, namely pharmacological management and non-pharmacological management. Pharmacological management using drugs prescribed by doctors so as to lower blood pressure and reduce headaches. This non-pharmacological management includes nursing measures of pain disorders, deep breathing exercises, weight loss, sodium restriction, avoiding alcohol intake, regular physical exercise, healthy eating and smoking cessation and complementary therapies (Abdul Rashid AR, Khalid Y, 2019). Currently, the complementary therapy that is the choice of the Indonesian people to relieve headache pain due to increased blood pressure is cupping therapy (Setyawan et al., 2020)

Cupping is a treatment recommended by the Prophet Muhammad SAW. In the hadith shahi Bukhari the Prophet SAW said, "Actually, the treatment you should do is cupping (W. Umar, 2010). Wet cupping (or hijamah) in Arabic) is the process of using a vacuum at various points on the body, along with the use of incisions (small, light scratches made using a razor), to remove what was previously referred to as 'harmful blood' (this represents the accumulation of blood located just below the surface of the skin) (Aleyeidi et al., 2015).

Cupping therapy or wet cupping has a great opportunity to be a medical treatment to lower blood pressure (Apriza et al., 2022). According to (Al-Eidi et al., 2019) Revealed that medically, cupping has several systemic effects, namely pain-reducing effects, anti-inflammatory and improving blood circulation, immunomodulating effects to hematological effects. Some previous research on cupping and pain has already been done. Cupping is effective for pain management (Cao et al., 2012; Aboushanab & AlSanad, 2018).

METHOD

This research is included in the experimental research design using quasi-experimental methods with a non-equivalent pretest-posttest design. The samples in this study were observed first before being given cupping therapy treatment, then after being given cupping therapy treatment, the samples were observed again.



Scheme 1 Research Design

Information:

01: Measurement of pain scale before cupping therapy (pretest)

02: Measurement of pain scale after cupping therapy (posttest)

X: Cupping therapy intervention

This study was conducted from January to May 2021 on headache patients with hypertension who get treatment at the Tsabita Nursing Health Care (TNHC) clinic, Kampar Regency, Indonesia. The research sample amounted to 31 people taken using consecutive sampling. The samples that met the inclusion and exclusion criteria were taken into samples until the minimum number of samples that had been determined was achieved. The criteria for research inclusion include 1. Patients who seek treatment at the TNHC clinic with complaints

of headaches. 2. 18 – 65 years old. 3. Blood pressure range is in the pre-hypertensive category > 120-129 mmHg TDS and > 80-89 mmHg TDD and level I hypertension category ≥140-159 mmHg TDS and 90-99 mmHg TDD 4. Willing to sign informed consent. Exclusion criteria include: 1. The patient is taking anti-headache medication. 2. The patient does not follow the study to the end. 3. The patient has a malignant disease, and disorders of the organ. 4. The patient has a fever. 5. The patient is in menstruation. 6. Taking blood-thinning medications. 5. The patient is not willing to be a sample.

Data was collected using the Numeric Rating Scale (NRS) instrument to assess the scale of pain experienced by patients. Pain assessment is carried out twice, namely before and after cupping therapy. The assessment results are documented in the fill sheet for the sample data. The filling sheet is completed by filling in sample characteristics including initial name, age, gender, and occupation. The data were analyzed using the SPSS version 23 computer program. Data analysis using univariate and bivariate analysis. Univariate analysis is used to describe descriptive the frequency distribution of each variable studied. Univariate analysis in this study is the frequency distribution of respondent characteristics, and the distribution of pain levels before and after cupping actions are carried out. Bivariate analysis is performed through correlation tests and dependent t-tests.

RESULT

Table 1. Characteristics of Respondents

NO	Age	Frequency	Percentage (%)
1	17-25	1	3.2
2	26-35	2	6.5
3	36-45	12	38.7
4	46-55	8	25.8
5	56-65	8	25.8
	Total	31	100.0
NO	**Gender**	**Frequency**	**Percentage (%)**
1	Woman	22	71.0
2	Male	9	29.0
	Total	75	100.0
NO	**Work**	**Frequency**	**Percentage (%)**
1	Civil Servants	10	32.3
2	Housewives	16	51.6
3	Farmer	5	16.1
	Total	**31**	100.0

Based on Table 1, it can be seen that of the 31 respondents, there was the largest percentage of age in the age range of 36-45 years, amounting to 12 respondents (38.7%). Most of the respondents were female with 22 respondents (70%) and more than half of the respondents worked as housewives with 16 respondents (51.6%).

Table 2 Headache scale before cupping therapy

NO	Variable	Frequency	Percentage (%)
1	Moderate pain (4-7)	23	74.2
2	Severe pain (8-10)	8	25.8
	Total	31	100.0

Based on Table 2, it can be seen that respondents experienced moderate pain as many as 23 respondents (74.2%) and respondents experienced severe pain as many as 8 respondents (25.8%).

Table 3 Headache scale after cupping therapy

NO	Variable	Frequency	Percentage (%)
1	Mild pain (1-3)	26	83.9
2	Moderate pain (4-7)	5	16.1
	Total	31	100.0

Based on Table 3, it can be seen that after cupping therapy, the respondent's pain scale changed, namely; Respondents experienced mild pain in 26 respondents (83.9%) and respondents experienced moderate pain in 5 respondents (16.1%).

Table 4 Distribution of mean respondents' pain scales before and after cupping therapy

Variable	Mean	SE	SD	n	P Value
Pain scale before cupping	2.2581	.07989	.44480	31	0.000
Pain scale after cupping	1.1613	.06715	.37388		

Based on Table 4, it was found that the average pain scale of respondents before cupping therapy was 2.2581 with a standard deviation of .44480. In respondents after cupping therapy, the pain scale dropped to 1.1613 with a standard deviation of .37388. The mean difference between the pain scale before and after cupping therapy was 1.09677 with a standard deviation of .39622. The results of statistical tests obtained P value = 0.000 then it can be concluded that there is a significant difference in pain scale before and after cupping therapy

Table 5 Dependent T-Test analysis to examine changes in respondents' pain scales

Variable	Mean	SD	SE	CI 95%	P Value
Pretest pain scale and Posttest pain scale	1.09677	.39622	.07116	.95144-1.24211	0.000

Based on Table 5, the mean difference between the pain scale before and after cupping therapy is 1.09677 with a standard deviation of .39622. The results of statistical tests obtained P value = 0.000 then it can be concluded that there is a significant difference on average between the pain scale before and after cupping therapy.

Table 6 Correlation test of pain scale before and after cupping therapy

	n	Correlation	Sig
Pretest pain scale and Posttest pain scale	31	.543	.002

Based on Table 6, a correlation value of 0.543 with a P value of 0.002 is obtained, meaning that there is a strong relationship between the pain scale and cupping.

DISCUSSION

From the results of the study, it can be seen that hypertensive patients who complain of headaches are in two categories of pain levels, namely 74.2% in the moderate pain category and 25.8% in the severe category. Headache pain in hypertensive patients is caused by vascular damage to all peripheral vessels. Changes in small arteries and arteola cause blockage of blood vessels, resulting in impaired blood flow. The headache is felt more seriously and feels throbbing pain (throbbing) in the head

In this study, there was a strong correlation between headaches and cupping therapy as evidenced by an r-value of 0.543 and a P-value of 0.002. The results of the statistical test of

paired T analysis (dependent T-Test) obtained a P value = 0.000 so it can be concluded that there is a significant difference on average between the pain scale before and after cupping therapy. Research conducted by (Ahmadi et al., 2008) About the effectiveness of cupping therapy with headaches using 70 patients with migraine headaches treated with wet cupping. The design used is a pre-post design. The results showed that headaches decreased by 66% after wet cupping treatment. So, it can be concluded that wet cupping leads to clinically relevant benefits for primary care patients with headaches. The therapeutic benefits of cupping for reducing pain are also reported (Sayed, 2014). Research in Korea conducted by (Kim et al., 2011) in patients with persistent non-specific low back pain (PNSLBP) showed results that cupping was able to reduce the pain of patients with PNSBP by (-16.0 [95% CI: -24.4 to -7.7].

Research in Turkey conducted by (Ersoy & Benli, 2019) Proved that wet cupping therapy (WCT) can reduce pain and disability in patients with headaches/migraines, and efficacy increases when cupping therapy is carried out continuously. The same opinion is also proved by (Arslan et al., 2016) that WCT had a potential therapeutic effect on the pain felt by 61 respondents. The mean score of neck pain in the study group was 7.02 (SD 1/4 1.8) before and 3.70 (SD 1/4 2.2) after cupping therapy. The decrease in pain scores between pre and post-test was statistically significant ($p < 0.05$). Research at King Abdul Aziz Hospital Saudi Arabia also reports that cupping therapy is very beneficial in reducing pain in patients (Kaki et al., 2019). From these various studies, it is believed that cupping therapy is effective and useful for reducing pain in patients, including headaches complained by people with hypertension

Several theories explain the analgesic mechanism of cupping. The first is the Taibah theory. According to (Sayed, 2014) and his colleagues explained in this Taibah theory the human body is always in a state of physiological homeostasis by the harmony of body systems and organs. Etiopathogenesis of the disease occurs due to changes in physiological homeostasis. The scientific principle of Taibah's theory is based on that the kidneys function in the system of excretory and filtration of body fluids. Cupping or al hijamah is considered an artificial kidney that performs filtration of skin capillaries particles contained in blood and fluid and excretes them. The filtration and excretion forces in cupping are controlled by the negative

pressure of the cupping straw/vacuum of the cupping cup, capillary hydrostatic pressure, plasma protein osmotic pressure, and permeability. In cupping, filtration and excretion processes occur on the skin that bubbles due to the negative pressure straw of the cup. The filtration power in the skin capillaries is 16-43 times stronger than the glomerulus of the kidneys so that it can perform filtration and excretion of the skin. Next, a stabbing or cutting is carried out on the skin that has been in the header and a vacuum is carried out again. After that, there will be excretion of substances that are harmful to the body and can remove hydrophilic and hydrophobic substances such as cholesterol and triglycerides. In other words, cupping can open the skin barrier and increase the natural excretory role of the skin, and can secrete abnormal gamma globulins and large molecules. Skin injury due to a puncture or incision in the skin causes the release of β-endorphin (endogenous opioid analgesics) and adrenocortical hormone into the blood circulation to reduce pain.

The second theory that explains the effect of cupping reduces pain is the PGT theory (Pain Gate Theory). This theory comprehensively explains how pain is transmitted from the starting point to the brain. Also, how it is processed in the brain sends back efferent, protective signals to the stimulated or injured area. Local damage to the skin and capillaries acts as a nociceptive stimulus. Cupping affects chronic pain by altering signal processing at the nociceptor level in both the spinal cord and the brain. Cupping therapy can relieve pain using antinociceptive effects and counter-irritation. Cupping stimulates pain receptors that cause an increase in the frequency of urges. Therefore, it ultimately leads to the closure of the pain gate and hence there is a reduction in pain (Subadi et al., 2017; W. A. Umar, 2019)

A third theory that supports cupping to reduce pain is DNICs (Diffuse Noxious Inhibitory Controls). In this theory, DNICs signify inhibition of activity in converging or dynamically wide spatula nociceptive spinal neurons triggered by a second stimulus, which is spatially distant and harmful. This phenomenon is thought to underlie the principle of counter-irritation to reduce pain. The principle in this theory is "one pain covers another", or pain inhibits pain. Local damage to the skin and capillaries induced by cupping can cause nociceptive stimuli that activate DNICs. Cupping therapy can produce analgesic effects through nerves that are sensitive to mechanical stimuli. This mechanism is similar to acupuncture in that it activates blood vessels – Av and C nerves connected to the NNIC system, a pain-modulating pathway that has been described as a "pain inhibiting pain" phenomenon (W. A. Umar, 2019; AlBedah et al., 2015).

The fourth theory that explains the analgesic effects of cupping is the relaxation zone theory RZT (Reflex Zone Theory). This theory explains that there is a relationship between one organ and another. The theory explains that better blood supply to the disturbed area causes activation of biological processes in the disturbed area, when diseased organs send signals to the skin via autonomic nerves, when the cupping bowl is applied to the skin then skin receptors are activated which causes increased blood circulation and blood supply to the skin and internal organs through nerve connections.

The fifth theory that explains the analgesic effect of cupping is the release theory of NO (Release of Nitric Oxide Theory). Nitric Oxide (NO) is a signaling gas molecule that mediates vasodilation and regulates blood flow and volume. NO regulates blood pressure, contributes to immune responses, controls neurotransmission, and participates in cell differentiation and many physiological functions. Cupping therapy can cause the release of NO and endothelial cells, hence inducing beneficial biological changes. This mechanism is explained by "the release of nitric oxide and the theory of increased blood circulation. Cupping dilates topical capillaries and improves dermal blood flow. Blood in the area treated with cupping is dilated with vasodilators, such as adenosine, noradrenaline, and histamine which causes improved blood circulation. Blood flow in the subcutaneous tissue at the punctured site also increases, this correlates with an increase in NO, i.e. a puncture in the skin increases the level of NO in the punctured area and thus improves regional circulation. This is what explains the analgesic effect of cupping (Ersoy & Benli, 2019; Arslan et al., 2016)

From the results of the study above, researchers argue that headaches complained by people with hypertension can be overcome with cupping therapy. Cupping can facilitate blocked blood circulation and remove useless waste substances to provide a calm and comfortable effect for patients.

CONCLUSIONS

Cupping therapy is proven to effectively reduce headaches in hypertensive patients as evidenced by the value of statistical test results obtained P value = 0.000

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