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Effect Cupping Therapy on Blood Pressure in Patients Hypertension Bukit Kemuning Public Health Center

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ABSTRACT

Hypertension is a major health problem that can increase the risk of cardiovascular disease if not properly managed. This study aims to determine the effect of cupping therapy on blood pressure in hypertensive patients in the Bukit Kemuning Inpatient Community Health Center, North Lampung, in 2026. The study used a quantitative pre-experimental design with a one-group pretest-posttest design. The sampling technique used was purposive sampling, with a sample size of 20 hypertensive patients. Blood pressure measurements were taken before and after cupping therapy. Data analysis used the Wilcoxon Signed Rank Test.The results showed that the average blood pressure before cupping therapy was 156.50/96.00 mmHg, while the average blood pressure after cupping therapy decreased to 127.50/80.50 mmHg. The Wilcoxon Signed Rank Test showed an Asymp. Sig. <0.05, indicating an effect of cupping therapy on blood pressure in hypertensive patients in the Bukit Kemuning Inpatient Community Health Center, North Lampung.

INTRODUCTION

Hypertension, or high blood pressure, is a non-communicable disease that remains a serious challenge to health, both globally and nationally. Hypertension is known as a silent killer because it often causes no symptoms, yet it can lead to various dangerous complications such as stroke, coronary heart disease, chronic kidney failure, and other blood vessel disorders. Many factors contribute to high blood pressure, including genetics, a sedentary lifestyle, obesity, salt intake, aging, and stress (Goorani et al., 2024).

According to data from the World Health Organization (WHO), by 2025, the number of adults aged 30-79 years worldwide with hypertension is estimated to increase from 650 million in 1990 to 1.4 billion in 2024, with the increase mostly seen in low- and middle-income countries (WHO, 2025).

According to the 2023 Indonesian Health Survey (SKI), the prevalence of hypertension, measured in the age group 15 years and older, was 29.2%. According to the 2023 Indonesian Health Survey (SKI), the total number of hypertension cases in the province reached 28.3%, or 19,843 individuals (Ministry of Health, 2023). North Lampung City ranked fifth in the country with the highest number of hypertension patients, with a total of 122,903 cases.

Bukit Kemuning Community Health Center (Puskesmas) in North Lampung City is one of the inpatient health centers with 2,049 visits per year. Hypertension cases at Bukit Kemuning Community Health Center rank first out of the ten most common diseases. In 2025, from January to October, there were 2,359 cases of hypertension (Puskesmas Bukit Kemuning, 2025).

Hypertension, or high blood pressure, is a chronic condition characterized by persistently elevated blood pressure, typically ≥ 140/90 mmHg on two separate occasions. This condition often has no symptoms, hence the nickname "silent killer." Even without symptoms, long-term high blood pressure can cause damage to vital organs such as the heart, brain, kidneys, and eyes. This makes hypertension one of the leading causes of death and disability worldwide (Wasis et al., 2025).

Preventive measures to prevent hypertension include healthy lifestyle changes, a balanced diet, regular exercise, and proper stress management. If blood pressure targets are not yet achieved, medication and complementary therapies such as cupping therapy, which have a different mechanism of action, can be used (Marni et al., 2023).

Cupping is a method that removes metabolic waste or blood contaminated with toxins and oxidants from the body through the skin's surface. This method is considered safer than administering antioxidants or other chemical medications. Wet cupping is considered more effective for various diseases, especially those related to blood vessel disorders. Unlike dry cupping, which may only cure minor ailments, wet cupping can help treat more severe, acute, chronic, or degenerative conditions, such as hypertension (Nuridah & Yodang, 2021).

The benefits of cupping for hypertension include a process that reduces sympathetic nervous system activity and helps control aldosterone hormone levels in the nervous system. This then stimulates the secretion of enzymes that act as the renin-

angiotensin system, which can reduce blood volume, and the release of nitric oxide, which plays a role in vasodilation of blood vessels, thus lowering blood pressure. Furthermore, the preventive therapeutic properties of cupping are strongly recommended, making it a highly complementary therapy for hypertension prevention and treatment (Nuridah & Yodang, 2021).

This is supported by research conducted by (Mardiah, Dedi Pahrul, Lily Marleni, Adi Saputra, Ematiyana 2022) entitled "The Effect of Cupping Therapy on Reducing Blood Pressure in Hypertension Patients." The results of their study concluded that the average systolic blood pressure before cupping therapy was 148.00 with a standard deviation of 12.189. The average systolic blood pressure after cupping therapy was 140.00 with a standard deviation of 12.823.

Bukit Kemuning District is an administrative area in North Lampung Regency that has three active community health centers: the Bukit Kemuning Community Health Center (UPTD), the Negararatu Community Health Center (Puskesmas Negararatu), and the Tanjung Baru Community Health Center (Puskesmas Tanjung Baru). These three

community health centers play a crucial role in providing health services to the community, particularly in efforts to control non-communicable diseases (NCDs), such as hypertension, which remains a major health problem in the region. Meanwhile, the Negararatu Community Health Center reported 280 people with hypertension, with an average of 110 patient visits per month. Despite this high number of patients, the scope of Posbindu PTM activities in the community health center's work area only covers four villages. The main focus of services at this community health center remains on health education and routine blood pressure checks for the community. Meanwhile, the Tanjung Baru Community Health Center has a lower number of hypertension sufferers, namely 250 people, with an average of 90 patient visits per month. The majority of patients are elderly, and

The Posbindu PTM (Non-communicable disease prevention and treatment) activities in this community health center's work area are only active in three villages. This situation indicates that the coverage of services and data on the hypertension population in this area is still more limited than those of the other two community health centers. Based on these comparisons, it can be concluded that the Bukit Kemuning Community Health Center (UPTD) is the most representative location for this research. Several reasons underpinning this selection include:

Considering these various factors, the Bukit Kemuning Community Health Center (UPTD) was chosen as the research location because it has the highest prevalence of hypertension, the most optimal health service activities, and a broader coverage of non-communicable disease control programs compared to other community health centers in Bukit Kemuning District, North Lampung Regency. This broad service coverage and high frequency of patient visits provide an opportunity to obtain more comprehensive data. The availability of data and good coordination with the community health center facilitated the effective and efficient research process.

Based on the results of a pre-survey conducted at the Bukit Kemuning Inpatient

Community Health Center, hypertension was found to be the top 10 non-communicable disease at the center. The number of hypertension patients was 446 patients who regularly visited and received treatment during the last three months. The pre-survey revealed that all hypertension patients undergo regular monthly blood pressure checks. The health center staff also stated that they have never promoted cupping therapy as a method of lowering blood pressure in hypertension patients.

Based on the above background, the researchers were interested in conducting a study on "The Effect of Cupping Therapy on Lowering Blood Pressure in Hypertension Patients at the Bukit Kemuning Inpatient Community Health Center in 2025." Cupping therapy was chosen as the focus of this study due to its simplicity and ease of implementation without significant costs.

METHOD

Research participants

The study used a quantitative pre-experimental design with a one-group pretest-posttest design. The sampling technique used was purposive sampling, with a sample size of 20 hypertensive patients.

Research procedure

In the initial stage, researchers and enumerators selected potential respondents based on predetermined inclusion and exclusion criteria.Researchers sought out respondents who met the criteria with the assistance of community health center staff. Data collection was conducted in the Bukit Kemuning Inpatient Community Health Center's work area. Researchers then contracted with respondents for the intervention and blood pressure measurements. Initial identification information was recorded, including name, address, and telephone number to facilitate communication during the study. Respondents were given an explanation of the research objectives, potential benefits, and the duration of the cupping therapy intervention (once a week for two weeks). If respondents agreed to participate, they were asked to sign an informed consent form. Respondents who met the criteria were then contacted by telephone to schedule the first home visit. On the first visit, researchers measured blood pressure as a pre-test. They then scheduled another visit three days after the intervention for blood pressure measurements. Cupping therapy would be performed once a week for two weeks. Blood pressure was measured weekly three days after the intervention to evaluate changes. In the final stage (post-test), researchers measured blood pressure again after all cupping therapy sessions were completed. These post-test values were used to determine changes and the effect of cupping therapy on the blood pressure of hypertensive patients.

Instrument

The instruments used in the study on the independent variable of cupping therapy were the standard operating procedure (SOP), cupping equipment set, handscoon, but-but oil, air cup, cupping pen, lancet needle, 70% sterile alcohol, tissue, and alcohol swab. The dependent variable in this study was blood pressure, and the instruments used were a digital tensiometer and observation sheet research.

Data analysis

The Wilcoxon Signed Rank Test was used to determine the bivariate analysis used in this study, as the study involved only one group of subjects, measured twice: before and after cupping therapy. This test aimed to determine whether there was a difference in high blood pressure values

before and after the intervention. A significant difference or effect was found if the p-value was 0.05. All statistical analyses in this study were conducted using a computer program.

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics

Sex	Frequensy (f)	Percentage (%)
Female	20	100
Ages		
40-59 years	5	25.0
60-74 years	11	55.0
75-90 years	4	20.0
Long-term suffering		
<6 month	7	35.0
>6 month	13	65.0
Total	20	100.0

Based on table above it shows that all respondents with hypertension were female, amounting to 20 people (100.0%). Most of the hypertension sufferers were aged 60-74 years, namely 11 people (55.0%). Most hypertension sufferers have had hypertension for more than 6 months, a total of 13 people (65.0%).

Table 2. Blood Pressure (Systolic and Diastolic) in Hypertensive Respondents Before Cupping Therapy Implementation at the Bukit Kemuning Inpatient Health Center, North Lampung

Blood Presure	N	Mean	Median	Modus	Standart Deviasi	Min	Max
Pre Sistol	20	156.50	160.00	160	10.894	140	170
Pre Diastol	20	96.00	100.00	100	5.026	90	100

Table 2 shows that among the 20 respondents, the average systolic blood pressure before cupping therapy was 156.50 mmHg, with the most common reading at 160 mmHg, the lowest at 140 mmHg, and the highest at 170 mmHg. The average diastolic blood pressure before cupping therapy was 96.00 mmHg, with the lowest reading at 90 mmHg and the highest at 100 mmHg.

Table 3. Blood Pressure (Systolic and Diastolic) in Hypertensive Respondents After Cupping Therapy Implementation at the Bukit Kemuning Inpatient Health Center, North Lampung

Blood Presure	N	Mean	Median	Modus	Standart Deviasi	Min	Max
Post Sistol	20	127.50	130.00	130	7.164	120	140
Post Diastol	20	80.50	80.00	80	6.048	100	90

Table above shows that the average systolic blood pressure of the 20 respondents after cupping therapy was 127.50 mmHg, with a maximum of 130 mmHg, a minimum of 120 mmHg, and a maximum of 140 mmHg. The average diastolic blood pressure after cupping therapy was 80.50 mmHg, with a maximum of 80 mmHg, a minimum of 100 mmHg, and a maximum of 90 mmHg.

Table 4. Systolic Blood Pressure Analysis Before and After Cupping Therapy in the Bukit Kemuning Inpatient Health Center, North Lampung

Uji *Wilcoxon*	Pre Test Sistole	Post Test Sistole	Z	P-Value
Mean	156.50	127.50		
Standard Deviasi	10.894	7.164	-3.976	0.000
Minimum	140	120		
Maximum	170	140		

Table above shows the average pre-test systolic blood pressure of 156.50 mmHg, categorized as high blood pressure, and the post-test systolic blood pressure of 127.89 mmHg, categorized as normal blood pressure. The pre-test standard deviation was 10.894 mmHg and the post-test standard deviation was 7.164 mmHg. The minimum pre-test value was 140 mmHg, and the minimum post-test value was 120 mmHg. The maximum pre-test value was 170 mmHg, and the minimum post-test value was 140 mmHg. Wilcoxon Signed Rank Test requires that if the Asymp. Sig. value is <0.05, then H1 is accepted. The Wilcoxon Signed Rank Test above shows an Asymp. Sig. value <0.000, which means H0 is rejected. HI is accepted, indicating a significant difference between systolic blood pressure before and after cupping therapy. The conclusion from the statistical test above is that there is an effect of cupping therapy on the blood pressure of hypertension sufferers in the Bukit Kemuning Inpatient Health Center Work Area, North Lampung.

Table 5. Analysis of Diastolic Blood Pressure Before and After Cupping Therapy in the Bukit Kemuning Inpatient Health Center, North Lampung

Uji *Wilcoxon*	Pre Test Diastole	Post Test Diastole	Z	P-Value
Mean	96.00	80.50		
Standar Deviasi	5.026	6.048	-4.021	0.000
Minimum	90	70		
Maximum	100	90		

Table above shows that the average pre-test diastolic blood pressure was 96,000 mmHg, categorized as high blood pressure, and the post-test diastolic blood pressure was 80.50 mmHg, categorized as normal blood pressure. The pre-test standard deviation was 5,026 mmHg, and the post-test standard deviation was 6,048 mmHg. The minimum pre-test value was 90 mmHg, and the minimum post-test value was 70 mmHg. The maximum pre-test value was 100 mmHg, and the minimum post-test value was 90 mmHg. Wilcoxon Signed Rank Test requires that if the Asymp. Sig. value is <0.05, then H1 is accepted. The Wilcoxon Signed Rank Test above shows that the Asymp. Sig. value is <0.000, meaning H0 is rejected, and H1 is accepted, indicating a significant difference between diastolic blood pressure before and after cupping therapy. The conclusion from the statistical test above is that there is an effect of cupping therapy on the blood pressure of hypertension sufferers in the Bukit Kemuning Inpatient Health Center Work Area, North Lampung.

Table shows that the average pre-test diastolic blood pressure was 96,000 mmHg, categorized as high blood pressure, and the post-test diastolic blood pressure was 80.50 mmHg, categorized as normal blood pressure. The pre-test standard deviation was 5,026 mmHg, and the post-test standard deviation was 6,048 mmHg. The minimum pre-test value was 90 mmHg, and the minimum post-test value was 70 mmHg. The maximum pre-test value was 100 mmHg, and the minimum post-test value was 90 mmHg.

The Wilcoxon Signed Rank Test requires that if the Asymp. Sig. value is

<0.05, then H1 is accepted. The Wilcoxon Signed Rank Test above shows that the Asymp. Sig. value is <0.000, meaning H0 is rejected, and HI is accepted, indicating a significant difference between diastolic blood pressure before and after cupping therapy. The conclusion from the statistical test above is that cupping therapy has an effect on blood pressure in hypertension patients in the Bukit Kemuning Inpatient Community Health Center, North Lampung.

According to Khomsah (2024), cupping therapy is a method that removes metabolic waste or blood contaminated with toxins and oxidants from the body through the skin's surface. According to Mardiah (2022), the benefits of cupping for hypertension include the process of reducing sympathetic nervous system activity and helping control aldosterone levels in the nervous system. This process then stimulates the secretion of enzymes that act as the renin-angiotensin system, which can reduce blood volume, and the release of nitric oxide, which plays a role in vasodilation of blood vessels, thus lowering blood pressure. Its preventive therapeutic properties are highly recommended for the severity of hypertension, making it a highly complementary therapy for the prevention and treatment of hypertension (Rahman, 2020).

Cupping, through its nitric oxide production, increases the supply of nitrates and blood needed by the cells and lining of arteries and veins, making them stronger and more elastic, and reducing blood pressure. Cupping stimulates specific receptors associated with the contraction and expansion of blood vessels (baroreceptors), thereby increasing blood vessel sensitivity and responding to stimuli that cause hypertension (Andrian, 2023).

Cupping is performed by making an incision in the skin surface, followed by massage. Bloodletting is performed by making an incision with a sterile lancet on the cupped area. The resulting blood is then sucked out with a tube until all the blood is removed from the incision. After cupping, the patient is assisted to sit and then practiced relaxation techniques for approximately 15 minutes. Once the patient is comfortable, they are allowed to stand and walk in preparation for discharge. During the cupping process, researchers engage in therapeutic communication to promote relaxation and alleviate fear. Significant changes in the average systolic and diastolic blood pressure were observed after two cupping sessions, two weeks apart (Nurhidayah, 2025).

Cupping therapy has been shown to be effective in lowering blood pressure in hypertensive patients. The effect of cupping on high blood pressure is due to its role in calming the sympathetic nervous system. This sympathetic nervous system stimulates the secretion of enzymes that function as the angiotensin-renin system. When this system is calmed and its activity decreases, blood pressure decreases. Cupping also controls levels of the hormones aldosterone and nitric oxide (NO), which are involved in vasodilation. Through nitric oxide, it also increases nitrite demand and blood supply to the cells and lining of arteries and veins, making them stronger and more elastic. Cupping also plays a role in stimulating receptors (baroreceptors), which enable blood vessels to respond to stimuli and become more sensitive to factors that cause high blood pressure.

A related study conducted by Nuridah (2021) entitled "The Effect of Cupping Therapy on Blood Pressure in Hypertension Patients: A Quasi-Experimental Study," found that systolic and diastolic blood pressure decreased significantly in the intervention group ($p < 0.05$), while no significant changes occurred in the control group ($p > 0.05$). The results of this study indicate a difference in average blood pressure across the three measurement intervals in the intervention group. Therefore, it can be concluded that cupping

therapy is effective in reducing blood pressure in patients with hypertension.

Based on research findings, supporting theories, and related studies, researchers assume that cupping therapy is effective in lowering blood pressure in people with hypertension. Results from a study at the Bukit Kemuning Inpatient Community Health Center in North Lampung showed a statistically significant decrease in average diastolic blood pressure from 96.00 mmHg to 80.50 mmHg (Asymp. Sig < 0.05). This aligns with Nuridah's (2021) study, which showed a significant decrease in the intervention group, while the control group experienced no change.

The reduction in blood pressure due to cupping therapy occurs through several physiological, chemical, and hormonal mechanisms. Controlled skin injury triggers the release of mediators such as histamine, serotonin, bradykinin, and nitric oxide (NO), which function as vasodilators, improve microcirculation, and decrease vascular resistance. Furthermore, mild pain stimulation during therapy stimulates the central nervous system, releasing endorphins and ACTH, resulting in muscle relaxation and lower blood pressure.

Cupping therapy also calms the sympathetic nervous system, regulates aldosterone hormone, stimulates enzymes in the angiotensin-renin system, and increases blood vessel elasticity and strength. This mechanism is enhanced by the role of baroreceptors, which make blood vessels more sensitive to changes in blood pressure.

Cupping practice involves controlled skin incisions, the removal of impure blood, and relaxation techniques for patient comfort. Blood pressure reduction is seen after several sessions, demonstrating the effectiveness of cupping therapy as a complementary and preventative intervention. Researchers believe that the success of this therapy is the result of an interaction of physiological, chemical, hormonal, and psychological mechanisms, making cupping a safe and beneficial non-pharmacological alternative in the management of hypertension.

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