

**Effect of Wet Cupping Therapy on reducing blood pressure in primary hypertensive patients: A preliminary study****Ali M. Hassan<sup>a\*</sup>, Sarah M. Mohammed Kamel<sup>b</sup>, Ahmed Torad<sup>c</sup>, Amgad Hazzaa<sup>d</sup>, Ahmed M. Salama<sup>e</sup>**

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**Abstract**

**Background:** It was reported in the literature that aerobic exercise reduces blood pressure in patients with hypertension. Cupping therapy may be beneficial in reducing hypertension; however, there is a paucity of available literature showing scientific evidence about that.

**Objectives:** Current study aimed to investigate the effect of Wet Cupping Therapy on systolic and diastolic blood pressure in hypertensive Patients

**Patients and methods:** Sixty patients (30 Males and 30 Females) suffering from primary hypertension (46.3± 4.2 years) participated in the study and were randomly divided into two equal groups; the control group received only aerobic exercises [30 min of walking and jogging, with an intensity of 60%-80% of maximal heart rate (Max HR)] for 3 months (3 sessions/week), and the treatment group received the same aerobic exercises as the control group in addition to wet cupping therapy once per month. The current study started in September 2021 till May 2022. The participants' demographic characteristics were analyzed using t-test and Chi-square test. Within-group differences were investigated using paired t-test while between groups comparisons were investigated using independent t-test. The statistical significance level was set at P <0.05.

**Results:** The treatment group showed a statistically significant reduction in blood pressure. Significant differences were noted between groups in favor of the treatment group in the systolic and diastolic blood pressure.

**Conclusion:** Wet cupping therapy combined with aerobic exercises could lead to a significant reduction in blood pressure in primary hypertensive patients.

**Keywords:** Hypertension; Aerobic exercise, Cupping.

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## Introduction

Cupping therapy is a method that employs cups placed over the skin to induce negative pressure by suction (**Shixi and Yu, 2006**). It can be used to treat a variety of medical disorders (including dyspepsia, hypertension, anemia, and cramping (**Vashi et al., 2018**)).

Hypertension (HTN) is a long-standing medical disorder characterized by chronically increased blood pressure in the arteries (**Key et al., 2021**). It contributes significantly to the risk of ischemic heart disease, cerebrovascular stroke, dementia, heart failure, atrial fibrillation, chronic renal disease, peripheral arterial disease, vision loss and chronic kidney disease (**Lackland and Weber, 2015**). It is either main or secondary HTN. Primary hypertension is characterized as high blood pressure caused by nonspecific lifestyle and genetic variables in 90-95% of cases.

Diet rich salt, alcohol use, increased body weight, smoking are all risk factors. The systolic and diastolic pressures are used to express blood pressure. At rest, normal systolic blood pressure is between 100 and 130 millimeters mercury (mmHg), and 60-80 mmHg for diastole (**Carey et al., 2018**). HTN is present if the measured resting blood pressure is persistently at or above 130/80 or 140/90 mmHg (**Watts, 2016**). Its effective treatment is less clear (**Garrison et al., 2017**), it affects 16% to 37% of the population worldwide (**Watts, 2016**).

It was reported in the literature that Aerobic exercise reduces blood pressure. The underlying mechanism is still unknown but may be due to the post-exercise prolonged vasodilation in the exercising skeletal muscles likely by decreasing the sympathetic activity of these muscles and increased levels of local vasodilators (e.g. activation of histamine receptor). Furthermore, Exercise increases skeletal

muscle blood supply several folds, which may increase the opportunities of angiotensin II receptor type 1 (AT1) receptors to interact with angiotensin II receptor type 1 blockers (ARBs) in muscle vascular capillaries. Given that both (ARBs) medications and aerobic exercise are advised in the treatment of hypertensive patients, understanding their combined effects may become clear as ARBs may block the AT1 receptors, which are found in the heart, kidney, brain, nerve terminals, platelets, adrenal glands, and adipocytes in addition to the skeletal muscle vascular bed (**Ramirez-Jimenez et al., 2018**).

Despite the various conditions for which practitioners believe cupping therapy is beneficial in reducing high blood pressure, there is inadequate scientific proof that it provides any health advantages, particularly with wet and fire cupping (**Vashi et al., 2018**). Furthermore, recently in their systematic review study (**Lu et al., 2019**), Lu et al., concluded that wet cupping seems promising in adults with hypertension, yet firm conclusions cannot be drawn due to the small number of studies and quality of their methodology. Consequently, the evidence base is not yet strong enough to encourage the clinical use of wet cupping in adults with hypertension. So, investigating the effect of wet cupping is of value to determine its efficacy in hypertension patients. This study aimed to evaluate the effect of wet cupping therapy on blood pressure in primary hypertensive patients.

## Patients and Methods

### Participants

Sixty Patients with equal gender distribution (30 Males and 30 Females) diagnosed with primary hypertension were recruited from the outpatient physical therapy center, South Valley University hospital. The Participants were randomly

allocated into two equal groups (30 patients in each group) using computer-generated random numbers in a table and covert allocation was carried out using secret, opaque, sealed envelopes. Before taking part in the study, written informed consent was obtained from each participant. The

current study had been approved by the Human Research Ethics Committee of South Valley University, Qena, Egypt The demographic characteristics of the study participants were displayed in (Table.1). The current study started in September 2021 till May 2022.

**Table 1. Demographic Data of the Participants (n=60)**

Variables	Groups	Mean $\pm$ SD	P-Value
<b>Age (years)</b>	Group A	45.2 $\pm$ 5.4	0.24
	Group B	47.8 $\pm$ 3.2	
<b>Weight (Kg)</b>	Group A	89.3 $\pm$ 6.3	0.15
	Group B	89.7 $\pm$ 5.8	
<b>Height (cm)</b>	Group A	171.5 $\pm$ 3.6	0.36
	Group B	170.3 $\pm$ 7.5	
<b>BMI (Kg/m<sup>2</sup>)</b>	Group A	32.3 $\pm$ 1.5	0.22
	Group B	31.8 $\pm$ 1.0	
<b>Gender</b>	Male	30 (50%)	0.12
	Female	30 (50%)	

*Continuous data are expressed as mean $\pm$  standard deviation; categorical data are expressed as absolute numbers (percentage%)*

The sample size was calculated by G\*power software. The study was approved by the Human Research ethics committee of South Valley University, Egypt with the following reference number [PT-IMG-12/2022-500]. The inclusion criteria are as follows: 1) primary hypertensive patients [systolic arterial blood Pressure of 150 –180 mmHg, diastolic arterial Blood Pressure of 90 –115 mmHg] 2) Age range from 30- 50 years old; 2) patients on antihypertensive medications (not more than 2 types of medications) 3) not engaging in any

therapeutic massage or relaxation techniques; 4) not to use any painkiller medication or antidepressants in the last six months. 5) not changing the medications used during the intervention

The participants were excluded if they had: 1) disorders of mentality, hypotension, burns or spinal disturbances 2) renal disease or diabetes mellitus patients; 3) tumors; 4) congenital heart disease.

## Methods

### ASSESSMENT TOOLS

- 1) Weight and height scale to calculate body mass index (BMI),
- 2) Patients (ABP) measurement tools (Mercury sphygmomanometer and stethoscope),
- 3) Cupping Evaluation Test (Three Minutes Evaluation Test for the most Congested points),

### Procedures

The study protocol was explained to participants before participation in the study. Each participant signed a written consent form before interventions.

A- Arterial Blood Pressure (ABP) measurement:

Blood Pressure was measured using a sphygmomanometer and stethoscope standardized device.

B- Aerobic exercises:

Because walking and jogging are the cheapest and safest modes of aerobic exercises, the participants of both groups received 30 min of walking and jogging, with an intensity of 60%-80% of maximal heart rate (Max HR) for 3 days/week according to Joint guidelines from the American Heart Association (AHA) and American College of Sports Medicine (ACSM) recommendation (Cao et al., 2019; Haskell et al., 2007). The duration of the study is 12 weeks (3 months).

C- Cupping Therapy:

The cupping session lasts 20 min and was done over the lumbosacral region (Right and Left sides of the 3<sup>rd</sup> to 5<sup>th</sup> Lumbar and 1st sacral vertebrae). The current study followed the cupping procedures in the previous study done by Aleyeidi et al., (Aleyeidi et al., 2014; Aleyeidi et al., 2015) and was done in five steps:

In step one, the therapist designates certain locations or areas for cupping and cleans the area with disinfectant to start primary suction (dry cupping). The

therapist applies cups with suitable sizes at the desired locations and manually suctions the air out of the cups.

After suctioning the body areas for 3-5 min as standard time, the therapist removes the cups and selects the most congested areas.

Step two is for puncturing or scarification. With a Surgical Scalpel Blade, No. 11 superficial scratches were made gently to the skin, also, a needle puncture, auto-lancing device or a plum-blossom needle may be used (wet cupping). The tools used in cupping are used only one time for each patient (new sterilized tools are used for each patient) for safety and infection control measures.

Step three is about blood suction and bloodletting but not more than 150 ml of blood from congested areas after reapplication of the cups again.

In step four the cup is removed and the blood is cleaned.

Step five includes disinfecting the areas under the cups and dressing the skin. Furthermore, The scarified skin is subsequently covered with adhesive strips of proper sizes, which stay for 48 hours over the treated area.

### Statistical analysis

The normality of data was investigated using Shapiro-wilk test. Data analysis was performed using SPSS statistical software (version 21). The demographic data were analyzed using t-test and also Chi-square test. Within-group differences were investigated using paired t-test while between groups comparisons were investigated using independent t-test. The statistical significance level was set at  $P < 0.05$ . Demographic data were displayed in (Table .1).

**Results**

**A- Within groups differences**

Systolic and diastolic blood pressure: as shown in (Table .2) comparative analysis

of mean values for systolic and diastolic blood pressure before and after the program revealed statistically significant improvement (P<0.05) in both groups.

**Table 2. Within group Comparison of systolic blood pressure, diastolic blood pressure.**

Variables	Group ( A)		P- Value	Group (B)		p- value
	Pre-intervention Mean ±SD	Post-intervention Mean ±SD		Pre-intervention Mean ±SD	Post-intervention Mean ±SD	
<b>Systolic blood pressure</b>	144.6±9.5	129.5±9.9	0.01	145.3±5.3	145.8±11.0	0.1
<b>Diastolic blood pressure</b>	95.6±6.4	78.6±6.8	0.02	94.1±3.4	93.6±5.8	0.08

*SD=Standard Deviation, P-value = Probability level*

**B- Between groups differences**

Systolic and diastolic blood pressure: (Table. 3) showed comparative analysis of mean values for systolic and diastolic blood pressure showed a significant decrease after

the program (P< 0.05). There were non-statistically significant differences (P>0.05) between groups before intervention in the studied variables.

**Table 3. Comparison of Mean ± SD of values of systolic, diastolic blood pressure between study groups.**

Variables	Group(A) pre-intervention Mean ±SD	Group (B) pre-intervention Mean ±SD	P- value	Group (A) Post-intervention Mean ±SD	Group (B) Post-intervention Mean ±SD	p-value
<b>Systolic blood pressure</b>	144.6±9.5	145.7±9.9	0.32	129.1±5.3	142.2±11.0	0.00
<b>Diastolic blood pressure</b>	95.6±6.4	95.1±6.9	0.26	78.8±3.45	90.11± 2.3	0.02

*SD=Standard Deviation, P-value = Probability level, NS=not significant if (P>0.05), S= significant if (P≤0.05).*

**Discussion**

This study aimed to determine the effect of cupping therapy on patients with hypertension (HTN), and its potential effect on Systolic blood pressure and Diastolic blood pressure.

In this study, a program of aerobic exercises plus cupping therapy was applied to the treatment group (A), and a program of aerobic exercises only was applied to the study group (B) to differentiate between the effects of the two programs and to obtain

the effect of cupping therapy on the cases of hypertension. Assessment of the patients before and after the two programs was done using a sphygmomanometer.

The results of the current study showed significant improvement in systolic and diastolic blood pressure in the treatment group (A).

In the intervention group, Systolic Blood Pressure decreases significantly as well as diastolic blood pressure compared to the control group. This could be explained according to "Taibah Theory" which states that wet cupping removes toxic metabolic chemicals, and increased intravascular fluid, and interstitial fluid. Theoretically, also hypothesizes that wet cupping induces endogenous nitric oxide secretion that has a vasodilatation effect and removal of free radicals and accumulated vasoconstrictor materials, which may cause decreased BP measurements. All of these effects lead to reducing blood pressure in hypertension patients (Aleeyidi et al., 2015).

The results of this study were supported by the results of the previous study (Aleeyidi, 2015) which approved that wet-cupping therapy is beneficial in decreasing systolic blood pressure in hypertensive patients and lasts for 4 weeks in follow-up, the mean systolic blood pressure was 8.4 mmHg lower in the study group than that of the control group ( $P = 0.046$ ), and no serious side effects were noted, and advised that wet-cupping as a complementary hypertension treatment is important, but further studies are still advised.

In agreement with the results of the current study (Saibaba and Pandiyan, 2016) stated that traditional medicine alternatives have a beneficial effect in lowering high blood pressure and also induce better health and wellness for patients. High blood pressure patients have

a large amount of blood volume in their circulation, also other patients' blood may thicken and becomes heavier over time and causing blood pressure to increase. Cupping therapy is a non-invasive procedure, and it better works to decrease the root causes of hypertension and bring out that pooled thick blood so that purifies and makes blood light and can circulate more easily than before.

Along with the same results of the current study (Niasari et al., 2007) reported that Wet cupping may work effectively to decrease and lower low-density lipoprotein cholesterol in men and consequently may assist in the prevention of atherosclerosis. He stated that a 7% reduction in total cholesterol and 3% increase in high-density lipoprotein cholesterol may be clinically important and this may help to control blood pressure.

In contrast, the results of (Lu et al., 2019) reported that the evidence for cupping therapy is not significantly persuasive to suggest its effectiveness as a treatment for hypertension.

The research results may be because of using more time and also because congested areas for cupping therapy may change from time to time.

#### **Conclusion:**

Cupping therapy combined with aerobic exercises could lead to a significant reduction in blood pressure in primary hypertensive patients.

#### **Study's limitations:**

The main limitation of this study is the small sample size used. However, this is a preliminary study and this should be addressed in future research work targeting this topic.

**Conflict of interest:** No conflict of interest declared.

## References

- **Aleyeidi N, Aseri K and Kawthar A. (2014).** The Efficacy of Wet Cupping on Blood Pressure among Hypertension Patients in Jeddah, Saudi Arabia: A Randomised Controlled Trial Pilot Study. *Altern. Integr. Med*, 04 (1): 183.
- **Aleyeidi N, Aseri K, Matbouli S, Sulaiamani A, Kobeisy S. (2015).** Effects of wet-cupping on blood pressure in hypertensive patients: A randomized controlled trial. *J. Integr. Med*, 13: 391–399.
- **Cao L, Li X, Yan P, Wang X, Li M, Li R et al (2019).** The effectiveness of aerobic exercise for hypertensive population: A systematic review and meta-analysis. *J. Clin. Hypertens*, 21: 868-876.
- **Carey R, Whelton P, Aronow W, Casey D, Collins K, Himmelfarb C et al. (2018).** Prevention, detection, evaluation, and management of high blood pressure in adults: Synopsis of the 2017 American College of Cardiology/American Heart Association Hypertension Guideline. *Ann. Intern. Med*, 168(5):351-358.
- **Garrison S, Kolber M, Korownyk C, Mccracken R, Heran B, Allan G. (2017).** Blood pressure targets for hypertension in older adults. *Cochrane Database Syst. Rev*, 8(8):CD011575.
- **Haskell L, Lee M, Pate R, Powell E, Blair N, Franklin A et al (2007).** Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Med. Sci. Sports Exerc*, 39(8): 1423-1434.
- **Key A, Acad S, Biosci J, Khawar-Balwan W, Kour S (2021).** A Systematic Review of Hypertension and Stress-The Silent Killers. *Sch Acad J Biosci*, 9 (6): 150–154.
- **Lackland D, Weber M. (2015).** Global burden of cardiovascular disease and stroke: Hypertension at the core. *Can. J. Cardiol*, 31(5):569-571
- **Lu S, Du S, Fish A, Tang C, Lou Q, Zhang X. (2019).** Wet cupping for hypertension: a systematic review and meta-analysis. *Clin. Exp. Hypertens*, 41(5): 474–480.
- **Niasari M, Kosari F, Ahmadi A. (2007).** The effect of wet cupping on serum lipid concentrations of clinically healthy young men: A randomized controlled trial. *J. Altern. Complement. Med*, 13: 79–82.
- **Ramirez-Jimenez M, Morales-Palomo F, Ortega J, Mora-Rodriguez R (2018).** Intense aerobic exercise lowers blood pressure in individuals with metabolic syndrome taking antihypertensive medicine. *Blood Press Monit*, 23(5):230-236.
- **Saibaba S, Pandiyan P. (2016).** High Performance Thin Layer Chromatography: A Mini Review. *Research in Pharmacy and Health Sciences*, 2 (4): 219-226.
- **Aleyeidi N. (2015).** The Efficacy of Wet Cupping on Blood Pressure among Hypertension Patients in Jeddah, Saudi Arabia: A Randomised Controlled Trial Pilot Study. *Altern. Integr. Med*, 04 (1).
- **Aleyeidi N, Aseri K, Matbouli S, Sulaiamani A, Kobeisy S (2015).** Effects of wet-cupping on blood pressure in hypertensive patients: A randomized controlled trial. *J. Integr. Med*, 13: 391–399.
- **Carey R, Whelton P, Aronow W, Casey D, Collins K, Himmelfarb C et al (2018).** Prevention, detection, evaluation, and management of high blood pressure in adults: Synopsis of the 2017 American College of Cardiology/American Heart Association Hypertension Guideline.

- Ann. Intern. Med,168(5):351-358.
- **Garrison S, Kolber M, Korownyk C, Mccracken R, Heran B, Allan G (2017).** Blood pressure targets for hypertension in older adults. *Cochrane Database Syst. Rev*, 8(8):CD011575.
  - **Key A, Acad S, Biosci J, Khawar-Balwan W, Kour S (2021).** A Systematic Review of Hypertension and Stress-The Silent Killers. *Sch Acad J Biosci*, 9 (6): 150–154.
  - **Lackland D, Weber M (2015).** Global burden of cardiovascular disease and stroke: Hypertension at the core. *Can. J. Cardiol*, 31(5):569-571
  - **Lu S, Du S, Fish A, Tang C, Lou Q, Zhang X (2019).** Wet cupping for hypertension: a systematic review and meta-analysis. *Clin. Exp. Hypertens*, 41(5): 474–480.
  - **Niasari M, Kosari F, Ahmadi A (2007).** The effect of wet cupping on serum lipid concentrations of clinically healthy young men: A randomized controlled trial. *J. Altern. Complement. Med*, 13: 79–82.
  - **Ramirez-Jimenez M, Morales-Palomo F, Ortega J, Mora-Rodriguez R (2018).** Intense aerobic exercise lowers blood pressure in individuals with metabolic syndrome taking antihypertensive medicine. *Blood Press Monit*, 23(5):230-236.
  - **Saibaba S, Pandiyan P (2016).** High Performance Thin Layer Chromatography: A Mini Review. *Research in Pharmacy and Health Sciences*, 2 (4): 219-226.
  - **Shixi H, Yu C (2006).** Cupping therapy. *J. Chinese Med*: 52–57.
  - **Vashi N, Patzelt N, Wirya S, Maymone M, Zancanaro P, Kundu R (2018).** Dermatoses caused by cultural practices: Therapeutic cultural practices. *J. Am. Acad. Dermatol*, 79 (1):1-16.
  - **Watts G (2016).** Neil Poulter: upping the pressure on hypertension. *Lancet*, 388 (10060), p2585. [https://doi.org/10.1016/S0140-6736\(16\)31775-5](https://doi.org/10.1016/S0140-6736(16)31775-5)