Original Research

The Effect of Cupping Therapy on Blood Pressure in Elderly Patients

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Abstract

Introduction: Hypertension is understood as the silent killer as it frequently appears without symptoms and is a major cause of cardiovascular disease. The elderly is a group who is vulnerable to being diagnosed with cardiovascular disease. Cupping therapy is a popular alternative treatment option performed by the community. Over time, it encourages nurses to entirely evidence the benefits of cupping therapy. The objective of this study is to determine the effect of cupping therapy on reducing blood pressure in the elderly.

Methods: This research was conducted by employing a method in the form of a quasi-experimental one-group pretest-posttest. Researchers examined blood pressure before cupping therapy and calculated it again 30 minutes after cupping therapy. The sample administered was 15 elderly patients with cupping at Al Ghaffar Care, Bone Regency, which were selected by administering purposive sampling technique.

Results: After conducting statistical analysis by employing the paired sample T-test, the systolic pressure was obtained a significant value (p < 0.05) with an average decrease in systolic pressure of 5.133 mmHg and a significant diastolic pressure was acquired (p > 0.05). The results signify that there is an effect between a decrease in systolic pressure but no effect on diastolic pressure before and after cupping therapy.

Conclusion: In order to allow for a reduction in the dose of antihypertensive medications administered and lower the danger of drug dependence, cupping therapy can be thought of as an alternative therapy and adjunct therapy in patients with high blood pressure.

Keywords: cupping, blood pressure, elderly

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INTRODUCTION

Elderly according to the Ministry of Health of the Republic of Indonesia is an individual experiencing aging due to the increase of age, hence, there is a decrease in biological, physical, psychological and social functions. The elderly begins at the age of 55 years and the aging experienced by the elderly influences health, encompassing disorders of the cardiovascular system. The reduction in function that is most noticeable occurs in the function of organs like the cardiovascular system, which has lower blood vessel flexibility and efficacy for oxygenation, as well as the onset of hypertension due to increasing peripheral vascular resistance [1].

One of the risk factors for cardiovascular disease is high blood pressure and cholesterol levels. High cholesterol levels result in the risk of increasing blood pressure [2]. Miller argued that in the elderly, since childhood and adolescence, there has been an increase in the amount of atherosclerosis caused by cholesterol, which subsequently accumulates in the arteries at the age of 55 or older. If this plaque ruptures, the result will be cardiovascular disease [3].

Pical and Emil explained that hypertension encountered by the elderly possesses several negative impacts, incorporating if it does not receive proper treatment, it may affect complications such as stroke, heart failure, myocardial infarction to coma. Meanwhile, the treatment of hypertension complications requires a lot of money and causes a financial burden of the family. Furthermore, hypertension reduces the activity and productivity of the elderly themselves [4].

Pharmacological treatment of hypertension can be completed by providing antihypertensive drugs. The treatment depends on the patient’s considerations encompassing the cost. Moreover, in accordance with Price and Wilson, around 70% of patients with hypercholesterolemia in Indonesia fail to administer treatment which results in frequent relapses and unsafe side effects [5].

Due to the numerous negative pharmacological side effects and expensive expense of treatment, patients with cardiovascular function issues require alternative treatments, one of which is cupping therapy. A prominent alternative medicine in China and the Arab world, cupping therapy is also being utilized in Indonesia to treat a variety of illnesses, particularly fibrositis, back pain, diarrhea, and cardiovascular problems incorporating hypertension and atherosclerosis [6].

Thus, researchers are interested in conducting further research on the advantages of cupping therapy in lowering blood pressure in the elderly, who constitute a group of people who are vulnerable to cardiovascular disease due to the existence of numerous diseases that can be prevented and the lack of conclusive evidence for cupping therapy.
METHODS

Study Design and Samples

This type of research employs a quasi-experimental research design involving one-group pretest-posttest which objective is to identify the differences in blood pressure in elderly patients before and after cupping therapy is administered. The sample in this study was 15 respondents with a non-random sampling method by employing a purposive sampling technique with inclusion criteria, a) Cupping patients at Al Ghaffar Care, (b) Willing to be a research sample, (c) Male and female, (d) Aged 55 – 59 years, and (e) Patients who possess blood pressure 140/90 mmHg.

Measurement/Instruments

The instrument in this study employed the Omron HEM 8712 digital blood pressure monitor manufactured by Omron Healthcare Co., Ltd, for 2022 production that has been clinically validated by international organizations, which is the European Society for Hypertension (ESH) and the Association for the Advancement of Medical Instrumentation (AAMI), then calibrated before application in examining blood pressure before and after cupping. Observation sheets were employed to record blood pressure before and after cupping therapy.

The consent sheet and the respondent’s identity sheet were administered in identifying the characteristics of the respondents in this study, comprising of the age, gender, last education, occupation, cupping experience, drug consumption and anthropometry.

Data Collection and Procedure

This research was performed from July 21st, 2022 to August 17th, 2022. There were 15 samples in this study incorporated as in the inclusion criteria. Before the intervention was performed, the sample first elaborated the benefits, objectives, and research procedures by filling out informed consent. Then, blood pressure was evaluated 30 minutes before cupping and after cupping by employing Omron brand digital tension.

Data Analysis

The researcher performed univariate analysis and bivariate analysis. This univariate analysis was administered to attain an overview of the research problem by elaborating each variable employed in this variable, which is by perceiving the description of the frequency distribution and a single percentage in accordance with the research objectives. This bivariate analysis was conducted to determine the effect of cupping therapy on blood pressure in elderly patients. In scrutinizing the data through bivariate method, the data was evaluated by administering a statistical test, which is the dependent T-test or paired T-test, and comparing the data before and after being provided cupping therapy, and the mean difference between pre-test and post-test was obtained. The level of significance is 95% (α=0.05). Guidelines in accepting the hypothesis comprise of, if the probability value (p) <0.05, Ha is accepted, if(p)> 0.05, Ho
fails or is rejected. The data is demonstrated in tabular form; hence, it can be easily perceived the effect of cupping therapy on blood pressure. Before the data is examined by dependent T-test, the normality test has to be performed out first, which is if the data is <5%, the Saphiro-Wilk normality test is employed and if the data is >5%, the normality test is administered by applying Kolmogorov-Smirnov test.

**Ethical Consideration**

This research has passed the ethical feasibility test by the health research ethics commission of Universitas Aisyiyah Yogyakarta No. 2190/KEP-UNISA/VII/2022. Respondents who are willing to participate in this study and who have signed an Informed Consent.

**RESULTS**

Based on Table 1, the age group presents that the largest number of samples is 55 years old, which consist of 8 people (53.3%). The minimum age of the sample was 55 years and the maximum was 59 years with an average sample age of 55.6 years with a standard deviation of 1.85 years.

Gender group demonstrated that from 15 samples, there have been 11 (73.3%) male samples and 4 (26.7%) female samples. In accordance with these data, the number of samples is male as the dominant variable.

Base on the last education group, it is illustrated that from the 15 samples, there were 8 (53.3%) samples with Senior High School, 3 (20%) samples with bachelor and 4 (26.7%) samples with postgraduate.

The work group demonstrates that from the 15 samples, there are 3 (20%) samples working as government employees, 2 (13.3%) samples working as private employees, 9 (60%) samples working as enterpriser and 1 (6.7%) the sample works as an entrepreneur.

In accordance with the normality test in Table 2, the Shapiro-Wilk test was administered, as the number of samples was <50 with a significant value of 0.05. hence, it is identified that the significant value for the value of systolic pressure before (pre-systolic) was 0.075 and after (post-systolic) cupping was administered at 0.095. For diastolic pressure before (pre-diastolic) cupping was 0.159 and after cupping (post-diastolic) was 0.116. Because the value is more significant than 0.05, it is implied that the pretest-posttest value data is good for blood pressure. Therefore, the requirements or assumptions for normality in the use of the T-test sample have been fulfilled.

Table 3 indicates that there is an average difference (mean) of 5.133 between the systolic pressure before and after cupping therapy. With the calculated t value of 4.401 > the t table value of 2.145 and a significant value of p 0.001 <0.05, the results are significant. In light of this, it may be said that hypothesis Ho is rejected and hypothesis Ha is accepted, i.e., there is an average difference between systolic pressure before and after cupping therapy. Furthermore, diastolic pressure before and after cupping therapy seemed to have an average difference (mean) of 0.000. Administering the calculated t value of 0.000 and <t table value of 2.145, respectively, with a significant value of p 1,000 <0.05. In light of the fact that there was
no difference in diastolic pressure before and after receiving cupping therapy, it was determined that Hypothesis Ho was supported and Hypothesis Ha was rejected.

**Table 1**

Demographic Characteristics of Respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>%</th>
<th>Min-Max</th>
<th>Means</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 55 years</td>
<td>8</td>
<td>53,3</td>
<td>55-59 years</td>
<td>56,5</td>
<td>1,85</td>
</tr>
<tr>
<td>- 56 years</td>
<td>1</td>
<td>6,7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 58 years</td>
<td>2</td>
<td>13,3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- 59 years</td>
<td>4</td>
<td>26,7</td>
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<tr>
<td>Gender</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Male</td>
<td>11</td>
<td>73,3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Female</td>
<td>4</td>
<td>26,7</td>
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<tr>
<td>Last education</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>- Senior High School</td>
<td>8</td>
<td>53,3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bachelor</td>
<td>3</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Postgraduate</td>
<td>4</td>
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<td>Working</td>
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<td>- Government employees</td>
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<td>13,3</td>
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</tr>
<tr>
<td>- Enterpriser</td>
<td>9</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Entrepreneur</td>
<td>1</td>
<td>6,7</td>
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<td></td>
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</tbody>
</table>

**Table 2**

Data Normality Test

<table>
<thead>
<tr>
<th>Blood pressure</th>
<th>Shapiro-Wilk</th>
<th>Statistic</th>
<th>Df</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>Systole</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Before Cupping</td>
<td>0,885</td>
<td>15</td>
<td>0,075</td>
<td></td>
</tr>
<tr>
<td>- After Cupping</td>
<td>0,886</td>
<td>15</td>
<td>0,095</td>
<td></td>
</tr>
<tr>
<td>Diastole</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Before Cupping</td>
<td>0,915</td>
<td>15</td>
<td>0,159</td>
<td></td>
</tr>
<tr>
<td>- After Cupping</td>
<td>0,906</td>
<td>15</td>
<td>0,116</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

Thin incisions or tiny punctures on the skin's surface are utilized in the therapy recognized as cupping to prevent blood that contains toxic substances from the body. A limited and regulated injury to the skin's surface generates pain, and this pain input is conveyed by sensory motor neurons to the thalamus, where it induces the release of hormones such as ACTH, cortisone, endorphins, enkephalins, histamine, bradykinin, serotonin, and nitric oxide. From the cupping area, the release of these neurochemicals results in pain reduction, which is accompanied by an increase in blood and oxygen flow. Leukocytes make up only one tenth of the blood in wet cupping therapy, while the erythrocytes provide an abnormal shape and are unable to perform their function, which causes these peculiar erythrocyte cells to suppress other cells that are still young and active and is alluded to as "dirty blood." It implies that the blood which originates from the cupping process is blood which is no longer required by the body.

The results of the study are in accordance with the research conducted by Al-Tabakha, Sameer which administered a retrospective study with a sample of 60 divided into two groups, incorporating the study group and the control group with an average age of 40-60 years. They discovered that there was a decrease in systolic blood pressure before and after cupping started from 149.2 mmHg to 130.8 mmHg with a significant p value of 0.01 < 0.05 but different in diastolic blood pressure obtained a p value of 0.074 > 0.05. It indicates that there is no effect of diastolic pressure before and after the cupping therapy procedure.

The results of the study are also in accordance with previous research by administering a Quasi-Experimental one-group pretest-posttest research design on 30 samples. The results of examining systolic blood pressure before cupping therapy obtained a mean of 156.7 mmHg with SD 15.83 mmHg and after cupping therapy obtained a mean of 149 mmHg, with an SD of 8.90 mmHg with an average change in systolic pressure of 7.667 mmHg. Systolic Blood Pressure statistical test results received p
value $0.000 < 0.05$, which indicates that there is an effect between systolic blood pressure before and after cupping. Furthermore, for diastolic blood pressure after a statistical test, a p value of $0.119 > 0.05$ was acquired, implying that there is no effect on diastolic blood pressure before and after cupping therapy. Robust vasodilator to blood vessels may escalate capillary permeability and can support the process of enhancing blood vessel microcirculation [10].

It is in accordance with research performed by Sormin (2019), which revealed that cupping therapy is able to stimulate the body to release several substances such as serotonin, histamine, bradykinin, slow reacting substance, and other substances which can enhance the process of dilating blood vessel capillaries. There are also effects of relaxation of blood vessels, stiff muscles. Due to vasodilation, it frequently lowers blood pressure stably [11].

According to additional studies, the effect of cupping on blood pressure contributes to the sympathetic nervous system’s relaxing (Simpatico Nervous System). The renin-angiotensin system’s enzymes are stimulated to secrete more when the nervous system is under stress. Blood pressure will decrease after the system is tranquil and its activity is lessened. Nitric oxide molecules, which also play a pivotal part in vasodilation and in increasing the flow of nutrients required by cells and the lining of arteries and veins, hence, they may become robust and elastic, and also be controlled by cupping [12].

As for diastolic blood pressure, there was no significant decrease before and after cupping therapy as the body occupies a baroreceptor reflex mechanism that attempts to return blood pressure to its original value, Baroreceptors can immediately detect changes in pressure brought on by a reduction in blood volume, muscle relaxation, and vasodilation. These changes are then transmitted to the medulla oblongata, which activates the sympathetic or parasympathetic nervous system to generate blood pressure back to a level that is comparable to the original blood pressure value [12]. Furthermore, external factors do not easily affect diastolic blood pressure. Diastolic pressure, which naturally tends to be more enduring, is the pressure that exists while the heart is not contracting (relaxing/resting). Compared to the systolic pressure that occurs when the heart contracts, greater energy is required to affect the diastolic pressure [10].

However, several studies have discovered that systolic pressure is more essential in predicting cardiovascular complications. This study revealed an apparent effect between cupping therapy and lowering blood pressure in hypertensive patients with an age range of 55-59 years. Hence, cupping therapy can be considered as an alternative and adjunct therapy in patients with high blood pressure, thereby allowing a decrease in the dose of antihypertensive drugs administered and decreasing the risk of drug dependence.

CONCLUSION

This study examined the effect of cupping therapy on blood pressure. The result of this study demonstrated a clear relationship
between cupping therapy and reducing blood pressure in hypertensive patients between the ages of 55 to 59. As a result, cupping therapy can be employed as an alternative or additional treatment for patients with high blood pressure, allowing the dosage of antihypertensive medications to be reduced and lowering the risk of drug dependence. To achieve this, nurses need to be more active in socializing the benefits of cupping therapy to the community and not forgetting to increase their knowledge and skills so that it is hoped that the community will have more trust in nurses in carrying out cupping therapy.

REFERENCES