



## Combination Therapy of Dry Cupping and *Pece Kau'a* (Traditional Therapy in Bima, West Nusa Tenggara Province in Indonesia) Against Blood Pressure



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### Abstract

This research aimed at investigating the influence of combination therapy of cupping and *Pece Kau'a* on hypertensive patients. The research design that was utilized was experimental design by a pretest-posttest control group approach. The population of this research was all patients who suffered from hypertension in Bima City, West Nusa Tenggara Province in Indonesia. The sample in this research was 60 respondents and this sampling utilized a randomized control trial. The results showed that combination therapy of dry cupping and *Pece Kau'a* on hypertensive patients could reduce the average of systolic and diastolic blood pressure with a p-value of 0.000. Therapy of dry cupping and *Pece Kau'a* is expected to be an alternative for medical action in nursing services both in hospitals and Public Health Centers. Besides, the combination therapy of dry cupping and *Pece Kau'a* could be developed more again.

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## 1 Introduction

Hypertension is a symptom of an increase in blood pressure which then, affects other organs, such as stroke for the brain or coronary heart disease for blood vessels for the heart blood vessels, and heart muscle. This disease becomes one of the main problems in the realm of public health either in Indonesia or in the world (Ardiansyah, 2012).

Hypertension incidence increases in line with the increase of human age. In the last few decades, the risk of high blood pressure has increased quite seriously and this is due to changes in healthy lifestyles. Nine from ten people are at risk of suffering from hypertension after the age of 50 years (Stanley, 2007). About 90% of hypertension cases were unknown regarding their causes and these hypertension cases were called essential hypertension (unknown etiology and pathogenesis) (Smeltzer, 2002; Horwitz et al., 2005; Group1A, 2001; Trialists, 1994).

WHO stated that almost 1 billion people worldwide had high blood pressure. Hypertension was one of the main causes of premature death worldwide. In 2020, about 1.56 billion adults would live with hypertension. Hypertension killed almost 8 billion people every year in the world and almost 1.5 million people every year in the East-South Asia region. About a third of adults in East-South Asia suffered from hypertension (World Health Organization, 2013).

In Indonesia, hypertension incidence in the last 5 years has increased based on Basic Health Research (*Riskesdas*) of the Indonesian Ministry of Health. In 2013, it reached around 25.8% to be 34.1% in 2018 Ministry of Health (2018). Therefore, illustration in 2018 was by using individual analysis units. If the current total population of Indonesian people was 265 million, the national prevalence of hypertension in Indonesia based on measurement results in which at the age of  $\geq 18$  years, 90,365,000 people suffered from hypertension (Kementerian Kesehatan RI, 2018).

*Riskesdas* 2018 gave results that the prevalence of hypertension in West Nusa Tenggara Province, Indonesia was 1.8% and the highest prevalence was in Bima City with 5.9% (Riskesdas, 2018). The prevalence value actually increased rather than in 2013, which was 1.3% based on the results of *Riskesdas* of West Nusa Tenggara Province (NTB), Indonesia in 2018.

Conducted research by Yogie Bagus Pratama (2018) was regarding the influence of dry cupping against blood pressure that was conducted at PSTW Jember, East Java Province, Indonesia with 22 respondents who said that dry cupping could reduce systolic blood pressure in hypertensive patients (Yogie, 2018). Likewise, researched by Yudop Purwadinata (2016), Panti Wredha Budhi Dharma Yogyakarta, and Tresna Werdha Social Service Center in unit Budiluhur, Yogyakarta with 31 respondents showed that dry cupping could reduce blood pressure for hypertensive patients (Purwadinata, 2016; Sandi et al., 2017; Sutapa et al., 2020).

*Pece Kau'a* is one of the traditional therapies in Bima and Dompu areas of West Nusa Tenggara Province, Indonesia which has been believed for hundreds of years to be able to help the healing process of diseases including hypertension. If it is seen from the way it works, it is like acupressure therapy (Widya, 2012). Research regarding cupping against blood pressure and cholesterol had already existed, but there was no research regarding the influence of combination therapy of cupping and *Pece Kau'a* against blood pressure and cholesterol on hypertensive patients. Based on the description above, the researcher team wanted to research the influence between dry cupping and *Pece Kau'a* against blood pressure and cholesterol on hypertensive patients in Bima City, West Nusa Tenggara Province, Indonesia.

## 2 Materials and Methods

### Research Design

This type of research was quantitative by utilizing a pre-experimental design with a quasi-experimental approach in the pretest-posttest control group design which aimed at investigating the influence between dry cupping and *Pece Kau'a* against hypertensive patients in Bima City, West Nusa Tenggara Province, Indonesia. The procedure for conducting this research by utilizing this design was there were two groups, each of which was selected according to inclusion criteria.

The first group was a group of hypertensive patients who were treated by combination therapy of dry cupping and *Pece Kua'a*, in which the blood pressure was measured before and afterward. Treatment of dry cupping therapy and

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*Pece Kau'a* was conducted for 10 minutes for one respondent and it was conducted in 3 times, which were on 1<sup>st</sup>, 6<sup>th</sup>, and 12<sup>th</sup> day. The second group was a group of hypertensive patients who were only treated by dry cupping. All in all, the group of hypertensive patients who were treated by combination therapy of dry cupping and *Pece Kau'a* was called the intervention group. Meanwhile, a group of hypertensive patients who were only treated by dry cupping was called the control group. Location in this research was conducted in all Public Health Centers in Bima City, which were Public Health Center of Jatibaru, Penanae, Mpunda, and East Rasanae. This research was conducted from July to November 2019 and the research was conducted on Saturday or Monday, with a duration of once in 1 week.

### *Sample*

Population in this research was all hypertensive patients who suffered from moderate blood pressure according to JNC VII (TDS: 140-159 mmHg., TDD: 90-99 mmHg. The population for the period from May to June 2019 in 4 Public Health Centers was 135 respondents. The smallest sample of the estimation sample was 30 controls and 30 treatments. The sample in this research was 60 respondents, thus, the intervention group was 30 respondents, and the control group was 30 respondents.

### *Data Collection*

Primary data collection in this research was collected directly by the researchers through taking direct measurements against blood pressure before and after the intervention, then, all measurement results were noted on provided observation sheet. Secondary data in this research was data that was obtained through documentation studies, monthly report medical record data, and other supporting data to investigate the total number of blood pressure and cholesterol sufferers in Bima City. Data collection was conducted after being declared eligible and obtaining research permission by having the certificate of research ethical eligibility. Data processing; Editing was conducted to correct what had been collected for. Coding was coding against the data; code 1 was for the intervention group and code 2 was for the control group to simplify the data and facilitate the tabulation and data analysis process. Entry was entering data into computer software for being analyzed. Cleaning was re-checking for possible errors in data that had been entered into statistical software before being analyzed to obtain accurate results. Data analysis was by utilizing univariate and bivariate data analysis.

### *Data Analysis*

The univariate analysis aimed at explaining or describing the characteristics of research variables. The univariate analysis in this research was respondents' characteristics, which were age, sex, occupation, and education level, and describing blood pressure and cholesterol in either the intervention group or control group. Bivariate analysis was used to prove the influence of cupping and acupressure therapy on hypertensive patients. Furthermore, it was conducted the normality test, the homogeneity of data. Then, for difference test between groups was by using paired t-test and using Independent sample t-test to investigate the influence between groups.

## **3 Results and Discussions**

### *Univariate Analysis*

Table 1  
Distribution of Hypertension Respondents' Characteristics in Bima City

Characteristics	Group			
	Control		Intervention	
	f	%	F	%
Classification of Age				
40-44	10	33,3	4	13,3
45-49	6	20	7	23,4

50-55	14	46,7	19	63,3
Smoking and Drinking Coffee				
Yes	20	66,7	17	56,7
No	10	33,3	13	43,3
Education Level				
Primary School	12	40	6	20
Secondary School	11	36,7	13	43,3
Academic	7	23,3	11	36,7
Occupation				
Civil Servants	7	23,4	10	33,3
Private Employees	19	63,3	14	46,7
Farmer/ Breeder	4	13,3	6	20

Based on Table 1, showed that most of the hypertension respondents' ages were 50 to 55 years, both in the intervention group (63.3%) and the control group (46,7%). Smoking and drinking coffee habits were mostly in the control group (66.7%), meanwhile, most of the respondents' education level was graduated from primary education which was in the control group (40%). Most of the respondents' occupations were as private employees which were in the control group (63.3%).

#### *Bivariate Analysis*

Table 2

Distribution of blood pressure before and after combination therapy of dry cupping and *pece kau'a* (intervention group) in Bima City

Blood Pressure	Mean	Std.Dev	Std. Error
Systolic			
-Before	149.97	6.184	1.129
-After	136.40	5.751	1.050
Diastolic			
-Before	86.77	3.181	.581
-After	79.90	2.578	.471

Table 3

Distribution of Blood Pressure Before and After Dry Cupping Therapy (Control Group) in Bima City

Blood Pressure	Mean	Std.Dev	Std. Error
Systolic			
-Before	153.33	5.378	.982
-After	138.23	5.431	.992
Diastolic			
-Before	88.30	3.109	.568
-After	79.70	2.842	.519

Table 4  
Distribution of Differences in Blood Pressure Before and After Combination Therapy of Dry Cupping and *Pece Kau'a* (Intervention Group) in Bima City

Blood Pressure	Mean	St. Dev	CI 95%	p value
Systolic pre-post	13.567	8.455	10.409-16.724	.000
Systolic pre-post				
Diastolic pre-post	6.867	1.995	6.122-7.612	.000
Diastolic pre-post				

Table 5  
Distribution of Differences in Blood Pressure Before and After Dry Cupping (Control Group) in Bima City

Blood Pressure	Mean	St. Dev	CI 95%	p value
Systolic pre-post	15.100	4.294	13.497-16.703	.000
Systolic pre-post				
Diastolic pre-post	8.600	3.286	7.3739-827-	.000
Diastolic pre-post				

#### *The Influence of Combination Therapy of Dry Cupping and Pece Kau'a on Hypertensive Patients*

Results of the independent t-test showed that the intervention group had a greater influence rather than the control group against the decrease of blood pressure on hypertensive patients. This was shown by the results of the intervention group analysis on systolic blood pressure with mean value on 1<sup>st</sup> day was 145.87, on 6<sup>th</sup> day was 141.67, and 12<sup>th</sup> day was 136.40 or ( $p = <0.05$ ). The mean value of 1<sup>st</sup> day at diastolic blood pressure was 84.63, 6<sup>th</sup> day was 82.73, and the 12<sup>th</sup> day was 79.90.

Control on 1<sup>st</sup> day was 149.17, 6<sup>th</sup> day was 144.50, and on 12<sup>th</sup> day was 138.23 or ( $p = <0.05$ ). Diastolic blood pressure on 1<sup>st</sup> day was 86.13, 6<sup>th</sup> day was 83.43, and 12<sup>th</sup> day was 79.70. By this cupping, there was the stimulation of cardiovascular regulators, especially in peripheral resistance. Through the effects that occurred due to cupping according to Syaraf (2012), the effect of cupping against hypertension was to play a role in calming the sympathetic nervous system. The upheaval in this sympathetic nervous system stimulated the secretion of the enzyme that acted as the renin-angiotensin system. After this system was calm and the activity reduced, the blood pressure would drop; Cupping also controlled aldosterone levels; Nitric oxide (NO) which played a role in vasodilation, through this nitric oxide substance also played a role in increasing the supply of nutrients and blood which were needed by cells and layers of arterial and venous blood vessels. Hence, that blood vessels became stronger and more elastic. Besides, cupping played a role in stimulating receptors (baroreceptors), thus, the blood vessels could respond to the stimulus and increase their sensitivity against factors causing hypertension (Syaraf, 2012).

Moreover, this research was in line with conducted research by Yasin (2005) who stated that some people immediately felt healed and refreshed from the first time they did cupping therapy, but some others needed wet cupping therapy more deeply once in a certain period. According to the results of conducted research by Rusdiatin, the response from a person after cupping showed that he or she felt comfortable and drowsy. When a person felt comfortable and relaxed, the sympathetic nervous system would calm down and the more having role was the

parasympathetic nervous system. A relaxed condition caused the heart rate to decrease. Through decreasing heart rate, the blood pressure would also decrease.

Varghese (2004) stated that the effectiveness of alternative medicine became a very influential reason against the choice of alternative medicine. One thing was said to be successful if it brought results or changes in direction that was expected.

*Pece Kau'a* was thought to be able to increase blood circulation. Because acupressure had been proved to stimulate Qi, yin and yang harmony, and neurotransmitter secretion, thereby, it could maintain the normal function of the human body and providing comfort. All the effects which were mentioned by acupressure could reduce blood glucose levels (Akbari, 2013).

## 4 Conclusion

There were differences in both systolic and diastolic blood pressure in two groups before and after the combined action of dry cupping and *Pece Kau'a*. There were differences in cholesterol levels in the two groups before and after the combined action of dry cupping and *Pece Kau'a*. There was a significant influence of combination therapy of dry cupping and *Pece Kau'a* against blood pressure and cholesterol on hypertensive patients. Therapy of dry cupping and *Pece Kau'a* were complementary therapies and they were expected to be able to be developed more in learning. Therapy of dry cupping and *Pece Kau'a* were expected to be an alternative for medical treatment in nursing services both in hospitals and Public Health Centers.

### *Conflict of interest statement*

The authors declared that they have no competing interests.

### *Statement of authorship*

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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