



The Effectiveness of Giving Papaya Fruit (*Carica Papaya*) Toward Blood Pressure on Elderly Hypertension Patients at the Posyandu Purna Sejahtera Surabaya

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Abstract : Hypertension in elderly happened due to the decrease elasticity of arteries at the process of aging. Based on previous research, papaya is known as complementary therapy to decrease blood pressure in adult patient. The design of this research is Quasi Experiment. The population were 34 elderly people with hypertension at Posyandu Purna Sejahtera Surabaya. There were 34 respondents as sample. Samples were taken by total sampling, which divide into two groups, each group consist of 17 respondents. Research instrument were sphygmomanometer needle, stethoscope and SOP of giving papaya. The data analysis using the Mann Whitney and the Wilcoxon Signed Rank Test Result of this study before intervention to 17 respondents was almost half of respondents (47,1%) had mild hypertension, while after intervention there only small part (35,3%) had normal hypertension. In the first measurement of control group the result obtained that half of respondents (52,9%) also had mild hypertension. Whereas the second measurement was found that almost half of respondents (47,1%) had mild hypertension. The result of Mann Whitney Test was $\rho=0,025 < \alpha=0,05$ then H_0 rejected, that means giving papaya has effectiveness to decrease blood pressure at Posyandu Lansia Purna Sejahtera Surabaya.

Keywords: Hypertension, Blood pressure, Papaya Fruit.

1. PRELIMINARY

Hypertension in the elderly occurs due to decreased arterial elasticity in the aging process. If not treated, hypertension can lead to strokes, damage to blood vessels (arteriosclerosis), heart failure and kidney failure (Haryono & Setianingsih, 2013). The phenomenon found, some elderly people still get blood pressure does not go down. While other elderly people are prone to relapse, even though they are diligent in taking anti-hypertensive drugs. Actually, there are alternative therapies to reduce blood pressure, which is complementary therapy using fruits, including papaya fruit, but this needs to be examined in advance.

The WHO Global Report on Non-Communicable Diseases 2010 states that developing economies have hypertension sufferers of 40 percent, while developed countries have only 35 percent. The prevalence of elderly hypertension patients in Indonesia based on the 2013 Riskesdas decreased from 21.7 percent in 2010 to 15.8 percent in 2013. According to the health profile of East Java Province in 2014, data on the number of patients with hypertension obtained from health facilities in East Java Province was 275.00 the soul of a hypertensive sufferer. The prevalence of hypertension in Surabaya from January to December 2015 ranks 7th out of the list of the 10 most diseases in Surabaya (Surabaya Health Office, 2015).

In the initial survey on 05 November 2016 at the Posyandu Purna Sejahtera Surabaya there were 56 elderly people and hypertensive patients in January 2016 there were 34 elderly people. Based on the research conducted, the content in papaya fruit can reduce blood pressure, the content in papaya fruit

is potassium and vitamin C effectively treat hypertension. Potassium is the main intracellular electrolyte, in reality, 98% of the body's potassium is in the cell body. The remaining 2% is outside the cell, the important thing is 2% for neuromuscular function. Potassium affects both skeletal and heart muscle activity (Rahayu, 2006).

Papaya has a high potassium content compared to sodium, ideally, the ratio of potassium to sodium in food is 5: 1 while in papaya the ratio is 9: 1. The high ratio of potassium to sodium is very beneficial to prevent the occurrence of hypertension too much sodium in the body is a signal to increase blood pressure. So, with the presence of high potassium in papaya fruit can compensate for the amount of sodium (Kowalski, 2010).

2. RESEARCH METHODS

This study uses an experimental design - quasi (quasi-experiment) with the design of pre-post-test control design. In this design, the intervention group was given papaya fruit. In both groups, the pre-test was started and after the treatment in the experimental group, the post-test of the two groups was carried out again. The population in this study were 34 people with elderly hypertension at the Posyandu Lansia Purna Sejahtera Surabaya. The sample size of this study was 34 people. So the sample size used was 34 respondents consisting of an intervention group of 17 respondents given 200gr papaya fruit 1x a day for 7 days and a control group of 17 respondents. In this study, sampling was done by the total sampling technique. Data were analyzed by Wilcoxon signed-rank test and Mann Whitney statistical test with significance $\alpha = 0.05$

1.1 Research result

1.1.1 Distribution of respondents by gender

Table 2.1.1 Frequency distribution of respondents by sex in the intervention group and control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Gender	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Man	3	17.6	0	0
2	Women	14	82.4	17	100
	Total	17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.1 shows that of the 17 respondents the intervention group was almost entirely (82.4%) female and of the 17 respondents the control group was entirely (100%) also female

1.1.2 Distribution of respondents based on age

Table 2.1.2 Frequency distribution of respondents according to age in the intervention group and control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Age	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	45-59	7	41.2	8	47.1

2	60-74	10	58.8	9	52.9
Total		17	100	17	100

Source: Primary Data, 2017

Based on Table 2.1.2 shows that of the 17 respondents in the intervention group most (58.8%) were aged 60-74 years (middle age), and from 17 respondents in the control group most (52.9%) were aged 60-74 years (elderly).

1.1.3 Respondents regularly control hypertension

Table 2.1.3 Frequency distribution according to Peruvian controls blood pressure in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Control Hypertension	Intervention Group		Control Group	
		Frequency	Percentage	Frekuensi	Percentage
		(n)	(%)	(n)	(%)
1	Yes	17	100	17	100
2	No	0	0	0	0
Total		17	100	17	100

Source: Primary Data, 2017

Based on Table 2.1.3 shows that from 17 respondents the intervention group and the control group entirely (100%) routinely control blood pressure

1.1.4 Distribution of respondents based on wrinkles controls blood pressure

Table 2.1.4 Frequency distribution of respondents according to the pleasure of consuming high salt foods in the intervention group and control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Salt Consumption	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	7	41.2	13	76.5
2	No	10	58.8	4	23.5
Total		17	100	17	100

Source: Primary Data, 2017

Based on Table 2.1.4 shows that of the 17 respondents in the intervention group most (58.8%) did not like foods containing high salt and from 17 respondents the control group almost all (76.5%) liked foods containing high salt

1.1.5 Respondents regularly exercise

Table 2.1.5 Frequency distribution of respondents according to sports routines in the intervention group and control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Exercise regularly	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	11	64.7	6	35.5
2	No	6	35.3	11	64.7
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.5 shows that from 17 respondents in the intervention group most (64.7%) routinely exercised and from 17 respondents in the control group most (64.7%) were not exercise routines

1.1.6 Respondents smoking

Table 2.1.6 Frequency distribution of respondents according to smoking habits in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Smoking	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	0	0	0	0
2	No	17	100	17	100
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.6 shows that from 17 respondents the intervention group and the control group all (100%) did not smoking.

1.1.7 Respondents consumption coffee

Table 2.1.7 Frequency distribution of respondents according to coffee consumption habits in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Consumption Coffee	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	0	0	0	0

2	No	17	100	17	100
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.7 shows that of the 17 respondents in the intervention group almost all (88.2%) did not consume coffee and from 17 respondents the control group entirely (100%) did not consume coffee.

1.1.8 Respondent consumption alcohol

Table 2.1.8 Frequency distribution of respondents according to alcohol consumption habits in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Consumption alcohol	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	0	0	0	0
2	No	17	100	17	100
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.8 shows that from 17 respondents the intervention group and the control group all (100%) did not consume alcohol.

1.1.9 Respondents of hypertension descent

Table 2.1.9 Frequency distribution of respondents according to hypertensive descent / high blood pressure in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Hypertensive Descen	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	16	94.1	13	76.5
2	No	1	5.9	4	23.5
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.9 shows that of the 17 respondents in the intervention group almost all (94.1%) descendants of hypertension / high blood pressure and from 17 respondents in the control group almost all (76.5%) also descended from hypertension / high blood pressure.

1.1.10 Distribution of respondents based on taking drugs

Table 2.1.10 Frequency distribution of respondents taking antihypertensive drugs in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Drugs antihypertensive	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Yes	11	64.7	8	47.1
2	No	6	35.3	9	52.9
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.10 shows that of the 17 respondents in the intervention group most (64.7%) consumed antihypertensive drugs and from 17 respondents in the control group most (52.9%) did not take antihypertensive drugs

1.1.11 Analisis hasil tekanan darah responden pada kelompok intervensi dan kelompok kontrol sebelum diberikan buah pepaya

Table 2.1.11 Analysis of the results of respondents' blood pressure in the intervention group and the control group before the administration of papaya fruit at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Blood pressure	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Normal	0	0	0	0
2	HT Light	8	47.1	9	52.9
3	HT Being	5	29.4	7	41.2
4	HT Weight	4	23.5	1	5.9
5	HT Very heavy	0	0	0	0
Total		17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.11 shows that from 17 respondents the intervention group almost half (47.1%) experienced mild hypertension before administration of papaya fruit, and from 17 control groups half (52.9%) also experienced mild hypertension before the administration of papaya fruit.

1.1.12 Analysis of the results of the blood pressure of respondents in the pre-post-test in the intervention group and the pre-post-test control group

The results of research on blood pressure in the intervention group and the control group after administration of papaya fruit can be seen in table 5.12 with normal categories (30130 / ≤ 85), mild hypertension (140-159 / 90-99), moderate hypertension (160-179 / 100-109), severe hypertension (180-209 / 110-119), and very severe hypertension ($< 210 / \geq 120$).

Table 2.1.12 Analysis of the results of the pre-post-test respondent's blood pressure in the intervention group and the pre-post test control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017.

No	Blood pressure	Intervention Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
		(n)	(%)	(n)	(%)
1	Normal	6	35.3	0	0
2	HT Light	6	35.3	8	47.1
3	HT Being	5	29.4	8	47.1
4	HT Weight	0	0	1	5.9
5	HT Very heavy	0	0	0	0
	Total	17	100	17	100

Source: Primary Data, 2017

Based on table 2.1.12 after the administration of papaya fruit showed that from 17 respondents in the intervention group a small percentage (35.3%) experienced normal blood pressure and also experienced mild hypertension, and from 17 control groups after being given papaya fruit, almost half (47.1%) had mild hypertension and also have moderate hypertension.

1.1.13 Effectiveness of papaya fruit in the intervention group and control group on blood pressure in elderly people with hypertension at the Posyandu Lansia Purna Sejahtera Surabaya January 2017

Table 2.1.13 Analysis of the results of pre-post-test blood pressure in the intervention group and the control group at the Posyandu Lansia Purna Sejahtera Surabaya January 2017

No.	Blood pressure	Intervention Group				Control Group			
		Pre		Post		Pre		Post	
		N	%	n	%	n	%	n	%
1	Normal	0	0	6	35.3	0	0	0	0

2	HT Light	8	47.1	6	35.3	9	52.9	8	47.1
3	HT Being	5	29.4	5	29.4	7	41.2	8	47.1
4	HT Weight	4	33.5	0	0	1	5.9	1	5.9
5	HT Very heavy	0	0	0	0	0	0	0	0
	Total	17	100	17	100	17	100	17	100
	ρ value Wilcoxon		0.001				0.317		
	ρ value Maan- Whitney				0.025				

*information: meaningful at $\alpha < 0.05$

Based on the Wilcoxon Sign Rank test in the intervention group, the value of $\rho = 0.001$ and the value of $\alpha = 0.05$ means that $\rho < \alpha$, H_0 is rejected, meaning that it is effective for reducing blood pressure at the Posyandu Lansia Purna Sejahtera Surabaya. Whereas in the control group $\rho = 0.317$ and the value of $\alpha = 0.05$ means that $\rho > \alpha$ then H_0 is accepted, which means there is no effectiveness.

Based on the Mann-Whitney test to analyze blood pressure differences in the intervention group and the control group, the value $\rho = 0.025$ and the value of $\alpha = 0.05$ means $\rho < \alpha$, H_0 is rejected, meaning that the papaya fruit is effective against blood pressure in elderly hypertensive patients at the Posyandu Lansia Purna Sejahtera Surabaya.

3. DISCUSSION

3.1 Blood pressure before being given papaya fruit in the intervention group and the control group.

Some factors that can affect hypertension in the elderly are 2, which can be controlled and cannot be controlled. Age is a factor that cannot be controlled. Based on Table 2.1.2 shows that of the 17 respondents in the intervention group, most (58.8%) were aged 60-74 years (elderly), and of the 17 control group respondents most (52.9%) were aged 60-74 years (elderly). age is very dependent on hypertension because with increasing age the higher the risk of hypertension. The incidence of hypertension increases with increasing age. This is often caused by nature in the body which affects the heart, blood vessels, and hormones. Hypertension in people younger than 35 years will increase the incidence of coronary artery disease and death (Triyanto, 2014). Table 2.1.9 shows that of the 17 respondents in the intervention group almost all (94.1%) of hypertensive/high blood pressure descendants and from 17 respondents in the control group, almost all (76.5%) also had a descent of hypertension / high blood pressure. The average respondent said that their parents had experienced high blood pressure or hypertension in both the intervention group and the control group. The existence of genetic factors in certain families will cause the family to have the risk of suffering from hypertension. Individuals with parents have twice the risk of suffering from hypertension than people who do not have a family with a history of hypertension. Besides that, it was found that 70-80% of cases of essential hypertension with a history of hypertension in the family (Anggraini et al., 2009). A person will be more likely to get if his parents suffer from hypertension (Marliani, 2007).

3.2 Blood pressure after administration of papaya fruit in the intervention group and the control group

Based on table 2.1.12, 17 respondents from the intervention group (35.3%) experienced blood pressure in the normal category after being given papaya fruit, and a small percentage (35.3%) experienced mild hypertension after giving papaya fruit, and from 17 control groups almost half (47.1%) experienced mild hypertension after administration of papaya fruit, and almost half (47.1%) had moderate hypertension after administration of papaya fruit. In the intervention group, a small proportion (35.3%) reached blood pressure in the normal category after being given papaya fruit, while the control group did not reach the normal category because they were not given papaya fruit. Blood pressure measurements were divided into 5 criteria: Normal ($\leq 130 / \leq 85$), mild hypertension (140-159 / 90-99), moderate hypertension (160/179 / 100-109), severe hypertension (180-209 / 110 -119), and very severe hypertension ($<210 / \geq 120$) (The Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure USA, 2005). From these results, the administration of papaya fruit can be used as a complementary non-pharmacological therapy. Treatment in hypertensive patients can be done by pharmacological treatment and non-pharmacology. In the study, the population selected both those who took antihypertensive drugs and those who did not take antihypertensive drugs. In the intervention group, the fruit was given, while the control group was not given papaya fruit. Antihypertensive drugs must continue to be consumed, but for use and use must be prescribed by a doctor, given the side effects and certain indications that are only understood by the doctor (Sasongkowati, 2013).

In the intervention group was given non-pharmacological for blood pressure reduction namely papaya fruit. Giving papaya is believed to reduce blood pressure. Giving papaya fruit in hypertensive patients is possible because papaya fruit contains high potassium compared to sodium, ideally, the ratio of potassium to sodium in food is 5: 1 while in papaya fruit the ratio is 92: 1. The high ratio of potassium to sodium is very beneficial to prevent the occurrence of hypertension too much sodium in the body is a signal to increase blood pressure. So, with the presence of high potassium in papaya fruit can compensate for the amount of sodium (Kowalski, 2010).

3.3 Differences in blood pressure pre-post administration of papaya fruit in the intervention and pre-post groups in the control group.

The results of data analysis using the Mann-Whitney test to analyze blood pressure differences in the intervention group and the control group obtained a value of $\rho = 0.025$ and a value of $\alpha = 0.05$ means $\rho < \alpha$, H_0 is rejected, meaning that papaya fruit is effective against blood pressure in the elderly hypertensive sufferers at the Posyandu Lansia Purna Sejahtera Surabaya

4. CONCLUSION

- 4.1 In hypertension patients, the intervention group before administration of papaya fruit almost half had blood pressure in the mild category, whereas in the control group half also had blood pressure in the mild category
- 4.2 In hypertension patients, the intervention group after administration of papaya fruit almost half had blood pressure in the normal category, and almost half had blood pressure in the mild category, while in the control group almost half had blood pressure in the mild category, and nearly half had blood pressure in the medium category. But in the intervention group, almost half had blood pressure in the normal category while none in the control group reached normal
- 4.3 In patients with hypertension and the intervention group and the control group, there were significant differences between before and after the administration of papaya fruit.

5. SUGGESTION

- 5.1 The elderly are expected to consume papaya fruit regularly to reduce blood pressure when symptoms of hypertension occur.

- 5.2 Nurses can continue to help and teach non-pharmacological treatments such as giving papaya fruit to kalien who have hypertension so that clients are more independent in lowering blood pressure
- 5.3 Research is expected to increase reading resources related to non-pharmacological treatment through fruits and vegetables, especially papaya fruit which can reduce blood pressure.

REFERENCE

- [1] Aini, M. Nur. 2015. *Various Efficacious Fruit Medicines*. Yogyakarta: Real Books
- [2] Azizah, Lilik Ma'rifatul. 2011. *Elderly Nursing*. Yogyakarta: Graha Ilmu.
- [3] Dinkes Surabaya. 2015. *Profile of the Surabaya Health Office. Opened September 26, 2016, from <http://dinkes.surabaya.go.id/portal/>.*
- [4] Dewi, Sofia Rhosma. 2014. *Gerontik Nursing Textbook*. Yogyakarta: Deepublis.
- [5] Depkes. 2013. *Basic Health Research. Opened September 27, 2016, from <http://www.depkes.go.id/resources/download/general/Hasil%202013.pdf>*
- [6] Farmawati, Ruhjana. 2012. *Provision of Papaya on the Blood Pressure of Hypertensive Patients in the Working Area of Ngampilan Yogyakarta Health Center. Opened September 26, 2016, from http://Naskah%20Publikasi_ASMI%20FARMAWATI.pdf.*
- [7] Fatmah. 2010. *Elderly Nutrition*. Jakarta: PT Penerbit Erlangga
- [8] Haryono, Rudi & Sulis Setianingrum. 2013. *Watch Your Enemies After 40 Years Old*. Yogyakarta: Gosyen Publishing.
- [9] Indriana, Yeniar. 2012. *Gerontology & Progeria*. Yogyakarta: Pustaka Belajar
- [10] Khomsan, Ali. 2010. *Food and Nutrition for Health*. Jakarta: Rajawali Spor
- [11] Muflihah, Siti & Nurul Kamariyah. 2015. *The Role of Nurses in Antihypertensive Monitoring in People with Hypertension. Opened October 6, 2016, from <http://journal.unusa.ac.id/index.php/jhs/article/viewFile/12/14>*
- [12] Marlioni, Lilin dkk. 2007. *100 Quest & Answers Hipertensi*. Jakarta: PT Elex Media Komputindo, Gramedia
- [13] Mursito, Bambang. 2007. *Healthy in old age with traditional herbs*. Jakarta: Penebar Swadaya
- [14] Notoatmodjo, Soekidio. 2012. *Health Research Methodology*. Jakarta: Rineka Cipta.
- [15] Nugroho, Wahyudi. 2008. *Gerontik & Geriatric Nursing*. Jakarta: E n GC
- [16] Purnama, Puji. 2014. *Easy Ways to Harvest Abundant Papaya Fruit*. Yogyakarta: Indolerasi.
- [17] Putra, Satria Winkandra. 2013. *68 Antidote to Disease*. Jogjakarta: Katahari
- [18] RM, Puspita & Minni Rochaili Immelati. 2013. *Did You Know Foods Are Dangerous For High Blood Pressure*. Jakarta: Niaga Swadaya
- [19] Rilantono, Lily I. 2013. *Cardiovascular disease*. Jakarta: FKUI
- [20] Sunaryo, dkk .2016. *Gerontik Nursing Care*. Yogyakarta: ANDI.
- [21] Sasongkowati, Retno. 2013. *Sakti Buah Destroyer Disease*. Yogyakarta: Indoliteras.
- [23] Susilo, Yekti & Wulandari. 2011. *The Right Way to Overcome Hypertension*. Yogyakarta: Andi.
- [24] Sujiprihati, Sriani & Ketty Suketi. 2009. *Superior Papaya Cultivation*. Jakarta: Penebar Swadaya.
- [25] Triyanto, Endang. 2014. *Nursing Services for Integrated Hypertension Patients*. Yogyakarta: Graha Ilmu.
- [26] Wahyuningsih, Retno. 2013. *Nursing Services for Integrated Hypertension Patients*. Yogyakarta: Graha Ilmu.
- [27] Widjadja, Rafelin. 2009. *Chronic disease*. Jakarta: Bee Media Indonesia.
- [28] Yulianto. A. 2014. *Cultivation of Rambutan, Banana, Watermelon, Oranges, Mangoes, Papaya*. Jogjakarta: Javalitera.