Jurnal Ilmiah Keperawatan
p-ISSN 2477-4391
e-ISSN 2528-3022
Scientific Journal of Nursing

JUS SEMANGKA SEBAGAI TERAPI TAMBAHAN BAGI LANSIA DENGAN HIPERTENSI

Watermelon Juice as an Adjunct Therapy for Elderly with Hypertension

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Riwayat artikel
Diajukan: 5 Juni 2022
Diterima: 23 Juli 2022

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Kata Kunci:
Hypertension, Blood Pressure, Elderly, and Watermelon

Abstrak

Tujuan: Tujuan dari penelitian ini adalah untuk mengetahui pengaruh Pemberian Jus Semangka (Citrullus Latanus) terhadap Tingkat Tekanan Darah pada Lansia dengan Hipertensi. **Metode:** Desain penelitian adalah Pretest and Posttest Non Equivalent Control Group. Metode: Metode penelitian yang digunakan adalah penelitian eksperimen semu. Sampel dalam penelitian ini sebanyak 20 sampel yang terdiri dari dua kelompok yaitu 10 responden untuk intervensi dan 10 responden untuk kontrol. Pengambilan sampel menggunakan teknik purposive, dengan kriteria inklusi dan eksklusi. Kelompok intervensi minum obat hipertensi dan diberikan jus semangka sebanyak 350 gram sekali sehari selama 7 hari, sedangkan kelompok kontrol hanya minum obat hipertensi. Dalam penelitian ini analisis data yang digunakan adalah univariat dan bivariat menggunakan independent t test dan alat untuk mengukur tekanan darah adalah Digital Sphygmomanometer. **Hasil:** Hasil penelitian menunjukkan rerata SBP setelah intervensi pada kelompok intervensi dan kontrol adalah 139,40 mmHg dan 159,70 mmHg. Sedangkan rerata DBP pada kelompok intervensi dan kontrol adalah 78,90 mmHg dan 95,50 mmHg. Uji t independen diperoleh nilai p SBP dan DBP sebesar 0,001 dan 0,002 (α 0,05). **Kesimpulan:** Terdapat perbedaan tekanan darah sistolik dan diastolik pada kelompok kontrol dan intervensi. Jus semangka dapat digunakan oleh lansia penderita hipertensi sebagai terapi komplementer untuk mengelola tekanan darah dengan frekuensi yang dianjurkan 1 kali per hari.

Abstract

Aims: The purpose of this study was to determine the effect of Watermelon Juice *(Citrullus Latanus)* on on Blood Pressure Levels in Elderly with Hypertension. **Design:** Research design was Pretest and Posttest *Non Equivalent Control Group.* **Methods:** The research method was quasi-experimental study**.** The sample in this study was 20 samples consisting of two groups, namely 10 respondents for interventions and 10 respondents for control. Sampling using purposive technique, with inclusion and exclusion criteria. The intervention group took hypertension medication and they were given 350 grams of watermelon juice once a day for 7 days, while the control group only took hypertension medication. In this study, analysis of the data used was univariate and bivariate using independent t test and the instrument for measuring blood pressure was a Digital Sphygmomanometer. **Result:** The results showed the mean SBP after intervention in the intervention and control groups were 139.40 mmHg and 159.70 mmHg. Meanwhile, the mean DBP in the intervention and control groups were 78.90 mmHg and 95.50 mmHg. The independent t-test obtained SBP and DBP p value of 0.001 and 0.002 (α 0.05). **Conclusions:** There were differences in systolic and diastolic blood pressure in the control and intervention groups. Watermelon juice can be used by the elderly with hypertension as a complementary therapy to manage blood pressure with the recommended frequency of 1 time per d

INTRODUCTION

The aging process is a process that occurs naturally after passing through the three stages of life, namely childhood, adulthood and old age. Aging is characterized by white hair, sagging skin, deteriorating vision, slowed movement, decreased hearing and abnormalities in various vital organ functions (Nugroho, 2014).

The aging process results in decreased physiological functions resulting in non-communicable diseases as well. This new communicable disease in the elderly can be transmitted through lifestyle such as diet, sexual life and global communication. According to the Ministry of Health, non-communicable diseases in the elderly include hypertension, stroke, diabetes mellitus and arthritis or rheumatoid arthritis (Kemenkes RI, 2013).

The World Health Organization (WHO) states that hypertension is a condition in which blood vessels have a persistent systolic blood pressure of ≥140 mmHg or a diastolic blood pressure of ≥90 mmHg. Hypertension be diagnosed when a person's systolic blood pressure (SBP) is ≥140 mm Hg and/or diastolic blood pressure (DBP) is ≥90 mm Hg following repeated examination. (Riskesdas, 2013).

The incidence of hypertension in the world has reached 26.4% of the world's population with almost the same ratio between men and women, that are 26.6% in men and 26.1% in women. This figure is likely to increase to 29.2% by 2025. At this time, of the 972 million people with hypertension, 333 million people are in developed countries and 639 million people are in developing countries including Indonesia (Kemenkes R.I., 2014).

Currently, Indonesia's population is 252,124,458 and 65,048,110 (25.8%) people who suffer from hypertension. West Java ranks fourth out of the five highest sequences of hypertension in Indonesia reaching 13,612,359 (Kemenkes RI, 2014).

The exact cause of hypertension 90% is unknown, but various studies have found several factors that often cause hypertension, one of which is an unhealthy lifestyle. Signs and symptoms caused by hypertension are dizziness, visual disturbances, headaches, irritability, ringing in the ears, difficulty sleeping, shortness of breath and can be at risk of falling.h (Khotimah, 2013 and Triyanto, 2014).

Hypertension can be treated with pharmacological and non-pharmacological therapies. Pharmacologically, there are five major classes of antihypertensive drugs commonly used, including diuretics, alpha-blockers, beta-blockers, calcium channel blockers, ACE inhibitors, and angiotensin receptor blockers. One of the side effects of diuretics is that it causes low levels of potassium in the blood (Nisa & Intan, 2011). There are several non-pharmacological treatments for hypertension, one of which is herbal plant therapy (cucumber, garlic, chayote, celery, bay leaf and watermelon) (Arturo, 2012). Watermelon is one that can be used as herbal therapy because it contains high potassium, amino acid, sitrulin, water, vitamin C, vitamin A (karatenoid), vitamin K, and L-arginine (Nisa & Intan, 2011).

The potassium content in watermelon has a diuretic effect. Potassium is an intracellular ion and is associated with an exchange mechanism with sodium. Increasing potassium intake may lower blood pressure, because it triggers natriuresis (loss of sodium through urine). Sodium is the main cation in the blood and is present in the extracellular fluid. Minerals play a role in the regulation of body fluids, including blood pressure and acid-base balance. Magnesium is a mineral that protects the heart muscle. Minerals play a role in the regulation of body fluids, including blood pressure and acid-base balance. Magnesium is a mineral that protects the heart muscle because normal magnesium levels can maintain smooth muscle tone and control blood pressure (Hermin, 2009).

Research by Rebbi Permata, et al (2017) entitled "The effect of watermelon juice on reducing blood pressure in elderly people with hypertension in the work area of the Lubuk Buaya Padang Health Center" showed that there was a decrease in blood pressure in elderly people with hypertension who consume watermelon juice. This type of research wass Quasy Experiment with Two Group Pretest-Postest Design. The population of this study were all elderly people with hypertension who visited the Lubuk Buaya Padang Health Center. The sample amounted to 30 people who were taken by accidental sampling. The mean pretest of systolic and diastolic blood pressure in the intervention group was 174.00 and 96.67 mmHg and in the control group was 169.33 and 96.67 mmHg, meanwhile the mean posttest in the

intervention group was 156.00 and 82.00 mmHg and in the control group was 167.33 and 93.33 mmHg.

Frida, et al (2013)'s research on "The Effect of Giving Watermelon (Cilitrus Vulgaris Schrad) Juice to Lowering Blood Pressure in Elderly With a History of Hypertension" found that there were differences in systolic and diastolic blood pressure before and after the intervention, namely systolic blood pressure of 31.5±11, 79 mmHg and diastolic 6.63 ± 6.196 mmHg with statistical test results showing p value = 0.00.

Preliminary study was conducted by means of interviews and observations of 10 people. The results obtained 6 out of 10 elderly said they did not know watermelon juice as herbal therapy and patients only depended on the treatment given from the puskesmas such as Amlodipine and Captropil drugs. Meanwhile, 4 elderly people have used other herbal therapies such as boiled water from soursop leaves, tomato, and cucumber juices, but not regularly. Ignorance and lack of information on alternative hypertension treatment are the main reasons people do not consume herbal therapy.

Nurses have a role as educators, namely helping to improve health through health education about medical care and action to patients, at-risk family groups, health cadres, and the community. The role of nurses as educators and care givers is expected to be able to carry out their role in providing services to patients, especially those with hypertension (Hidayat, 2009.

Variables	Mean± SD	Min-Max	N
Systolic	156,70 ±5,964	146 - 164	10
Diastolic	96,80 ±8,443	81 - 111	

METHODS

The design in this study was a Quasi Experiment with Pretest and Posttest Non Equivalent Control Group. The hypothesis of this study is the alternative hypothesis (Ha), that there was a difference in the mean blood pressure in the intervention group and the control group in the elderly with hypertension. In this study, there were two kind of independent and dependent variables, namely watermelon juice and blood pressure.

The population in this study were elderly patients with hypertension in Cipageran Community Health Centre. Total sample were 20 respondents divided into two groups, 10 respondents for intervention and 10 respondents for control, sampling technique in purposive sampling using inclusion and exclusion criteria.

The research instruments were a food scale in grams, a blender and a digital sphygmomanometer (OMRON). The intervention group took hypertension medication and they were given 350 grams of watermelon juice once a day for 7 days, while the control group only took hypertension medication. Analysis of the data used univariate and bivariate with independent t test.

Variables	Mean± SD	Min-Max	N
Systolic	151,90 ±6,315	141-158	10
Diastolic	90,60 ±13,134	71-110	

RESULTS AND ANALYSIS

Distribution of Blood Pressure in the Elderly with hypertension before and after the Intervention

Table 1 Distribution of Blood Pressure in the Elderly with Hypertention before giving watermelon juice in the Intervention Group

Table 1 shows that the mean systolic blood pressure (SBP) before intervention was 156.70 ± 5.964 mmHg with the lowest and the highest SBP were 146 mmHg and 164 mmHg. On the other hand, the average diastolic blood pressure (DBP) before intervention was 96.80 ± 8.443 mmHg with the lowest and the highest DBP were 81 mmHg and 111 mmHg.

Variables	Mean± SD	Min-Max	N
Systolic	139,40±2,989	135 - 143	10
Diastolic	78,90±4,533	72 - 86	

Table 2 Distribution of Blood Pressure in the Elderly with Hypertension after Giving Watermelon Juice in the Intervention Group

Table 2 defines the mean SBP after treatment with watermelon juice was 139.40 ± 2,989 mmHg with the lowest and the highest

Variables	Groups	Mean± SD	*P*-value	N
SBP Post	Intervention	139,40±2,989	0,001	10
	Control	159,70±4,498		
DBP Post	Intervention	78,90±4,533	0,002	10
	Control	95,50±13,310		

SBP were 135 mmHg and 143 mmHg. Meanwhile DBP after intervention was 78.90 ± 4.533 mmHg with the lowest and the highest DBP were 72 mmHg and 86 mmHg

Distribution of Blood Pressure of the Control Group at the beginning and the end measurements in the elderly with hypertension

Table 3 Distribution of blood pressure at the beginning measurement in the elderly with hypertension in the control group

Table 3 explains that the mean SBP at the beginning of the measurement was 151.90 ±6.315 mmHg, the lowest and the highest measurements were 141 mmHg and 158 mmHg. Meanwhile, the average DBP was 90.60 ±13.134 mmHg with the lowest and the highest measurements were 71 mmHg and 110 mmHg.

Table 4 Distribution of Blood Pressure at the End Measurement in the Elderly with Hypertension in the Control Group

Variables	Mean± SD	Min-Max	N
Systolic	159,70 ±4,498	153-167	10
Diastolic	95,50 ±13,310	71-115	

Table 4 illustrates that the mean SBP at the end of the measurement was 159.70 mmHg ± 1 4,498 with the lowest and the highest value were 153 mmHg and 167 mmHg. while the mean DBP at the end measurement was 95.50 mmHg ± 13,310 with the lowest and higest value were 71 mmHg and 115 mmHg.

The Differences Average Blood Pressure in the Control and Intervention Groups on Hypertensive Elderly

Table 5 Distribution of Blood Pressure in the Control and the Intervention Groups

Table 5 defines that the average respondent's SBP after the intervention was 139.40 mmHg ± 2.989 and DBP was 78.90 ± 4.535 mmHg. On other hand, the average post SBP and DBP in the control group respondents were 159.70 ±4,498 mmHg and 95.50 ±13,310 mmHg. The results of the statistical test showed that the p value of systolic blood pressure was 0.001 < α (0,05) and the p value of diastolic blood pressure was 0.002 < α (0,05)

DISCUSSION

1. **The Average of Blood Pressure in the Elderly with Hypertension Before and After the Intervention**

   The average blood pressure respondents were hypertension grades 1 and 2 according to the classification established by JNC VII before being given watermelon juice. Individuals identified with confirmed hypertension in grade 1 and grade 2 should receive appropriate pharmacological treatment.

   Hypertension is a serious medical condition that significantly increases the risks of heart, brain, kidney and other diseases. Hypertension is the systolic blood pressure ≥140 mmHg and/or the diastolic blood pressure ≥90 mmHg. Hypertension is called a "silent killer". Most people with hypertension are unaware of the problem because it may have no warning signs or symptoms (Triyanto, 2014).

   In this study, 10 respondents in the intervention group, all took antihypertensive drugs during the study. Blood pressure measurements were taken in the morning, then respondents were given 350 grams of watermelon juice which had to be consumed in one drink, because watermelon juice only lasted 4 hours after processing. Watermelon juice was given for 7 consecutive days. Blood pressure was measured on the 1st day before consuming watermelon juice and on the 7th day after consuming watermelon juice.

   High-normal blood pressure is intended to identify individuals who could benefit

from healthy diet interventions and who would receive pharmacological treatment. Treatment in individuals with hypertension in the long term will cause adverse side effects. One of the side effects caused by long-term use of hypertension drugs from the diuretic type is that it causes low levels of potassium in the blood. (Nisa & Intan, 2011).

Non-pharmacological treatment for hypertension by giving watermelon juice, because watermelon contains the amino acid citrulline, potassium, water, vitamin C, vitamin A (carotenoids), vitamin K, and L-arginine. Water and potassium elements in watermelon can neutralize blood pressure and maintain body balance. In addition, watermelon has no side effects on our body, so it can be used as a complementary treatment for hypertension (Nisa & Intan, 2011).

Based on data analysis in table 1 shows that the average blood pressure decreased, possibly caused by the respondent drinking watermelon juice regularly in accordance with the advice of the researcher. Respondents stated that after seven days of consuming watermelon juice, they felt less dizzy, slept well, and their blood pressure gradually decreased. Watermelon (Cilitrus Latanus)) juice is consumed as much as 350 grams given for 7 consecutive days in the morning.

2. **The Average Blood Pressure at The Beginning and at the End of the Measurements on the Hypertensive Elderly in the Control Group**

Hypertension is a degenerative disease that most often appears in developing countries such as Indonesia. In general, blood pressure increases slowly with age. Hypertension be diagnosed when a person's systolic blood pressure (SBP) is ≥140 mm Hg and/or diastolic blood pressure (DBP) is ≥90 mm Hg following repeated examination. (Riskesdas, 2013).

The results of observations made by researchers, hypertension experienced by respondents may be caused by age, genetics, and stress. Respondents only took antihypertensive drugs before and throughout the study and were advised not to take other non-pharmacological therapies that could affect the results of the study. Blood pressure measurements were carried out on the first and seventh days during the study.

Based on the analysis of the data above, the researcher concluded that the control group who only took antihypertensive drugs, in some respondents experienced a decrease in blood pressure, but there were also those who stayed. This possibility is due to the respondent's non-compliance to take antihypertensive drugs, unable to change lifestyle, stress and not being willing to follow a healthy diet such as consuming excessive sodium.

Other than that, observations to the control group by the researchers, there were respondents who complained of dizziness, difficulty sleeping, and some had no appetite if they did consume high sodium in their diet with reason that they need a taste in their food.

3. **The difference in average blood pressure between the control and intervention roups on the elderly with hypertension**

Table 5 defines that the average respondent's SBP after the intervention was 139.40 mmHg ± 2.989 and DBP was 78.90 ± 4.535 mmHg. On other hand, the average post SBP and DBP in the control group respondents were 159.70 ±4,498 mmHg and 95.50 ±13,310 mmHg. The results of the statistical test showed that the p value of systolic blood pressure was $0.001 < \alpha$ (0,05) and the p value of diastolic blood pressure was $0.002 < \alpha$ (0,05).

The analysis of the data above shows that there are differences in the mean blood pressure in the intervention and control groups. For 7 days the intervention group was given 350 grams of watermelon juice once a day. The results of this study indicate that respondents in the intervention group experienced a decrease in blood pressure. Meanwhile, 10 respondents in the control group who were not given watermelon juice did not reduce their blood pressure.

The mineral content in watermelon may have an important role in regulating body fluids, including blood pressure and acid-base balance. Watermelon contains sodium which is the main cation in blood and extracellular fluid. Magnesium is a

mineral that has a role in protecting the heart muscle so that normal magnesium levels can maintain smooth muscle tone and control blood pressure. Watermelon also contains the amino acid citrulline, potassium, water, vitamin C, vitamin A (carotenoids), vitamin K, and L-arginine. Water and potassium elements in watermelon may function to neutralize blood pressure and maintain body balance. Watermelon content such as minerals, vitamins and water in watermelon is the possibility that it can lower blood pressure so that it is suitable for complementary therapy for the elderly with hypertension in addition to taking hypertension medication. The results showed that the elderly group who was given additional therapeutic interventions such as watermelon experienced a significant decrease compared to the control group who was only given hypertension medication.

CONCLUSION

Watermelon consist of mineral, vitamin and water that has been identified as a supporting treatment for elderly with hypertension. One of the most visible effect of watermelon juice has on a decrease hypertension in elderly people with giving the 350 grams of watermelon juice once a day for 7 days. Statistically, the p value of systolic blood pressure was $0.001 < \alpha$ (0,05) and the p value of diastolic blood pressure was $0.002 < \alpha$ (0,05), indicating that the difference in reduce hypertension in elderly with hypertension.

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