

APPLICATION OF DECORATED PANDAN LEAVES AND AROMATHERAPY TO REDUCE BLOOD PRESSURE IN ELDERLY PARENTS WITH HYPERTENSION: CASE REPORT



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ABSTRACT

Introduction: Hypertension is one of the health problems that requires constant attention. This is because it can affect more serious health conditions for sufferers. The complications that can arise in hypertension cases include heart attack, stroke, aneurysm, kidney failure, eye problems, and can cause death. The actions taken to overcome this risk is by applying non-pharmacological therapy, such as boiled pandan leaves. **Purpose:** This case study aims to provide an overview of the application of boiled pandan leaves to health problems in hypertension cases in Banteran Village, Sumbang Subdistrict. **Methods:** This case study was carried out using the case-study analysis method based on nursing intervention. The case study was conducted in November 2023 with research subjects who were sufferers of hypertension. **Discussion:** The results of this case study show that after being given nursing intervention with non-pharmacological therapy boiled and aromatherapy pandan leaves once a day for 7 days, blood pressure decreased. **Conclusion:** Application of boiled pandan leaves can reduce blood pressure levels in hypertension health problems.

Keywords: Aromatherapy, Hypertension, blood pressure, boiled pandan leaves

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INTRODUCTION

Hypertension is a condition of increased blood pressure that can be a risk factor for heart failure, stroke, atherosclerosis, and kidney failure (Azizah, 2022). This disease is a disorder of the blood vessels that causes obstruction of blood flow that carries oxygen and nutrients to be distributed to body tissues (Trisna 2019). This condition causes the heart to work harder to fulfill and circulate blood throughout the body. Hypertension is included in the deadly diseases, often this disease is given the term "silent killer" because it can attack anyone from various groups and has signs that are often ignored by sufferers (Trisna 2019). Based on data from WHO (2023), hypertension sufferers range from 1.28 billion with an age range of 30-79 years and most of them live in developing countries.

According to data from the Ministry of Health (2023), cases of hypertension in Indonesia are estimated to be more than 70 million. In addition, according to Riskesdas data (2018), the province of South Kalimantan has the most cases with (44.1%), West Java (39.6%), East Kalimantan (39.3%), and Central Java (37.6%). This condition has increased compared to 2013 with South Kalimantan having the most cases with (30.8%), West Java (29.4%), East Kalimantan (29.6%), and Central Java (26.4%). Meanwhile, data from the Banyumas Health Office (2022) shows that the number of hypertension sufferers in Banyumas is around 181,948 people aged ≥ 15 years and is divided based on gender, male as many as 74,888 people (41.15%) and female as many as 107,110 people (58.84%). Hypertension cases are expected

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to continue to increase every year. This is due to a lack of understanding of the disease process so that sufferers often realize it too late which can increase the risk of degenerative diseases to death.

Hypertension is difficult to cure, but this disease can be controlled by implementing a healthy lifestyle. Hypertension control can also be done pharmacologically and non-pharmacologically. The pharmacological approach involves antihypertensive drugs, while for non-pharmacological ones, herbal plants can be utilized, one of which is pandan leaves (Sasabone, Aulya and Widowati, 2023).

Pandan is one of the plants that is often used for food ingredients, food coloring, and flavoring. Planting pandan is also very easy and the plant can also grow by itself. Pandan has a delicious aroma and taste so that people only use it as a food ingredient. But actually pandan leaves have various benefits that are good for health.

Pandan wangi contains flavonoids, alkaloids, saponins, tannins, polyphenols which can be used as antibacterial, anticancer, and antioxidants. In addition, pandan leaves also contain essential oils composed of sesquiterpene hydrocarbons (6-24%) and monoterpene linalool (6%) and there are aroma components in pandan leaves in the form of 2 acetyl-1-pyrroline (10%) (Al-Mira 2021). The flavonoid content in pandan is also good for treating hypertension because it can inhibit ACE so that the change of angiotensin I to angiotensin II can be prevented which will lower blood pressure (Sasabone, Aulya and Widowati, 2023). The linalool compound is also thought to cause antidepressants so that it is good for reducing stress, increasing relaxation, and causing the nervous system to become stable (Inaku 2023).

The results of a preliminary study conducted in November 2023 obtained data from 31 people in RW 05 Banteran Village, there were 18 people who suffered from hypertension. Hypertension sufferers rarely undergo health checks and often ignore the programs that have been given. In addition, the community is still unaware of the benefits of pandan leaves as one of the interventions that can be done to lower blood pressure.

Based on the description above, the author is interested in implementing nursing in the

form of applying boiled and aromatherapy pandan leaves to reduce blood pressure in RW 05 Banteran Village, Sumbang District, Banyumas Regency.

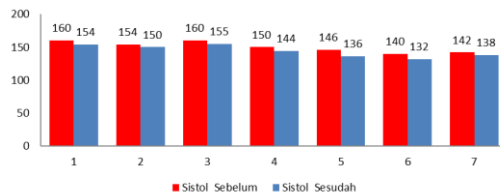
METHOD

Intervention analysis based on the implementation of Evidence Based Nursing (EBN) in nursing practice. The case study uses an activity flow based on Polit and Beck (2012) regarding the EBN implementation process. There are five stages carried out in the implementation process, namely compiling PICO questions (Problem, Intervention, Comparison, and Outcome) to be solved, tracing evidence related to the case discussed, assessing the evidence obtained, implementing according to the evidence, and evaluating the implementation of EBN. The first stage is compiling questions that refer to PICO, namely "what interventions are given to lower blood pressure in people with hypertension?". Then, a search was conducted using electronic media, namely the Google Scholar database with articles from 2019-2023 and 10 articles were obtained that were in accordance with the research objectives. Then after that, a review of the article was carried out and it was found that giving boiled pandan leaves was a nursing intervention that could be used. The next stage is implementing EBN on patients for 7 days from December 11 to 17, 2023. Therapy is given once a day, namely in the morning, then on the seventh day, blood pressure monitoring is carried out as an evaluation..

RESULT

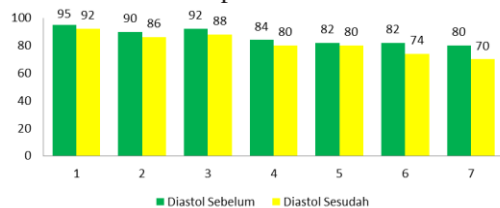
Based on Before the implementation of drinking boiled pandan leaves, the author conveyed the purpose, procedure, and time contract to the client who would take the action. During the intervention process, the client could process the pandan leaf concoction at home after being given direction by the author. The client was asked to consume the boiled water once a day in the morning after breakfast. The client was then monitored for blood pressure 15 minutes after drinking the boiled water and did aromatherapy every day.

Figure 3.1 Systolic Blood Pressure Monitor Before and After Implementation



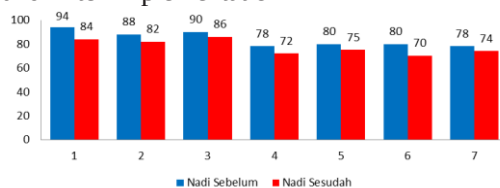
Based on the graph above, it can be concluded that the client's systolic blood pressure decreased every time they applied pandan leaf decoction and aromatherapy. The average decrease before and after application was 4.4 mmHg, while the decrease from the first to the seventh day was 18 mmHg (12.5%). However, on the third day, the client's blood pressure increased because the client experienced stress which could affect their eating and rest patterns.

Figure 3.2 Diastolic Blood Pressure Monitor Before and After Implementation



Based on the graph above, it is obtained that the client's diastolic blood pressure decreased. The average decrease before and after implementation was 5.1 mmHg, while the decrease from the first to the seventh day was 15 mmHg (15.8%). On the 3rd day, diastolic pressure tended to increase. This condition is in line with the systolic pressure graph which states that the increase in blood pressure on that day was caused by stress.

Figure 3.3 Heart Rate Frequency Monitor Before and After Implementation



Based on the graph above, it is found that the client's heart rate frequency has decreased. The average decrease before and after implementation is 7x/minute. While the decrease from the first to the seventh day is 16 mmHg (17%).

During the implementation, the author also conducted observations both before and after the intervention. Before implementing the decoction and aromatherapy of pandan leaves, the client said he felt hesitant because he did not know the

benefits of pandan leaves in overcoming hypertension, but the client seemed cooperative and brave enough to try to overcome his health problems. After implementing it, the client said that treatment using pandan leaves tended to make the client more comfortable, in addition to its fragrance, the taste of the boiled water tended to be sweet so that the client did not hesitate to continue the treatment process.

DISCUSSION

Hypertension treatment can be done pharmacologically or non-pharmacologically. Pharmacological treatment can be done by taking drugs such as amlodipine, bisoprolol, furosemide, candesartan, captopril, and valsartan. While non-pharmacological treatment can be done with relaxation techniques, lifestyle changes, and consuming herbs that can cause vasodilation in blood vessels (Sasabone, Aulya and Widowati, 2023). One of the non-pharmacological actions that can be done is therapy using fragrant pandan leaves, namely as a decoction and aromatherapy.

Based on the interview results on December 11, 2023, Mr. W said he had never tried treatment using pandan wangi leaves. Usually prefer to use over-the-counter drugs to treat pain or headaches. In addition, Mr. W also occasionally applies other complementary therapies, such as boiled pucuk merah leaves to lower his blood pressure. However, this condition did not continue because according to Mr. W, the aroma produced and the taste of the boiled water tended to be bitter so that it was less popular. Meanwhile, the therapy of boiled pandan wangi leaves and aromatherapy itself produces a distinctive aroma and the taste of the decoction tends to be sweet. The aroma produced from pandan wangi leaves comes from essential oils which have the characteristics of a thick, aromatic, and volatile form (Priatomo 2018). While the sweet taste appears naturally through the cooking process.

The intervention process of boiled pandan leaves and aromatherapy was carried out for 7 consecutive days from 11 to 17 December 2023 in the morning. During the intervention, the author measured blood pressure and heart rate before and after the application. In addition, the author also assisted the client in drinking boiled pandan leaves until preparing aromatherapy which was placed in the corner of the room.

On the first day, the client said he was willing to take action because in addition to being easy, the intervention given was also liked by the client. Health interventions that are liked by clients can

increase motivation to consume or receive treatment. This is in line with Ervina's research (2018) which states that having trust and an attitude of availability can increase a person's motivation to apply complementary medicine. The process of treating hypertension tends to take a long time, so motivation is needed to increase a person's ability and willingness with the aim of improving health and well-being (Suling 2023).

Pandan leaf decoction therapy is one of the complementary actions that can be done by consuming boiled water that has been processed beforehand. This therapy is an additional therapy that can be useful for several things such as lowering blood sugar levels, helping treat cancer, reducing heart disease, overcoming hypertension, and many more. Pandan leaves are easy to find and are commonly processed by the community as additional ingredients for cooking. In addition, pandan leaves contain Alkaloids, Flavonoids, Tannins, Saponins, and Polyphenols (Santoso 2019).

Aromatherapy is a complementary therapy program that is carried out using plant extracts. This therapy can be done by utilizing plants that contain essential oils that have benefits such as increasing relaxation, controlling emotions, reducing anxiety, insomnia, and stress (Pratiwi 2020). Aromatherapy using pandan leaves can be done because they contain essential oils and have a distinctive aroma. In this application process, pandan leaf aromatherapy can be done by utilizing the previous boiled results which are placed in a container.

The process of applying the boiled pandan leaves and aromatherapy was then continued until the seventh day, December 17, 2023. During the intervention, Mr. W's blood pressure and heart rate tended to decrease every day. However, on the third day, the client experienced an increase in blood pressure. This was because the client felt stressed due to his work which had a negative impact on eating patterns and sleep patterns. This is in line with Kartika's opinion (2021) that increased blood pressure can occur due to lifestyle problems, genetic factors, age, obesity, stress, rest and activity patterns, and many more. These conditions can increase blockages in blood vessels which will have an impact on blood pressure.

However, overall after applying the pandan leaf decoction and aromatherapy, the systolic and diastolic blood pressure were 142 mmHg and 80 mmHg. Based on this, it was found that there was a decrease in systolic and diastolic blood

pressure for 7 days by 18 mmHg (11.25%) and 15 mmHg (15.8%). In addition, there was a change in heart rate to 78x/minute with a decrease of 16.7%. based on this, it can be concluded that there was a decrease in blood pressure and heart rate of Mr. W after applying the pandan leaf decoction and aromatherapy.

The results of this study are in line with research from Safitri (2021) and research Sasabone, Aulya and Widowati (2023) which gives the result that there is a decrease in blood pressure in hypertension sufferers after applying pandan wangi leaf decoction therapy. In overcoming hypertension problems, this decoction can inhibit the formation of Angiotensin II which can cause vasoconstriction in blood vessels. This is the function of flavonoids that inhibit ACE in the process of changing Angiotensin I to Angiotensin II. In addition, the dominant compound in flavonoids is anthocyanin which can accumulate and protect endothelial cells from free radicals, so that it can maintain Nitric Oxide Synthase (NOS) which causes relaxation in blood vessels (Hannifa, 2020).

The application of aromatherapy using pandan leaves also plays a role in lowering blood pressure and heart rate. This condition is caused by the content of essential oils in pandan leaves containing linalool which can cause a feeling of comfort, smooth blood vessels, and slow the heart rate which can affect the process of lowering blood pressure (Al-mira 2021; Priastomo 2018). This is in line with Inaku (2023) by testing male mice to obtain results that giving pandan leaf aromatherapy can reduce stress in male mice as measured by body weight, feces, and urination. This is due to the content of linalool which will be distributed through the olfactory nerves so that it stimulates the hypothalamus to secrete hormones, enkaphlin, serotonin, and endorphins which can provide a comfortable and relaxing effect, reduce stress and reduce the hormone cortisol in the blood.

CONCLUSION

DM The conclusion from the results of the case study conducted on Mr. W with hypertension health problems is as follows Mr. W's health problem is ineffective health management related to inadequate instructions for action. This is because the client is less aware of the actions that need to be taken to overcome hypertension problems and has unhealthy sleep patterns, eating patterns, and habits. After the

application of pandan leaf decoction and aromatherapy, the results showed a decrease in blood pressure. Systolic pressure decreased by 20 mmHg and diastolic by 24 mmHg. In addition, the client's pulse also decreased from 94x/minute to 78x/minute.

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Table 1. Table Attachment

(Tables must be designed with the table feature in a word processor). For MSOffice version 2013 or later, it is recommended to create tables in a textbox as in the Image Attachment Insert image hereChoose a building block.

Table 1 Frequency distribution based on length of service, education, gender, age and work space (n=248)			
Variables	Category	Frequency	Percentage
Years of service	13 years old	77	31
	4 – 9 years	98	39.5
	More than 10 years	73	29.4
Education	D3	173	69.8
	D4	1	4
	S1 Nursing	73	29.4
	S2	1	4
Gender	Man	111	44.8
	Woman	137	55.2
Age	< 25 years	42	16.9
	26-35 Years	125	50.4
	36-45 Years	72	29
	46-55 Year	9	3.6
	>56 years	0	0
Room	Ade Irma S.	23	9.3
	Cipto MK.	17	6.9
	Cut Nyak Dien	26	10.5
	Diponegoro	24	9.7
Room	Hemodialysis	8	3.2
	ICU	25	10
	Emergency Room	30	12.1
	Imam Bonjol	24	9.7
	OK	28	11.3
	Pattimura	17	6.9
	Soetomo	12	4.8
	VIP	14	5.6



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