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Counseling on Ginger Decoction to Reduce Hypertension Among the Community in Aron Village, Kuta Baro Subdistrict, Aceh Besar Regency

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ABSTRACT

Hypertension is the most common health problem in the world. Approximately one million people worldwide, or one in every four people, suffer from this disease. Hypertension not only gradually reduces the severity of the condition but also contributes to the development of other diseases that cause increased blood pressure and organ damage, such as stroke in the brain, coronary heart disease in the heart, and heart muscle damage. Management of hypertensive patients can be done with a non-pharmacological approach. One traditional medicine that can lower blood pressure is red ginger, which is one of the herbal therapies for treating hypertension. The success of healthcare workers in carrying out their role is expected to help patients overcome hypertension after being given intervention. Based on the results of community service activities in Gampong Aron, Kuta Baro, Aceh Besar, it can be concluded that the community has gained understanding in identifying hypertension and ways to treat hypertension with herbal remedies.

Keywords: Hypertension, Ginger, Herbal Therapy, Non-Pharmacological Treatment

1. Introduction

Hypertension is the most common health problem in the world. Approximately one million people worldwide, or one in every four people, suffer from this disease. Hypertension not only gradually reduces the severity of the condition but also contributes to the development of other diseases that cause increased blood pressure and organ damage, such as stroke in the brain, coronary heart disease in the heart, and heart muscle damage (Desreza, 2023)

Hypertension, as one of the non-communicable diseases, is still known as "*The Silent Killer*" because its symptoms are difficult to recognize and often show no symptoms without complaints (Nonasri, 2021). Hypertension, also known as high blood pressure, is a condition where a person's blood pressure increases above normal, detected by systolic (upper) and diastolic (lower) numbers during blood pressure examination using a mercury sphygmomanometer or other types of digital blood pressure monitors (Apriza, 2020).

Research from the World Health Organization indicates that around a quarter of the global population deals with high blood pressure, with slightly more men than women affected. The majority of cases are found in developing nations like Indonesia. According to data released by the Ministry of Health, hypertension and other heart diseases comprise more than one-third of the causes of death, where hypertension is the second leading cause of death after stroke (WHO, 2018). Based on WHO data from 2021, it is estimated that there are 1.28 billion adults worldwide suffering from hypertension. Most cases come from countries with lower-middle economies. In Southeast Asia, the incidence rate of hypertension in 2020 was 39.9% (Laurensia, 2022).

The prevalence of hypertension in Indonesia in 2018 was 55.2% in the 55-64 age group, 63.2% in the 65-74 age group, and 69.5% in the 75+ age group. Based on measurement results for people aged over 18, the figure was 25.8%. The highest prevalence of hypertension is found in Aceh Province, Indonesia, where hypertension prevalence exceeds 9.7% (Riskesdas, 2020).

According to data from the Aceh Provincial Health Office Profile 2023, hypertension cases reached 464,839 cases across all districts/cities in Aceh. The highest number of hypertension cases in Aceh was in East Aceh Regency with 110,191 cases. The second highest was in East Aceh Regency with 73,318 cases, followed by Simeulue Regency with 33,161 cases. The lowest hypertension cases in Aceh were in Sabang City with 1,441 cases, Gayo Lues Regency with 3,418 cases, and Nagan Raya Regency with 3,423 cases (Aceh Health Office, 2023). Based on data obtained from the Aceh Besar Health Office, the number of hypertension patients in 2023 was 7,285 people from 28 health centers spread across Aceh Besar. The number of hypertension patients in the Kuta Baro Health Center area was 514 people, and the Kuta Baro area ranked fourth with the highest number of hypertension patients (Aceh Besar Health Office, 2023).

Commonly known as high blood pressure, hypertension can lead to serious health issues like stroke, heart attack, and the build-up of plaque in the blood vessels (Faraj et al., 2024). It can also result in ruptures of small blood vessels in the brain, kidneys, and throughout the body. Severe cases of hypertension can even cause a condition called hypertensive encephalopathy, which can lead to a decrease in consciousness or even coma. As such, it is crucial to properly manage hypertension to prevent these complications (Trisnawan, 2019).

Management of hypertensive patients can be done with a non-pharmacological approach. One traditional medicine that can lower blood pressure is red ginger, which is one of the herbal therapies for treating hypertension. Bay leaves contain chemicals that are believed to help lower blood pressure. These include flavonoids, essential oils, potassium, and alkaloids with diuretic properties. The flavonoids in bay leaves can enhance blood flow and prevent blockages in blood vessels. Additionally, flavonoid compounds have the ability to reduce Systemic Vascular Resistance (SVR), induce vasodilation, and impact the function of ACE inhibitors which can prevent the conversion of angiotensin I to angiotensin II. This dual effect of vasodilation and ACE inhibition can result in a decrease in blood pressure (Junaedi, 2018).

In addition, there are also complementary therapies such as herbal therapy that can be used to treat hypertension using medicinal plants such as ginger, turmeric, noni, bay leaves, star fruit, and garlic (Syaifuddin, 2022). Ginger originates from the Pacific Asia region, spreading from India to China. Ginger is widely produced in North Sumatra, Bengkulu, West Java, Central Java, and East Java in Indonesia. It has been traditionally used for treating a range of ailments including hypoglycemia, osteoarthritis, gout, rheumatoid arthritis, migraine, gastrointestinal issues, cardiovascular problems, and liver health (Setyawan, 2019).

Based on the background above, the purpose of this study is to investigate the efficacy of counselling on the use of ginger decoction as a non-pharmacological intervention to lower hypertension among the community of Aron Village, Kuta Baro Subdistrict, Aceh Besar Regency. This method aims to increase public awareness of hypertension and promote the use of herbal treatments, notably ginger, as a complementary therapy to support community health.

2. Methodology

Lecture and question-and-answer activities were conducted in 2024 to provide community understanding about hypertension, symptoms, causes, complications, prevention methods, and treatment of hypertension. This material was delivered by presenters from Abulyatama University Aceh who master the material and were assisted by faculty staff, professional students, and health center staff working in related fields. The material provided contained various issues such as: Lectures covering everything about hypertension, treatment methods, and demonstration of herbal/traditional treatment using red ginger.

3. Results and Discussion

3.1. Research Results

This socialization activity was carried out in the form of programmed lectures and question-and-answer sessions. Activity details can be shown in Table 1 below.

Table 1. Details of Gampong Aron Community Socialization Activities

	Activities
Meeting 1	Specific hypertension education
	Lecture and Q&A about hypertension: definition, treatment methods, demonstration of hypertension treatment

The Gampong Aron community participated as education participants in activities on hypertension. The sessions, consisting of lectures and discussions, proceeded smoothly in a conducive atmosphere. Participants actively responded to the presenters' questions, often with humor, which made the activity more engaging.

The results of providing education and knowledge about everything regarding the definition of hypertension, treatment methods, and demonstration of hypertension treatment in the main subject matter, followed by question-and-answer sessions with the community by the presenters, generally community knowledge regarding hypertension remains suboptimal, especially regarding hypertension treatment. Yet, some community members understood hypertension treatment but had never applied it.

Figure 1. Documentation of Education and Demonstration

After conducting education for the Aron Kuta Baro Aceh Besar community, pre-test and post-test results were obtained as follows:

Table 2. Pre-Test and Post-Test Results

Paired Samples Statistics I					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre_Test	11.3000	10	.98173	.31832
	Post_Test	15.5000	10	.68694	.22344

Paired Samples Test II									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	Pre_Test Post_Test	-2.20000	1.49851	.54222	-3.20136	-1.29964	-6.326	9	.000

Based on the education results provided by Abulyatama University presenters, it was found that the P-value was 0.000, meaning there was a difference before and after providing education about ginger in lowering blood pressure for hypertension in the Aron Kuta Baro Aceh Besar community.

3.2. Discussion

Ginger has benefits in the cardiovascular system by increasing body fluid flow through stimulating blood circulation throughout the body. Ginger is known for its antioxidant properties that can help diminish free radicals and decrease blood pressure by blocking voltage-dependent calcium channels (Ghayur & Gilani, 2005). Ginger can also lower blood pressure by inhibiting ACE activation, which is influenced by ginger content (Al-Azzawie et al., 2014).

Ginger contains flavonoid compounds, saponins, and non-flavonoid phenols. The presence of flavonoids in ginger can inhibit the activity of angiotensin-converting enzyme (ACE), leading to a decrease in the production of angiotensin II. This, in turn, causes vasodilation, reduced cardiac output, and ultimately results in a decrease in blood pressure (Guerrero et al., 2012). ACE inhibition has the potential to enhance levels of nitric oxide while reducing superoxide anions, resulting in vasodilation (Kojsova, 2016).

Ginger has antioxidant properties due to the presence of phenol compounds like (6)-shogaol, (6)-gingerol, and (10)-gingerol (Ghayur & Gilani, 2005). Antioxidants have the ability to decrease the presence of free radicals like thromboxane A2, endothelins, and endoperoxides, which are factors that cause vasoconstriction in the endothelium (Kojšová et al., 2006). Antioxidants can also reduce superoxide anions that can reduce nitric oxide, which plays a role in regulating vascular resistance as a vasodilator (Gladwin et al., 2004).

Ginger not only has flavonoid and phenol compounds but also contains saponins. Saponins are known for their ability to block renin activity in the kidneys, leading to a decrease in angiotensin II production, a hormone that constricts blood vessels. Moreover, angiotensin II is responsible for triggering the release of aldosterone, a hormone that reduces the excretion of salt and water by the kidneys, thereby increasing the heart's pumping power. Consequently, this can elevate blood pressure levels. By reducing the production of angiotensin II, ginger can effectively lower high blood pressure (Chen et al., 2013).

Ginger contains minerals, one of which is potassium at 1.4%. In 100 grams of fresh ginger, there is 415 mg of potassium. Potassium is a nutrient needed to maintain total body volume, acid and electrolyte balance, and cell function. Increasing potassium consumption can lower blood pressure in adults (Aburto et al., 2013). Foods containing potassium are important for managing blood pressure because they reduce sodium effects. Potassium also reduces pressure on vessel walls, subsequently lowering blood pressure. The recommended potassium consumption for adults is 4,700 mg per day (American Heart Association, 2024).

4. Conclusion

The Community Service activities in Gampong Aron successfully achieved multiple educational objectives. The health education program significantly enhanced community understanding of hypertension, while also equipping residents with knowledge of both herbal and traditional treatment methods for managing this condition. These outcomes demonstrate the effectiveness of community-based health education in improving local health literacy and promoting accessible, culturally-appropriate healthcare approaches.

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