Voice of Community (VOC)
Journal of Community Service and Engagement
Vol: 04, No. 01, April 2024, hlm. 25-33
p-ISSN: 2656-6990 | e-ISSN: 2656-6974
homepage: http://journals.ums.ac.id/indx.php/voc

Optimizing Public Health: Socialization of Comprehensive Self-Medication for Hypertension Through Traditional Medicine in Community of Kedon, Rejosari Village, Bandongan District, Magelang Regency

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Article Info:

Submitted: 10 February 2024
Revised: 20 March 2024
Accepted: 20 April 2024
Publisher: 30 April 2024

Keywords: Comprehensive; Self-Medication; Hypertension; Traditional Medicine; Socialization

Abstract

Self-medication is an effort to self-medicate, the implementation of which involves recognizing the symptoms of a disease and selecting the medication on one's own initiative without going to a doctor or other health worker. Hypertension is a health problem that is quite dangerous throughout the world because hypertension is the main risk factor that leads to cardiovascular disease such as heart attack, heart failure, stroke and kidney disease. Alternative medicine or preventative measures are conventional medicine. The use of traditional medicine, especially plants, to improve public health is increasingly widespread. The use of medicinal plants, either alone or in combination, has long been used to reduce the symptoms of high blood pressure. Medicinal plants that are known to lower blood pressure include celery leaves and cat's whisker leaves. Both plants contain compounds that can help prevent high blood pressure. The aim of this activity is to increase public awareness of the importance of maintaining normal blood pressure and to find out the effect of giving traditional plant preparations which can be used as antihypertensives on the blood pressure of residents of RT 3 Bandongan District who experience hypertension.

1. Introduction

Self-medication is an effort to self-medicate, the implementation of which involves recognizing the symptoms of a disease and selecting the medication using one's own

initiative without going to a doctor or other health worker (Siregar et al., 2021). This self-medication can be used as an alternative for the community to reduce medical costs with treatment knowledge obtained from advertisements, brochures or counseling by health workers. So people don't need to go to the doctor to treat minor illnesses such as fever, cough and influenza (Restiyono, 2016).

Hypertension is a health problem that is quite dangerous throughout the world because hypertension is the main risk factor that leads to cardiovascular disease such as heart attack, heart failure, stroke and kidney disease, where in 2016 ischemic heart disease and stroke became the two main causes of death in the world (WHO, 2018). The average blood pressure for adults is 120/80 mmHg. For adults, the normal blood pressure range can vary between 95-145/60-90 mmHg. In general, hypertension is more common in elderly people, but it does not rule out the possibility that people from teenagers to adults can also suffer from high blood pressure. In adolescents and young adults aged 15 to 25 years, the prevalence of hypertension is 1 in 10.

According to Basic Health Research Data (*Riskesdas*) in Indonesia, hypertension sufferers in 2018 reached 8.4% based on doctor's diagnosis in the population aged ≥18 years (Kemeskes RI, 2018). Blood pressure from 2013 to 2018 can be said to have increased, namely around 8.3%. The prevalence of hypertension in Indonesia obtained from blood pressure measurements in residents aged ≥ 18 years has increased from 25.8% in 2013 to 34.11%. Central Java is ranked fourth in the incidence of hypertension in Indonesia, namely 37.57% (RI Ministry of Health, 2018). Central Java Health Profile data, hypertension occupies the largest proportion of reported non-communicable diseases, namely 57.87% (Central Java Provincial Health Office, 2015).

Drug plant traditional has used by para professional medical And industry pharmacy since eraformerly. Utilization drug traditional specifically plant For increase health public the more widespread.Public interest in traditional medicine can be said to be quite high. One of the benefits of using medicines from these plants for humans is their antibiotic effect on various diseases such as flu, coughs, headaches, diabetes, diarrhea, hypotension and high blood pressure (Aulana, 2015). These diseases are diseases that attack many levels of society, both young and old in Indonesia. One of the endemic diseases in Indonesia is high blood pressure. The use of medicinal plants, either alone or in combination, has long been used to reduce the symptoms of hypertension. Medicinal plants that are known to lower blood pressure include celery leaves and cat's whisker leaves.

Celery contains flavonoids, saponins, tannins 1%, essential oils 0.033%, *flavo-glucoside (apiin), apigenin, phytosterols, choline, lipase, pthalides, asparagine, bitter substances, vitamins (A, B and C), apiin, volatile oils , apigenin and alkaloids.* Several compounds contain properties for treating high blood pressure, one of which is *apigenin*. *Apigenin* has *hypotensive* properties. *Apigenin* in celery leaves functions as a beta blocker which can slow the heart rate and reduce the strength of heart contractions so that less blood flow is pumped and blood pressure is reduced. Mannitol and apiin are diuretics, meaning they help the kidneys remove excess fluid and salt from the body, so that reducing fluid in the blood will lower blood pressure.(Saputra & Fitria, 2016). Celery contains *phytosterols* which function to prevent *atherosclerosis*, a complication caused by *endothelial dysfunction* caused by hypertension (Dwinanda et al., 2019).

The next plant that can be used as an *antihypertensive* is cat's whiskers (*Orthosiphonaristatus*). Cat's Whiskers (*Orthosiphon aristatus*) are also used to lower blood pressure in cases of hypertension. The research results showed that respondents used cat's whiskers by boiling the leaves and drinking the boiled water at a rate of 1 glass/day, and based on the interview results, cat's whiskers were quite good in helping lower blood pressure. This is in accordance with research conducted by Augusta CK Lando (2014) which showed that cat's whisker leaf extract (*Orthosiphon stamineus Benth*) reduced systolic and diastolic blood pressure in hypertension sufferers. In anti-hypertension research, cat whiskers contain potassium which is a diuretic and antioxidant, so it can reduce blood pressure Augusta CK Lando (2014). Apart from that, the flavonoid content has a mechanism for lowering blood pressure by improving blood circulation and preventing blockages in blood vessels so that blood can flow normally (Nur et al., 2019)(Ali et al., 2022).

2. Methods of Implementation

The implementation method of health checks and hypertension self-medication for the people of RT 03 Kedon, Rejosari Subdistrict is carried out based on the Participatory Rural Appraisal (PRA) model. This model emphasizes community involvement in the activities carried out. This community service activity was carried out by inviting 17 people from the community, carried out on December 30 2023. This community service activity was carried out in RW 3 Kedon, Rejosari Village, Bandongan District, Magelang City. The stages carried out in the PRA method are:

2.1 Problem recognition

Problem recognition is carried out by identifying problems faced by the community related to self-medication, hypertension management, and health checks.

2.2 Formulation of the problem

The level of public knowledge is low regarding hypertension management and health checks. This condition is a problem that exists in society and will be helped to resolve it by the community service team.

2.3 Identify problem solving

The community service team discussed resolving existing problems in the community of RT 3 Kedon, Rejosari Subdistrict related to low blood pressure, hypertension management, and health checks.

2.4 Selection of problem solving

The community service team provides solutions to solve problems faced by the community of RT 3 Kedon, Kelurahan Rejosari, namely in the form of socialization or counseling related to hypertension, providing health counseling and discussions related to hypertension, treating hypertension, providing education on making pudding and providing health information to the community which is done by checking blood pressure blood.

2.5 Planning the implementation of ideas

The community service team prepares this stage by involving the community so that implementation runs smoothly according to the planned targets. Focus Group Discussion (FGD) was first conducted with the community to discuss the activities to be carried out and the preparation of activity schedules.

2.6 Implementation of organization

Organizing is done by dividing tasks with team members according to their fields and expertise. The head of community service and members who have a pharmaceutical background are tasked with handling the problem of hypertension education, management, educating about treatment using TOGA pudding making for healthy snacks and helping the community to solve problems related to pharmaceutical care. Team members with educational backgrounds will help the community to explain the theory.

2.7 Monitoring and directing activities

To achieve optimal results and in accordance with targets, monitoring and directing activities need to be carried out. Monitoring is carried out in pre-tests and post-tests on participants.

2.8 Evaluation and follow-up plan

Evaluation is carried out at all stages carried out by the community service team, namely the preparation, implementation and report preparation stages. The aim of holding evaluations at all stages is so that there are no obstacles during the activities and all activities run smoothly so that they are beneficial for the community, especially RT 3 Kedon, Rejosari Village.

3. Results and Discussion

3.1 Preparation Phase

Coordinate and discuss with the Head of Rejosari Village Hamlet to provide permission to provide counseling and treatment education related to hypertension.

3.2 Planning Stage

After coordinating and discussing with the head of the Kedon hamlet RT 3 Rejosari village, we started preparing material for the presenters to present to the community on the theme of hypertension and home-made products that can be used at home. There are many plants that can be used as anti hypertensives in traditional medicine. For example, celery leaves and cat's whiskers leaves. And there are several products that will be displayed in the delivery of material regarding hypertension self-medication counseling at RT 3 Rejosari Village, Bandongan District, Magelang Regency. Some traditional products prepared from cat's whisker plants and celery leaves which are believed to have antihypertensive potential include:

A. Cat's Whiskers Extract (*Orthosiphon stamineus*): Cat's whiskers have long been used in traditional medicine in various cultures, including to treat hypertension problems. Cat's whisker extract can usually be found in capsule form (herbal supplement), tea, or liquid extract. The product can be shown in figure 1:

Figure 1. Capsules (herbal supplements) cat's whisker leaves and celery leaves.

B. Cat's Whisker and Celery Tea Drink: The combination of cat's whiskers and celery leaves in the form of tea can be a drink that is known to have potential blood pressure lowering effects. The materials used can be shown in the figure 2:

Figure 2. Tea bags made from cat's whiskers and celery leaves.

C. Herbal Concoction: Some traditional formulations can mix cat's whiskers and celery leaves with other herbs that have blood pressure lowering properties, such as soursop leaves, garlic or black cumin. The herbal concoction can be shown in figure 3:

Figure 3. Herbal concoction (decoction) of cat's whisker leaves and celery leaves.

3.3 Implementation Stage

The implementation stage begins with providing education regarding hypertension starting from explaining hypertension, the causes of hypertension, symptoms that appear, and managing hypertension with the administrators and community of RT 3 Rejosari Village. This activity will be carried out on December 30 2023. It is hoped that this outreach program

will be able to increase public awareness of the importance of maintaining normal blood pressure (Figure 4a). After counseling on self-medication for hypertension, it was followed by a health check including checking blood pressure (Figure 4b).

The next activity was a health check including blood pressure checks for the people of RT 3 Dusun Kedon, Rejosari Subdistrict who had attended the hypertension education event. From the results of the health check, it was found that 6 out of 17 people in RT 3 had hypertension, characterized by diastolic blood pressure exceeding the normal limit, namely the range of 60-90 mmHg. After the event was finished, the session closed with a group photo (Figure 4c).

(a) (b) (c)

Figure 4. Hypertension self-medication activities: (a) Counseling (b) Health Check (c) documentation.

3.4 Health Check Results

From the results of the health check, it was found that 6 out of 17 people in RT 3 had hypertension, characterized by diastolic blood pressure exceeding the normal limit, namely the range of 60-90 mmHg. Patient data can be shown in table 1:

Table 1.Blood Pressure Data

No	Name	Blood pressure
1	Patient A	130/100
2	Patient B	120/110
3	Patient C	130/110
4	Patient D	120/100
5	Patient E	120/100
6	Patient F	120/100

In research conducted by 30 Jamu Saintification doctors who provide traditional herbal medicine services in nine districts. The respondents in this study consisted of 78 subjects who were divided into two groups, namely 40 subjects in the herb group and 38 subjects in the HCT drug group.(Triyono et al., 2018). Data obtained on changes in the patient's blood pressure after drinking the herbal concoction are shown in the following table 2:

Table 2. Blood pressure measurement results for the herb group

Measurement	H-0 (Mean + SD)	D-28 (Mean + SD)	D-56 (Mean + SD)
Systolic (mmHg)	154.12 + 11.20	134.86+ 17.67	130.15+17.59
P	-	0,000 (*)	0,000 (*)

Diastolic (mmHg)	94.12 + 4.65	85.91 + 15.04	83.82 + 9.53
P	-	0,000 (*)	0,000 (*)

Note: p = measurement on D-0 compared to D-28 and D-56, (*) significant if p value < 0.05

Table 2 shows the average blood pressure (systolic and diastolic) of the herb group before intervention (H-0), H-28, and H-56. The results of blood pressure measurements on D-0, the average systolic pressure was 154.12+11.20 mmHg and diastolic pressure 94.12+4.65 mmHg. After intervention for 28 days (D-28), there was a reduction in the subject's blood pressure to 134+17.67 mmHg and 85+15.04 mmHg. This reduction can be said to be statistically significant ($p<0.05$) when compared to blood pressure at the start of the intervention. The last measurement on day 56 (D-56), the subjects' mean blood pressure fell to 130.15+17.59 mmHg and 83.82+9.53 mmHg. When compared to D-0, there was a significant decrease ($p<0.05$) in the blood pressure of the research subjects.

From these results it can be seen that herbal medicines can lower blood pressure, for example cat's whisker leaf and celery herbs. The ability of the herb to reduce the subject's systolic and diastolic blood pressure is influenced by each component of the herbal concoction. Celery (Apium graveolens) has hypotensive and diuretic activity in reducing blood pressure. Hypotensive activity of celery water extract by stimulating muscarinic receptors. In celery leaves, the diuretic activity has an effect on reducing sodium and potassium levels in the blood. Secondary metabolites that play a role in hypotensive and diuretic activity include apiin, mannitol, apigenin, 3-n-butyl phthalide (3nB), and phytosterol. Cat's whiskers (Orthosiphon stamineus) have the ability to reduce sodium and potassium levels in test animals. The quercetin content of cat's whisker leaves can lower blood pressure by preventing platelet aggregation and thrombus. Apart from quercetin, another bioactive that can function as an antihypertensive is sinensetin.

4. Conclusion

Giving herbal concoctions can reduce blood pressure in sufferers of grade I hypertension and is comparable to HCT drugs. This concoction is also safe for use by sufferers of grade I hypertension. This concoction is safe because it does not affect the subject's liver and kidney function until the end of the intervention.

5. Acknowledgements

Expressions of thanks for the implementation of Integrated Community Service (PPMT) Period VIII were conveyed to the Muhammadiyah University of Magelang as an institution that helped and provided a forum for the implementation of Integrated Community Service (PPMT) Period VIII, Community Figures and also the regional administrators of Kedon Hamlet, Subdistrict Rejosari, Bandongan District, Magelang Regency.

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