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Traditional Medicinal Plants for the Prevention and Treatment of Hypertension: A Literature Review

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ABSTRACT

Background: Hypertension is described as a disease that has a high prevalence in Indonesia. If it is not appropriately treated, it will cause advanced diseases such as stroke, heart failure, and kidney damage. Therefore, it is necessary to prevent and give early treatment, one of which is through alternative routine consumption of herbal medicines.
Objectives: This study aims to find out the benefits of herbal medicine for people with hypertension.
Methods: The method used in this research is a literature review. It is carried out in several stages by analyzing relevant previous pieces of literature using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses) flowchart that illustrates the flow of information through the different phases of a systematic review.
Results: A total of 11 reviewed articles show that various herbal plants were obtained with multiple uses to reduce hypertension, and these plants were easy to get and use. It shows that the boiled leaves were the most frequently used part of the plant. Herbal treatment for hypertension aims to enrich antioxidants, block calcium channels, strengthen the endothelium, inhibit ACE, increase without production, and release and decrease biogenic amines. Herbal plants like lemongrass leaves, ginger, gotu kola leaves, and cat's whiskers are useful for lowering blood pressure levels in routine and intensive use without any side effect intervention by boiling.
Conclusion: Education regarding herbal plants for hypertension is also beneficial because the increased insight and knowledge they have reduced the possibility of hypertension occurring in the community
Keywords: Herbal plants; Hypertension; Prevention; Treatment

INTRODUCTION

Hypertension is described as a disease that is highly prevalent in Indonesia. Hypertension is a disease that causes a person to experience increased blood pressure in the arteries. In general, hypertension is described as an asymptomatic condition in which the pressure is abnormally high in the arteries, which, if it continues to increase, will cause further diseases such as stroke, heart failure, and kidney damage.[1] The World Health Organization (WHO) also explains hypertension as an increase in systolic blood pressure higher than 140 mmHg and/or diastolic blood pressure higher than 90 mmHg.[2] Apart from that, the World Health Organization (WHO) data in 2015 showed that around 1.13 billion people were affected by hypertension. It is estimated that there will be 1.5 billion people in the world affected by hypertension in 2025.[3] Based on the statement provided by Riskedas 2018, it was explained that the rate of hypertension in the population over the age of 18 was 31.4%, with an estimated number of cases of 63,309,620 people and the number of deaths of 427,218. It proves that there was an increase in the number of patients with hypertension in 2013, which was only 25.8%.[4]

The increase in the number of people affected by hypertension occurs because many people do not realize that they have hypertension. In addition, some people believe that routine check and ordering medicines at the nearest health care center require quite a large amount of money, and there are even side effects of antihypertensive drugs, such as amlodipine, diltiazem, and felodipine. These include constipation, dizziness,

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weakness, nausea, and swelling.[5] These side effects occur due to chemical-based drugs. Based on this, an effective option for treating hypertension is to use herbal medicines. Medicinal herbal treatment is an essential and cost-effective form of treatment with fewer side effects compared to allopathic treatment.[6] The use of herbal medicine to treat hypertension is supported by the tradition of Indonesian people, who often use traditional medicine to treat various diseases. These plants can be considered part of the cultural heritage and traditional medicine that the community has used.

Plants are common industrial units for the invention of chemical components. These are used to strengthen the immune system and improve the body's natural ability to fight various health problems.[1] Therefore, herbal medicines have several active substances with pharmacological and prophylactic properties that can be used in the treatment of hypertension.[7] An example is cucumber juice, which has been proven to be effective in reducing systolic and diastolic blood pressure in people with hypertension.[8] However, the use of this herbal medicine still needs to be clearly researched regarding the appropriate type of plant and also the appropriate method of processing herbal plants to treat hypertension. Therefore, the novelty of this study is the comprehensive systematic observation methodology using the PRISMA flowchart to launch a rigorous literature on traditional medicinal plants for the treatment of hypertension. This study highlights the importance of education and support to increase public knowledge and reduce the incidence of hypertension. The thematic analysis of traditional medicinal plants provides deeper insight and demonstrates a holistic approach to hypertension treatment.

METHODS

Study Design

The method used in this research is a literature review. It is carried out in several stages by analyzing relevant previous pieces of literature using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses) flowchart that illustrates the flow of information through the different phases of a systematic review. The PRISMA flow diagram visually represents the study selection process in a systematic observation or meta-analysis. The process begins by identifying the dataset through databases and other sources searching, and removing the duplicate records. The remaining records were screened based on title and abstract, and records that did not meet inclusion criteria were excluded. Following this initial review, the full texts of potentially relevant studies were checked for eligibility. Further delivery can be carried out at this stage based on predetermined criteria such as research design, population, intervention, and results. Studies that meet the eligibility criteria will be included in the qualitative synthesis. Some of this research will also be included in a quantitative synthesis (meta-analysis). Throughout this process, the reasons for recording research will be documented at each stage to ensure transparency and reproducibility of visibility.

Search Strategy

Research team members, including the researcher, were involved in the initial search strategy planning. The search was conducted online via journal publication platforms such as Garuda, Pub Med, and ScienceDirect. The article search used English and Indonesian with the keywords.

Eligibility criteria

The inclusion criteria were: (1) articles published in the last five years (from 2019-2023); (2) open access; (3) have full text and explain the plant parts used for the utilization of hypertension treatment as well as an explanation of medicinal plant education to the community; (4) written in English or Indonesian. Exclusion criteria were: (1) absence of the word ‘Hypertension’ in the title in order to target studies with a clear focus on methodological development or use in qualitative research; (2) Mismatch between article title and abstract; (3) studies reported in grey literature; and (4) No full text available.

Data Extraction

In the first stage, articles were searched using the keywords "Herbal plants" AND "Hypertension" AND "Prevention" AND "Treatment." A total of 9,943 articles were obtained without considering other factors, including year of publication and year of research. After that, identification was carried out by filtering articles that were not older than 2019 with no duplicate publications to avoid publication bias. In the duplication identification stage, researchers used the publish or perish tool and Ms. Excel to help speed up the duplication

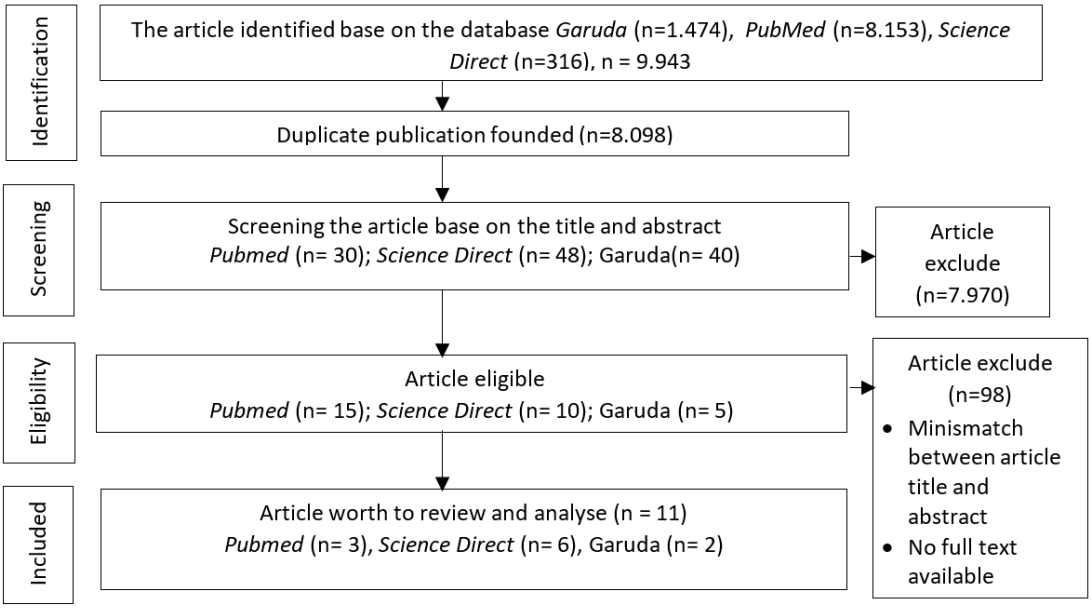

Figure 1 . PRISMA Flow Diagram

identification process. It resulted in 8,089 articles that did not meet the criteria because articles and research were published before 2019, or there was publication bias or both.

At the screening stage, an in-depth analysis was carried out regarding the suitability of the article title and the variables to be studied in this review, and 118 articles were obtained. The 118 articles were analyzed regarding the suitability of the title with the abstract and identifying whether or not a full-text version of the article title was obtained, so the final results in searching for articles that were eligible for analysis according to the criteria were 11 articles.

Analysis

The data were analyzed thematically on traditional medicinal plants for hypertension. Several research team meetings were held during the iterative data extraction and analysis process. Data matrices were used to display the findings according to the scoping review questions.

RESULTS AND DISCUSSION

Based on the results, the identification article was an appropriate scientific knowledge study, which made the recapitulation article scientific.

Table I. shows that public knowledge regarding the growth of herbal plants used as antihypertensives is still general. After counseling and education were held, public knowledge and insight increased. Some people who have used herbal plants as antihypertensives generally use boiled plant leaves. This is supported by previous research, which states that herbal medicine as an antihypertensive can be used by boiling, brewing, grating, and grinding, as has been done by the community in Simbang District.[18] People or respondents consume ½ to 1 glass of boiled plant water every day. Regular consumption results are shown to reduce high blood pressure and make it more stable. The side effects given were relatively mild, so treatment focused on reducing the respondent's blood pressure levels. Several studies have used more than 30 plants to treat hypertension because they contain flavonoids and other supporting compounds. These plants are predominantly in the Composite and Lamiaceae families. The following sub-chapter will provide a more in-depth discussion of this matter.

Traditional herbal medicine is a form of active community participation in solving health problems and has been recognized by many countries for its role in improving public health conditions. In previous journals, it was explained that the Chinese had used herbal medicine as an antihypertensive.[19] The World Health Organization (WHO) recommends the use of traditional medicines, especially herbal medicines, to maintain public health, prevent and treat diseases, especially chronic diseases, degenerative diseases and cancer.[20]

Table I. Study Characteristic

No	Title, Author, Year	Method	Results
1	Phytochemical study, antioxidant, and vasodilation activities of leafy stem extracts of *Flemingia Faginiea* Guill & Perr (Barker), a medicinal plant used for the traditional treatment of hypertension Ouedraogo, Beleemnaba, Nitema, Kabore, Koaala, Ouedraogo, Semde, Ouedraogo 2023[2]	Phytochemical studies were carried out using high performance thin layer chromatography and high performance liquid chromatography techniques coupled with mass spectrometry. The analysis was carried out using the aluminum trichloride colorimetric method to calculate total polyphenols and flavonoids.	The results show that phytochemical studies revealed the presence of flavonoids, tannins, coumarins, sterols and triterpenes, alkaloids and saponins in leafy stem extracts of *Flemingia Faginiea* Guill & Perr can be used for the treatment of hypertension.
2	BMI in the Associations of Plant-Based Diets with Type 2 Diabetes and Hypertension Risks in Women: The E3N prospective cohort study Laouali N, Shah S, Macdonald C, Saleh Y, Fatouhi, Mancini F, Fagherazzi G, Ruault M 2021[9]	A type of statistical quantitative research was used using the FFQ analysis method, namely the Cox regression model.	There were 4.64% cases of T2D (type 2 DM) and 27.14% cases of hypertension. The different relationship between plant-based diets on T2D and hypertension among women has a significant influence. The results show that only plant foods were healthier and partially low-risk.
3	Plants Used as Antihypertensive Verma, Sinha, Bansal, Yadav, Shah, Singh Chauhan 2020[1]	Literature-based qualitative research review of plants that are useful as antihypertensives.	The results show that various plants for the treatment of hypertension were used for the mechanism of action of hypertension. Pharmacological activity influences the pathogenesis of hypertension by modulating several parameters, namely endothelial function, ROS production, pro-inflammatory signals, platelet activation, opening and closing of ion channels, and ACE inhibition.
4	*Pemanfaatan Tanaman Obat sebagai Pengobatan Hipertensi dan Diabetes Melitus* Faoziyah, Rahma dan Febriani 2019[10]	This type of research uses quantitative statistics by conducting pre and post-tests on educational knowledge about medicinal plants in respondents.	The screening results at the Bahagia V Elderly Posyandu had the highest number of sufferers, namely hypertension and diabetes. Providing education increases insight to 30%, from 57.5% to 87.5%, regarding the use of herbal medicines for hypertension and diabetes.
5	Ficus Plants in the Management of Hypertension and Erectile Dysfunction Ajeigebe, Oboh, dan Adomasun 2021[11]	This descriptive qualitative type of research describes how plant Ficus regulates hypertension and erectile dysfunction in a person's body.	The results show that therapeutic drugs offer ED, HBP, and antihypertensive medications for reduction interventions by targeting active enzymes and proteins. The Ficus plant has a function in managing hypertension and erectile disease because it has aphrodisiac properties and has high heart protective power because it contains residual polyphenols.

Table I. (Continued)

No	Title, Author, Year	Method	Results
6	Traditional Herbal Therapies for Hypertension: A Systematic Review of Global Ethnobotanical Field Studies Aumeruddy, Mahonodally 2020[12]	This qualitative type of research is a systematic review within the scope of ethnobotanical studies.	The results show that Compositae and Lamiaceae are the most widely used plant families. In the plant body, 35% of people use leaves for healing, 12% fruit, and 1% roots. The method used is 50% decoction and 22% infusion. The results show that it has been scientifically validated in vitro, in vivo, and in clinical studies before the plant can be considered as an alternative or complementary antihypertensive therapy.
7	*Sosialisasi Ramuan Tanaman Herbal untuk Pengobatan Hipertensi di Desa Blubuk* Nurhidayati, Rejeki, Pramiastuti, Murti 2023[13]	This research uses a quantitative methodology with pre- and post-methods tests on residents in Blubuk village.	From the results of outreach conducted to Blubuk village residents regarding the treatment of hypertension, there was an increase in knowledge of the use of herbal plants in the treatment of hypertension by 10.2%.
8	Traditional Medicinal PlantsUsed by Hypertensive Patients in Belize: A Qualitative Evaluation of Beliefs and Practices Mputhi dan Husaini 2022[14]	This research uses testing methods on 15 plant families which are generally used to control hypertension.	The results show that of the 15 families of plants used, the leaves are the most frequently used part. The boiling method is the most frequently used method, with a recommended daily consumption of ½ to 1 glass. Mild side effects were detected when antioxidants reacted, which were felt to be more efficient in terms of healing.
9	*Pemanfaatan Terapi Herbal dan Pijat Akupresur dalam Terapi Terapi Lanjut Usia* Septianingrum, Nurpalupi, Astuti, Hanafi, dan Setiawan 2020[15]	This research uses a field survey method in Kembangan Hamlet through counseling and field practice.	The results show that elderly residents are not well monitored in terms of their health. After training and counseling, the knowledge and health behavior of residents with hypertension were improved.
10	*Hibiscus Sabdariff*, Treatment for Hypertension Anbaki, Cavin, Nogueira, Tasimi, Ali, Najem, Mahmood, Khaleel, MOHAMMED, Hasan, Marcourt, Felix, Der's, Queiroz, Wolfender, Watissee, Graz 2021[16]	This type of research uses quantitative research with a multicentric comparative method.	The results show that after six weeks, 61.8% of respondents in the intervention group had blood pressure <140/90 mmHg, compared to 6.7% of the control group. The intervention group had a mean reduction of 23.1 mmHg and 12 for systolic diastolic high pressure. In the control group, the reduction was 4.4/3.6. Based on this, the use of anthocyanins and hibiscus acid is effective.

Antihypertensive Herbal Plants

Several studies have shown that several plants are used as antihypertensives, some of which can be seen in the following table.[14,16,17]

Table II. shows that many plants have their leaves taken to be brewed/boiled with water in a consumption capacity of ½ to 1 glass to lower blood pressure levels. From the table of plants that reduce hypertension, many plants are very easy to find in the kitchen and are also used as spices/food ingredients such as onions, lime,

Table I. (Continued)

No	Title, Author, Year	Method	Results
11	Ethnobotanical and Ethnopharmacological Study of Medicinal Plants Used By A Traditional Community in Brazil's Northeastern Magalhaes, Araujo, Santos, Vanderlei, Souza 2020[17]	This research used an interview type of research on 24 interviewees who were residents of Quilombola, Alagoas.	use as plants and the use to fight arterial hypertension, diabetes mellitus, and inflammation. Its general use is boiled as tea. It is commonly used in quilomba groups because people usually plant these plants in their backyards.

Table II. Antihypertensive Herbal Plants

Plant Name	Family	Species	Parts used	How to use
Andu nuts	Fabaceae	*C. cajan*	Leaves and seeds	Brewed and Filtered like Tea
Chinese Senna	Fabaceae	*S. Macranthera*	Seed	Brewed like Coffee
Noni	Rubiaceae	*M. Citrifolia*	Fruit	Juice
Rosemary	Rubiaceae	*S. Rosmarinus*	Leaf	Brewed like Tea
Alecrim				
Asparagus	Asparagaceae	*A. Densiflorus*	Leaf	Brewed like tea
Juntai				
Roselle	Malvaceae	*H. Sabdariffa*	Fruit	Brewed like tea
Soursop	Annonaceae	*Annona muricata*	Leaves and Fruit	The fruit is consumed directly and the leaves can be brewed/boiled
Moringa leaves	Moringaceae	*Moringa oleifera*	Leaf	Brewed
Garlic	Amaryllidaceae	*Alliums sativum*	Bulbs	Raw garlic is consumed directly
Lime	Rutaceae	*Citrus Aurantilofolia*	Leaves and Fruit	Lime juice mixed with water / boiled leaves
Ginger	Zingiberaceae	*Zingiber Officinale*	Ginger/dry root	Boiled
Lemongrass	Poaceae	*Cymbopogon Andripoganeae*	Leaf	Boiled
Breadfruit	Moraceae	*Artocarpus altilis*	Leaf	Eat it straight away
Cat whiskers	Rubiaceae	*Uncaria tomentosa*	Leaf	Boiled
Pineapple	Broromaliaceae	*Ananas comosus*	Fruit	Eat it straight away
Anato	Bixaceae	*Bixa orellana*	Leaf	Boiled
Bukut	Leguminosae	*Cassia grandis*	Bulbs	Consumed directly
Serosion	Cucurbitaceae	*Momordica charantia*	Leaf	Boiled
Trumpet plant	Cecrapiaceae	*Cecropia peltata*	Leaf	Boiled
Cinnamon	Lauraceae	*Cinnamon verum*	Powder	Boiled

lemongrass, and cinnamon. A previous study explained that as many as 1,329 species in 823 genera with 176 families were detected as traditional medicine. The most common families that can be used for hypertension treatment are Compositae, Lamiaceae, Leguminosae, Rosaceae, Apocynaceae, Malvaceae, and Rubiaceae. The use of herbal plants to cure hypertension has been used for a long time. Apart from Indonesia, there are 90 countries that use herbal plants as a cure for hypertension such as 24 countries in Africa, 26 countries in Asia, 20 countries in Europe, 7 countries in North America, 10 countries in South America, 2 countries in Oceania, and

1 country in Marquesas.[12] It shows that herbal plants are used massively in various countries because of their efficacy and effectiveness as a medicine.

Hypertension Treatment

Treatment of hypertension includes non-pharmacological and pharmacological approaches. Treatment decisions depend on whether cardiovascular disease, diabetes, or CKD are already present. The 2017 AHA/ACC guidelines recommend considering the 10-year risk of cardiovascular disease for patients without stage 1 hypertension. If the risk is less than 10%, lifestyle modifications for only 3-6 months are reasonable. For pre-existing stage 2 hypertension, such as diabetes or CKD, and a 10-year risk of cardiovascular events of 10% or more, lifestyle modifications and treatment are recommended.[21]

Consume antioxidant-rich foods and drinks

Based on the results of the study, it was found that antioxidants have a relationship with hypertensive patients. For example, plasma Vit. C levels are inversely proportional to blood pressure. The presence of antioxidants in the body helps circulation and reduces hypertension. One can consume *Camellia sinensis, Zingiber officinale*, and *Terminalia arjuna* to enrich antioxidants.[12] Based on the literature, other studies have shown the benefit of *Camellia sinensis* and *Zingiber officinale* as cardioprotective and antioxidant-rich.[22] The benefits of *Camellia sinensis* (Green Tea) in reducing blood pressure as a tea derived from the *Camellia sinensis* plant which is generally known for its high polyphenol content, particularly compounds like Epigallocatechin gallate (EGCG). The polyphenols present in green tea possess antioxidative and vasodilatory properties. These characteristics can help relax blood vessels, enhance endothelial function, and mitigate oxidative stress, potentially leading to decreased blood pressure. Green tea can be consumed as a beverage, either hot or cold, and is also available in supplement form. Moreover, *Zingiber officinale* (Ginger) is renowned for its anti-inflammatory and antioxidative attributes and has been investigated for its potential to lower blood pressure. Ginger may reduce blood pressure by promoting blood vessel relaxation, improving blood circulation, and inhibiting angiotensin II, a hormone that can cause blood vessel constriction and heightened blood pressure. Ginger can be integrated into your diet by adding it to your meals, brewing ginger tea, or taking ginger supplements.[23] Then, the benefit of *Terminalia arjuna,* an herb utilized in traditional Ayurvedic medicine, has been explored for its cardiovascular advantages, including the possibility of lowering blood pressure. *Terminalia arjuna* may aid in reducing blood pressure by easing the tension in blood vessel walls, enhancing endothelial function, and lessening the workload on the heart. Additionally, it is believed to possess antioxidant and anti-inflammatory properties. *Terminalia arjuna* is accessible in various forms, such as capsules, powders, and extracts, and is commonly used as a dietary supplement.[24]

Inhibiting ACE

ACE inhibition functions to inhibit hypertension levels in patients who also experience diabetes on insulin with nephropathy. The ACE inhibitor plants are *Nigella sativa* and *Tribulus terrestris.*[1]

Pathway dependent/independent endothelium

The endothelium functions as a vasoconstrictor and vasodilation agent, which functions to regulate blood vessel tone and a substance that influences the interaction of blood platelet walls and the growth of vascular smooth muscle cells. The endothelium plays an important role in the distribution of blood in blood vessels. Based on this, a person can consume *Hibiscus sabdariffa* and *Crataegus spp* to facilitate vasoconstrictor substances.[1] In other research explained in the context of searching for natural vasodilators that function in the endothelium pathway, plants are used that are rich in ascorbic acid and phenol compounds. It aims to ensure that these herbal medicines can be used as a stepping stone to overcome endothelial dysfunction. Such plants are *Flemingia faginea* (Guil. and Perr.).[2]

Calcium Channel Blockers

These are drugs that function to limit the body's use of calcium. This drug functions to treat diseases, one of which is high blood pressure. Plants that have calcium ion channel blocker capabilities among them are *Coriandrum sativum, Salvia miltiorrhiza, Crocus sativus, Bidens pilosa, Apium graveolens, Cymbopogon citratus, Coptis chinensis, and Andrographis paniculata.*[1]

PGI2/KATP Channel Opener

KATP channels constitute the trigeminovascular system and are essential in regulating tone in the cerebral and meningeal arteries. Clinical trials also stated that opening KATP had side effects, namely headaches, due to the impact of vascular mechanisms. KATP has an essential role in reducing blood pressure levels in hypertension. PGI2 and KATP are found in plants *Coptis chinensis.*[1]

Improvement without production and release

In this case, the herbal plants that reduce blood pressure and help spread it are *Alliums sativum, Tribulus terrestris, Andrographis, paniculata, Camellia sinensis, and Panax ginseng*.[1]

Biogenic amines depletion

Several plants must be consumed to reduce the depletion of biogenic amines, including *Rauwolfia serpentina*. Biogenic amine is a component that functions as a nitrogen base, formed through the decarboxylation of amino acids.[1]

Herbal Plants and Society

Counseling was conducted at posyandu in Cilacap Regency, consisting of 14 respondents who were diagnosed with hypertension. Testing was carried out through general insight regarding herbal plants and their relationship to hypertension in pre-tests carried out together.[10] After the pre-test, training, and education were carried out regarding herbal plants for hypertension, and an increase in insight occurred by 30%. Another research carried out a pre-test and post-test for making a tensiherb concoction using turmeric, *alang-alang*, celery leaves, gotu kola leaves, palm sugar, and water, then boiled and filtered the juice.[11] Pre-test shows that the initial average result was 54; in the post-test, the final average result was 71.2, with an average percentage value of 31.8%.

Good knowledge about medicinal plants in the community can also be a significant opportunity for the local population. Traditional medicinal plants have great potential as a new commodity that can improve the economic and health status of the community. With a deeper understanding of herbal preparations, the community can produce high-quality herbal products and market them effectively. Herbal preparations made from simplisia (natural materials such as whole plants or plant parts) are essential to traditional medicine in many cultures. Their use can provide a more natural and safe alternative for health. Therefore, education and training in herbal preparation can help the community develop their potential in this field. Furthermore, knowledge of the correct and safe use of medicinal plants is also crucial to prevent negative impacts on public health. This can include understanding the appropriate dosage, potential side effects, and proper storage methods. With the development of education and understanding of medicinal plants and herbal preparations, it is hoped that the community can experience positive changes in economic and health aspects, providing new opportunities for the younger generation to pursue higher education and reduce unemployment rates.[25]

Apart from that, education on the benefits of herbal plants is now increasingly made easier by the existence of social media and electronic tools, which help reach the public more widely and efficiently. The use of social media to promote herbal plants has been carried out,[26] and the educational service on the benefits of herbal plants and juices carried out through social media can be easily accepted by various age groups.

Uses of Herbal Plants

There are several uses for herbaceous plants, some of which are as follows that may be easy to find in society:[13]

Reed plants

The roots contain 1.07% flavonoids, which facilitate diuretic and blood-stopping, cool the blood, reduce glucose, and strengthen the heart.

Turmeric

Turmeric contains curcumin and essential oils, which have a smoothing function of blood and energy in vital organs.

Celery leaves

Leaves function to improve digestion, fever, and flu, increase appetite, and reduce hypertension.

Gotu Kola

Horse's foot leaves reduce hypertension because they contain flavonoids, tannins, steroids, glilpsoda, and folia compounds—hydroceles, which clean the blood, and diuretics.

F. Faginea

In Ouedraogo's research, it was explained that the leaves of this endemic plant can be used to regulate blood pressure and other traditional treatments. In addition, it can be useful as a vaccinator to anticipate endothelium dysfunction.[2]

Ficus

Ficus is a plant that protects the body from high blood pressure. Ficus is an herbal medicine with many phytochemical compounds, namely alkaloids, tannins, triterpenes, and quinones, which ward off oxygen radicals and manage comorbidities from high blood pressure.[8]

A total of 11 articles were successfully processed that show herbal plants are helpful. In addition, these natural substances exhibit the potential to reduce blood pressure. It is essential to bear in mind that individual responses can vary. Moreover, their efficacy may not match that of prescription medications. Therefore, it is crucial to consult a healthcare professional before incorporating these natural remedies into your hypertension management strategy. The healthcare provider can offer tailored advice, monitor blood pressure, and ensure the safety and suitability of these natural remedies, especially in the context of specific health conditions and medications.[24]

CONCLUSION

This research concludes the review of 11 articles. It shows that herbal plants are useful for lowering blood pressure levels. Even though they require a long period of time, regular, and intensive use, they will reduce blood pressure levels without any side effects. In addition, herbal plants are easy to find, and the manufacturing process is easy. Some examples are lemongrass leaves, ginger, gotu kola leaves, and cat's whiskers, which can be boiled in water, and the juice can be drunk. Education and counseling in the community regarding herbal plants for hypertension is also beneficial because increasing the insight and knowledge they have reduces the possibility of hypertension in the community.

STUDY LIMITATIONS

Our study presented some limitations. First, this research focuses on hypertension in general. It does not discuss the use of herbal medicine for certain types of hypertension. Second, the literature is open access. Third, the article must be in full text with an appropriate title and abstract.

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CONFLICT OF INTEREST

None declared.

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