Jurnal Review Pendidikan dan Pengajaran
http://journal.universitaspahlawan.ac.id/index.php/jrpp
Volume 7 Nomor 4, 2024
P-2655-710X e-ISSN 2655-6022

Submitted : 29/11/2024
Reviewed : 01/12/2024
Accepted : 03/12/2024
Published : 07/12/2024

Raymond Hamonangan Manullang[1]
Yulia Dinda Sari[2]
Zahratushahwah Rasyida[3]

IDENTIFICATION OF MEDICINAL PLANT VARIATIONS AND THEIR UTILIZATION BY RURAL AND URBAN COMMUNITIES IN MOJOGEDANG DISTRICT, KARANGANYAR

Abstract
Medicinal plants are types of flora containing active compounds beneficial for preventing, treating, or alleviating various diseases. These plants are often used as part of traditional medicine practices across different cultures worldwide. This study aims to explore the diversity of medicinal plants and their utilization by rural and urban communities in Mojogedang Subdistrict, Karanganyar. The research employed a purposive snowball sampling method, with data collection techniques including observation, semi-structured interviews, and in-depth interviews. The collected data were analyzed using qualitative and quantitative approaches. Based on the study results, 31 species of medicinal plants were identified as being used regularly by the community. The most commonly used species belong to the family Zingiberaceae. Both rural and urban communities predominantly utilize the leaves of medicinal plants for treating illnesses. The findings conclude that utilizing medicinal plants as a natural health resource can support the sustainability of traditional medicine while also meeting modern healthcare needs in the community.
Keywords: Medicinal Plants, Rural, Urban, Use Value (UV), Relative Frequency Of Citation (RFC)

INTRODUCTION

About 80% of the global population in general relies heavily on medicinal plants in the world (Hamidah et al., 2020). The use of plants as medicinal materials has been used since ancient times (Ssenku et al., 2022). Its use is based on traditional knowledge passed down from generation to generation and developed in the community through experience and experimentation (Karahan et al., 2020). Medicinal plants can grow and develop depending on the type of medicinal plant itself. Some plants thrive in lowlands with hot climates, while others require a certain altitude with cooler temperatures. The growth stages of medicinal plants include the germination phase, vegetative growth, until the harvest period when the active substance content reaches its peak. Good management such as watering, fertilizing, pest control, and pruning can improve the quality and quantity of medicinal plant yields. Therefore, efforts to conserve and manage the natural habitat of medicinal plants can be the key to maintaining their benefits for human health.

Medicinal plants play an important role in both modern and traditional medicine in society (Shen et al., 2021). These plants are widely utilized in treatments due to their specific benefits and synergistic capabilities. The compounds found in medicinal plants can significantly aid in treating hard-to-cure diseases, such as cancer. Additionally, the components of medicinal plants are known to help prevent the onset of various chronic illnesses (Rasool et al., 2020). Furthermore, medicinal plants can serve as a source of income for rural or urban communities through harvesting and trade (Applequist et al., 2020). They provide economic opportunities, particularly through the cultivation, processing, and marketing of herbal products with high market value both locally and internationally. Beyond that, medicinal plants contribute to biodiversity and are considered a vital asset in the development of modern medicines.

[1,2,3]Environmental Science Study Program, Faculty of Mathematics and Natural Sciences, Sebelas Maret University
email : rhamonangan56@student.uns.ac.id, yuliadinsa127@student.uns.ac.id, zahratushahwahrasyid@student.uns.ac.id

The growth and development of medicinal plants can be influenced by several environmental factors, including soil conditions, climate, temperature, humidity, and sunlight intensity (Li et al., 2020). Medicinal plants require suitable weather conditions, such as adequate rainfall, to support optimal growth. Soil factors must include good fertility levels, pH, texture, and nutrients such as sodium (Na), phosphorus (P), copper (Cu), and other essential elements to enhance the growth of medicinal plants (Porwal et al., 2020). Adequate nutrition is necessary for medicinal plants to produce optimal amounts of bioactive compounds. A deficiency in nutrients like nitrogen, phosphorus, or potassium can affect both the productivity and quality of the plants. The presence of pests, diseases, and other decomposing organisms can also biologically impact the health of medicinal plants. Additionally, interactions with other plants, whether competitive or symbiotic, are critical determinants of medicinal plant growth.

Rural communities tend to prefer traditional medicines over urban communities due to their accessibility (Mbuni et al., 2020). Rural residents often grow medicinal plants in their home gardens or collect them from the surrounding environment, such as forests or farms. For rural or remote communities, medicinal plants are often the first solution for addressing health issues due to limited access to modern medical services. With relatively low costs, they can utilize local biodiversity to prepare effective and safe remedies. Urban communities typically use medicinal plants in more practical forms, such as herbal extracts, capsules, or herbal teas sold in modern markets. The widespread use of medicinal plants by both rural and urban communities is closely tied to the natural compounds within these plants (Masuku et al., 2020). This study aims to explore the diversity of medicinal plants and their utilization by rural and urban communities in Mojogedang Subdistrict, Karanganyar.

METHOD

Location Research

This research was conducted in Mojogedang Subdistrict, Karanganyar Regency, which was chosen because it covers three research areas, namely Sumberejo Hamlet (rural), Blimbing Hamlet (rural), and Tepus Hamlet (urban). Mojogedang Sub-district is located at coordinates -7.571473 LS and 111.022636 BT, with an average altitude of 380 meters above sea level. The sub-district borders Sragen District to the north, Karanganyar and Karangpandan Sub-districts to the south, Tasikmadu Sub-district to the west, and Ngargoyoso and Karangpandan Sub-districts to the east.

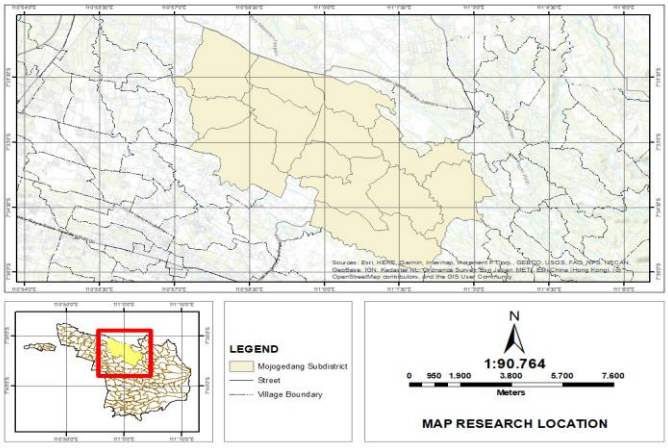

Figure 1. Map of Research Location

Data Collection Technique

This study involved 105 informants spread across 3 regions, consisting of 35 respondents in rural areas (Sumberejo Hamlet), 30 respondents in rural areas (Blimbing Hamlet), and 40 respondents in urban areas (Tepus Hamlet). The respondents selected were in the age range of 20 to 60 years so that they could reflect a diverse population both demographically and geographically. The selection of informants was carried out using a purposive snowball sampling method. According to Putri et al. (2023), purposive sampling is a method of sampling data sources based on certain considerations. For example, samples are selected from individuals who are considered to have expertise or knowledge relevant to the information needed.

The data collected focused on medicinal plant diversity through semi-structured interviews, in-depth interviews, and participatory observation. Semi-structured interviews were used to obtain an overview of the community's knowledge of medicinal plants. In-depth interviews were conducted to explore more detailed information, such as the types of plants often used, processing methods, and medical benefits believed by the community. In addition, participatory observation was applied to directly understand the practice of using medicinal plants in daily life, including how to collect, process and store the medicinal plants.

Data Analysis

Data analysis was conducted qualitatively and quantitatively. Qualitative analysis was calculated using descriptive statistics, while quantitative analysis was carried out by calculating Use Value (UV) and Relative Frequency of Citation (RFC).

1. Use Value (UV)

Use Value (UV) is used to measure the level of utilization of a plant species by the community based on the frequency of its use. The higher the UV value, the more often the species is utilized, especially as a medicinal plant (Sembiring et al., 2022). If the UV value is 0, the plant is considered to have no benefit. However, if the UV value is close to 1, this indicates that the plant has few benefits or is rarely used. The formula is as follows:

$$UV = \frac{U}{N}$$

Description:
UV = Use value
U = Number of uses or benefits
N = Total number of informants

2. Relative Frequency of Citation (RFC)

Relative Frequency of Citation (RFC) serves to measure the level of public recognition of a particular plant species. Sembiring et al. (2022) explained that RFC reflects the value of plant diversity that illustrates the importance of a species locally. If the RFC value is close to 1, this indicates that almost all respondents know and utilize the species. Conversely, an RFC value close to 0 indicates that the species is less known or rarely utilized. The formula is as follows:

$$RFC = \frac{FC}{N}$$

Description:
RFC = Diversity value
FC = Number of informants who mentioned the usefulness of the plant species
N = Total number of informants

RESULTS AND DISCUSSION

Diversity of Medicinal Plants

The results showed that there are 31 medicinal plant species from 18 families known by the community as part of the local plant utilization tradition. These species have various benefits, ranging from the treatment of minor diseases to more complex diseases, and are used in traditional daily health practices. The existence of these plants reflects the local wisdom of communities in sustainably utilizing natural resources to support their health and well-being. The species include nine species from the Zingiberaceae family, two species each from the Poaceae, Myrtaceae, Lamiaceae, Apiaceae, and Asteraceae families, and one species each from the Rhamnaceae, Basellaceae, Menispermaceae, Rutaceae, Phyllanthaceae, Lauraceae, Moringaceae, Asphodelaceae, Thymelaeaceae, Rubiaceae, Acanthaceae, and Piperaceae families.

Table 1. Inventory of medicinal plant species known by the community

No.	Type of Plant	Scientific Name	Famili
1.	Alang-alang	*Imperata cylindrica*	Poaceae
2.	Bidara	*Ziziphus mauritiana*	Rhamnaceae
3.	Binahong	*Anredera cordifolia*	Basellaceae
4.	Brotowali	*Tinospora cordifolia*	Menispermaceae
5.	Jahe	*Zingiber officinale*	Zingiberaceae

6.	Jambu biji	*Psidium guajava*	Myrtaceae
7.	Jeruk nipis	*Citrus aurantifolia*	Rutaceae
8.	Kapulaga	*Amomum aromaticum*	Zingiberaceae
9.	Katuk	*Sauropus androgynus*	Phyllanthaceae
10.	Kayu manis	*Cinnamomum verum*	Lauraceae
11.	Kelor	*Moringa oleifera*	Moringaceae
12.	Kemangi	*Ocimum basilicum*	Lamiaceae
13.	Kencur	*Kaempferia galanga*	Zingiberaceae
14.	Kumis kucing	*Orthosiphon stamineus*	Lamiaceae
15.	Kunyit	*Curcuma longa*	Zingiberaceae
16.	Lidah buaya	*Aloe vera*	Asphodelaceae
17.	Laos/Lengkuas	*Alpinia galanga*	Zingiberaceae
18.	Mahkota dewa	*Phaleria macrocarpa*	Thymelaeaceae
19.	Mengkudu	*Morinda citrifolia*	Rubiaceae
20.	Pegagan	*Centella asiatica*	Apiaceae
21.	Salam	*Syzygium polyanthum*	Myrtaceae
22.	Sambiloto	*Andrographis paniculata*	Acanthaceae
23.	Sambung nyawa	*Gynura procumbens*	Asteraceae
24.	Seledri	*Apium graveolens*	Apiaceae
25.	Serai	*Cymbopogon citratus*	Poaceae
26.	Sirih	*Piper betle*	Piperaceae
27.	Tempuyung	*Sonchus arvensis*	Asteraceae
28.	Temu glenyeh	*Curcuma mangga*	Zingiberaceae
29.	Temu ireng	*Curcuma heyneana*	Zingiberaceae
30.	Temu kunci	*Curcuma aeruginosa*	Zingiberaceae
31.	Temu lawak	*Curcuma xanthorrhiza*	Zingiberaceae

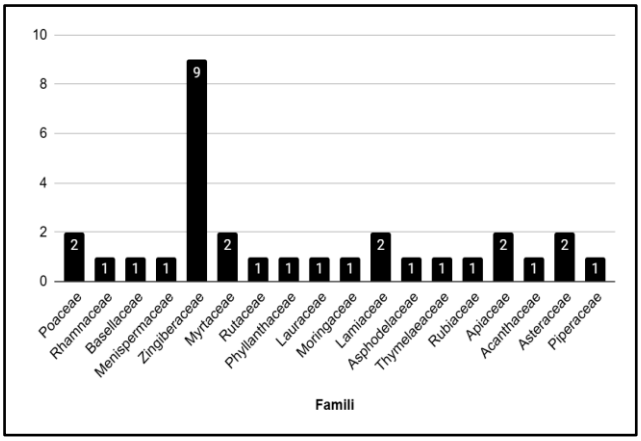

Figure 2. Graph of most families

The most widely used medicinal plant species come from the Zingiberaceae family, such as Zingiber officinale (ginger), Amomum aromaticum (cardamom), Kaempferia galanga (kencur), Curcuma longa (turmeric), Alpinia galanga (galangal), Curcuma mango (temu glenyeh), Curcuma heyneana (temu ireng), Curcuma aeruginosa (temu kunci), Curcuma xanthorrhiza

(temu lawak). The Zingiberaceae family, which is the largest family of the Zingiberales order, is widespread in tropical Asia (Novinovrita and Irawan, 2020) and grows optimally at an altitude of 0 - 2,000 meters above sea level. In Indonesia, this plant is commonly cultivated at an altitude of 200 - 600 meters with an ideal temperature of 20 - 35°C (Azima et al., 2024). Plants of the Zingiberaceae family are globally recognized as food and medicine. The Zingiberaceae family is a group of plants that are used as medicinal plants, with parts such as roots, flowers, leaves, and stems that are often used by the community (Hamidi et al., 2022). In Indonesia, this group of plants is known as ginger and is used for seasoning, traditional medicine such as herbal medicine, cosmetic ingredients, and ornamental plants (Andesmora et al., 2022). The rhizome is rich in bioactive compounds and essential oils that have antimicrobial properties, thus playing an important role in various traditional medicine systems (Rukmana and Zulkarnain, 2022). Kristiana et al. (2022) stated that, according to information from the Ministry of Trade through the Medicinal Plant Commodity Info, the four main rhizomes of medicinal plants with the highest production levels all come from the Zingiberaceae family. Among the four rhizomes, two types, namely Zingiber officinale and Zingiber purpureum, are often used in concoctions to improve fitness and overcome soreness. Essential oils, which are volatile compounds, can be produced from various parts of the plant, including roots, stems, leaves, flowers, and fruits, providing the distinctive aroma that characterizes these plants (Rahayu et al., 2022). Plants from the ginger-ginger group are also easily found in home yards, because people have long cultivated them for medicinal purposes and kitchen spices (Azima et al., 2024). These advantages make the Zingiberaceae family one of the main sources of herbal medicines that are popular and have high economic value.

In addition to the Zingiberaceae family, there are also other families such as Poaceae, Myrtaceae, Lamiaceae, Apiaceae, and Asteraceae, each of which contributes two species of medicinal plants known by the community. Species from the Poaceae family, such as Imperata cylindrica (alang-alang) and Cymbopogon citratus (serai), are plants that have various ecological advantages and practical benefits. According to Rahmayenti (2024), plants from the Poaceae family are known to have high adaptability to various environmental conditions, both in open habitats such as grasslands and under shade. This characteristic makes Poaceae plants able to thrive in various locations, even on less fertile land. In addition, the seeds of these plants are easily dispersed by wind, allowing for a wide and rapid spread. The Poaceae family or known as grass plants have a variety of benefits in everyday life, such as a source of food, medicine, animal feed, building materials, paper, spices, crafts, and household appliances (Izzati et al., 2024).

Further species from the Lamiaceae family are Ocimum basilicum (kemangi) and Orthosiphon stamineus (kumis kucing). Many members of this family have oil glands that produce volatile compounds with antimicrobial, anti-inflammatory, and antioxidant properties. Research by Nanisfi et al. (2024) showed that local communities such as in Kerandangan Hamlet, utilize plants from the Lamiaceae family as part of their local wisdom in traditional medicine. Furthermore, species from the Apiaceae family are Centella asiatica (pegagan) and Apium graveolens (celery). According to Khairullah et al. (2021), plants from this family are characterized by lush branches and stems, and leaves that range in length from 5 to 50 mm with serrated or lobed leaf edges. Plants from the Apiaceae family are known to have antibacterial properties derived from the content of bioactive compounds, such as flavonoids, saponins, tannins, apiin, essential oils, apigenin, choline, as well as vitamins A, B, and C. In addition, these plants also contain compounds that can be used as antimicrobial agents. In addition, the plant also contains bitter compounds such as asparagine, which contribute to its health benefits (Ngelu et al., 2022). However, these plants require specific environmental conditions to grow optimally. They generally thrive in moist soil, such as on riverbanks, ditches, or bushes. Environmental factors, especially sunlight intensity, greatly affect leaf morphology and the levels of bioactive compounds in them. Sufficient sunlight helps increase plant metabolic activity, so that the content of active compounds becomes more optimal (Putri et al., 2023).

Meanwhile, species from the Asteraceae family, namely Gynura procumbens (sambung nyawa) and Sonchus arvensis (tempuyung), are known as cosmopolitan families. This is due to the wide distribution of its species in various regions with temperate, cold, and subtropical climates (Medeiros-Neves et al., 2018). Plants in this family have aesthetic appeal, mainly due to the beauty of their flowers, but their benefits are much broader. Besides being used as medicinal and vegetable plants, they are also popular as ornamental plants. They contain

compounds with antimicrobial, antioxidant, hepatoprotective properties, and exhibit various anti-inflammatory activities, which make them valuable in traditional as well as modern medicine (Audya et al., 2023). Ecologically, plants from the Asteraceae family have an important role to play in erosion prevention, due to their ability to reduce the speed of rainwater flow and stabilize the soil. The roots of these plants are also useful as a living space for soil biota, which in turn helps to increase the content of organic matter in the soil, improve soil quality, and support the diversity of soil ecosystems (Oktarina and Salamah, 2017).

Utilization of Medicinal Plants

Medicinal plants have long been used in traditional medicine to treat various diseases, both as herbal ingredients and as basic ingredients for making modern medicines. The following is the traditional utilization of medicinal plants by the community.

Table 2. Utilization of medicinal plants by the community

No.	Type of Plant	Parts of Used	Usage
1.	Alang-alang	Leaf	Relieve internal heat, maintain endurance, overcome fever
2.	Bidara	Leaf	Overcome sleeplessness, cure mouth ulcers
3.	Binahong	Leaf	Resolve diarrhea, treat gout
4.	Brotowali	Leaf	Treats fever, boosts immunity, prevents cancer
5.	Jahe	Rhizome	Resolve digestive problems, treat muscle pain, lose weight, increase endurance
6.	Jambu biji	Leaf	Resolve diarrhea
7.	Jeruk nipis	Fruit	Overcoming cough
8.	Kapulaga	Fruit	Control blood pressure, treat flu and cough
9.	Katuk	Leaf	Facilitate breastfeeding, overcome diarrhea
10.	Kayu manis	Stem	Control cholesterol and blood sugar, lose weight
11.	Kelor	Leaf	Lower blood sugar levels, control blood pressure, facilitate breast milk production, treat red eyes
12.	Kemangi	Leaf	Resolve body odor, improve blood circulation
13.	Kencur	Rhizome	Overcome indigestion, relieve cough and cold, overcome fatigue
14.	Kumis kucing	Leaf	Relieves rheumatism and gout, controls blood pressure
15.	Kunyit	Rhizome	Relieves menstrual pain, treats wounds and skin infections, lowers cholesterol levels
16.	Lidah buaya	Leaf	Relieves burns, treats hair loss
17.	Laos/Lengkuas	Rhizome	Treats skin infections, relieves sore muscles, boosts immunity, treats coughs and sore throats
18.	Mahkota dewa	Fruit	Improve blood circulation, treat diabetes
19.	Mengkudu	Fruit	Relieve joint pain, maintain healthy skin, lose weight
20.	Pegagan	Leaf	Improve blood circulation, overcome sleeplessness, prevent senile dementia
21.	Salam	Leaf	Prevent diabetes, treat diarrhea
22.	Sambiloto	Leaf	Relieve sore throat, relieve fever, lower blood pressure, lower blood sugar
23.	Sambung nyawa	Leaf	Lowers blood pressure, improves fertility

24.	Seledri	Leaf	Prevent heart disease, control blood sugar, maintain eye health, improve digestion
25.	Serai	Stem	Reduces cholesterol, treats skin diseases, treats nausea and stomach pain
26.	Sirih	Leaf	Overcome body odor, prevent diabetes, maintain feminine health, maintain digestive health
27.	Tempuyung	Leaf	Resolves kidney stones, lowers uric acid levels, lowers blood pressure
28.	Temu glenyeh	Rhizome	Improves digestion, relieves joint pain and muscle pain, facilitates menstruation
29.	Temu ireng	Rhizome	Maintain body immunity, treat rheumatism, treat worms, treat diabetes
30.	Temu kunci	Rhizome	Overcome dry cough, treat stomach ulcers, treat dental diseases
31.	Temu lawak	Rhizome	Maintain immunity, treat diarrhea and abdominal pain, relieve fever, lower blood sugar levels

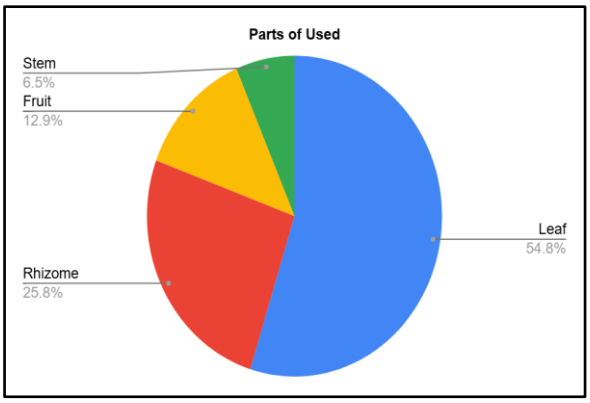

Figure 3. Graph of plant parts used as medicine

The part of the medicinal plant organ that is most often used by the community for disease treatment is the leaf, with a percentage of 54.8%, followed by rhizomes, fruits, and stems in order. According to Utami et al. (2018), plant parts such as leaves, fruits, and rhizomes are often used as the main ingredients in making traditional medicines. Among these organs, leaves are the main choice because in addition to having various properties for health, leaves are also easily obtained and more practical to be processed into medicinal herbs. The abundant content in leaves of vitamins, minerals, antioxidants, and various other compounds makes them very useful as medicinal ingredients (Nanisfi et al., 2024). This makes leaves the most commonly used ingredient in traditional community medicine systems. Apart from being practical, the use of leaves also supports efforts to conserve medicinal plants. As explained by Mulyani et al. (2020), the use of leaves does not have a significant impact on plant survival, making it more sustainable than the use of other organs such as roots and stems. Although the removal of leaves can affect the area where the photosynthesis process takes place, it does not directly impact the growth of the whole plant (Sandika and Putra, 2023). Meanwhile, taking roots or stems can cause structural damage to the plant and even lead to the death of the plant. Therefore, limiting the use of roots and stems is an important step to maintain the sustainability of medicinal plants. Leaves are usually available throughout the year, especially in plants that continue to grow without a specific season. This way, people can utilize medicinal plants sustainably without damaging their habitat or population, while maintaining the biodiversity around them.

Use Value (UV)

Plants with the highest use value (UV) are plant species that have many benefits and are widely known by informants. Conversely, plants with the lowest use value (UV) are plant species that have few properties or are less well known by informants.

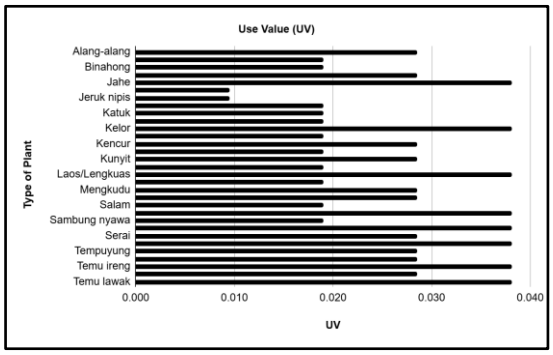

Figure 4. Graph of use Value Index (UV)

Based on the research data, the UV value of medicinal plants in this study ranges from 0.010 to 0.038. Plants with the highest UV value (0.038) include ginger, moringa, galangal, bitter gourd, celery, betel nut, temu ireng and temu luwak. These plants are widely known and have various medical benefits, such as increasing endurance, overcoming digestive disorders, relieving muscle pain, and lowering blood pressure. This shows that these plants have an important role in the traditional medicine of the local community (Lestari, 2022). The high UV value also indicates that these plants are abundant around the study area, making them more accessible to the local community. However, high usage needs to be balanced with conservation efforts to maintain their availability in nature.

Medicinal plants with the lowest UV value (0.010) are guava and lime. Both are reported to have only one benefit each, which is to treat diarrhea and cough. This low UV value can be caused by a lack of public knowledge about the other benefits of these plants or due to relatively less frequent use compared to other plants (Yusro et al., 2020). This condition has the potential to reduce the level of community utilization of these medicinal plant species. Therefore, these plant species require more attention in efforts to preserve and disseminate knowledge about their benefits. Documenting through studies like this is very important to preserve local knowledge and increase awareness about the use of medicinal plants as part of sustainable public health efforts (Umair et al., 2019).

Relative Frequency of Citation (RFC)

Table 3. Respondent data in village, rural and city areas

No.	Type of Plant	Number of Respondents Mentioning			Totally (FC)
		Desa	Rural	Kota	
1.	Alang-alang	26	19	29	74
2.	Bidara	12	9	7	28
3.	Binahong	14	11	8	33
4.	Brotowali	24	17	26	67
5.	Jahe	32	27	36	95
6.	Jambu biji	7	1	10	18
7.	Jeruk nipis	11	3	4	18
8.	Kapulaga	19	9	8	36
9.	Katuk	20	9	11	40
10.	Kayu manis	9	7	`14	16
11.	Kelor	29	19	16	64
12.	Kemangi	13	8	12	33
13.	Kencur	29	22	19	70

14.	Kumis kucing	14	9	4	27
15.	Kunyit	29	22	19	70
16.	Lidah buaya	17	10	24	51
17.	Laos/Lengkuas	29	22	19	70
18.	Mahkota dewa	9	4	7	20
19.	Mengkudu	19	7	9	35
20.	Pegagan	18	5	9	32
21.	Salam	17	13	9	39
22.	Sambiloto	29	14	23	66
23.	Sambung nyawa	9	5	7	21
24.	Seledri	24	27	32	83
25.	Serai	21	16	27	64
26.	Sirih	27	22	30	79
27.	Tempuyung	19	7	9	35
28.	Temu glenyeh	12	9	7	28
29.	Temu ireng	23	20	18	61
30.	Temu kunci	17	8	9	34
31.	Temu lawak	29	22	19	70

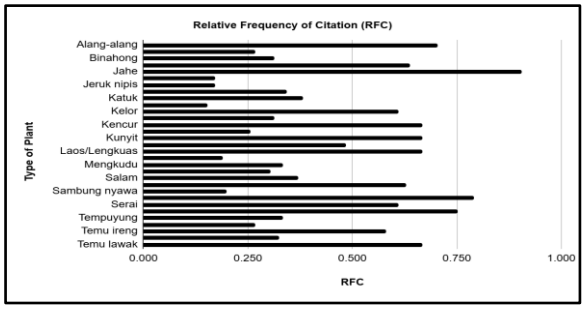

Figure 5. Graph of Relative Frequency of Citation (RFC) Index Value

Based on the calculation of the diversity value (RFC), medicinal plants show significant variations ranging from 0.152 to 0.905. This RFC value reflects the diversity in the level of recognition and utilization of medicinal plants by the community. The highest RFC value reached 0.905 for ginger, which is the most popular and frequently utilized plant in rural and urban areas. The popularity of ginger can be attributed to its diverse medical benefits and good accessibility. Other plants with high RFC values include betel (0.752), celery (0.790), moringa (0.610), and kencur (0.667). The availability of these crops in various regions also reinforces their level of use.

In contrast, crops with the lowest RFC values include cinnamon (0.152), guava (0.171), and lime (0.171). The low RFC value can be caused by the lack of public knowledge about the benefits of these plants or because of their rare presence in the research area (Putri and Setiawan, 2020). This shows the importance of education and preservation efforts to maintain traditional knowledge about medicinal plants. RFC values ranging from 0.152 to 0.905 reflect the level of variation in the introduction and utilization of medicinal plants by the community. These results emphasize the importance of preserving medicinal plants with high value as well as education to introduce the benefits of lesser-known plants, to ensure their continued use as part of local wisdom (Pratama et al., 2019).

ACKNOWLEDGMENTS

The authors would like to express their deepest appreciation and gratitude to the Mojogedang Sub-district Government for their full support during this research process. Thanks also go to the people of Mojogedang Sub-district who have warmly received the research team and provided valuable information and input. Hopefully the results of this research can provide benefits for the development of Mojogedang Subdistrict.

CONCLUSION

This study showed a significant diversity of medicinal plants in Mojogedang Subdistrict, Karanganyar, with 31 species from 18 families known and utilized by the community. These plants have various benefits, ranging from the treatment of minor ailments to more complex diseases. The utilization of medicinal plants by the community is dominated by the leaves, which are often used because of their rich content of vitamins, minerals, and bioactive compounds. In addition, leaf utilization is more sustainable compared to roots or stems, which can damage the plant if taken excessively. In terms of use value, plants with the highest UV value, such as ginger and galangal, have extensive medical benefits and are easily accessible, while plants with the lowest UV value, such as guava and lime, are underutilized. This suggests the need for further education to introduce the benefits of lesser-known plants. In addition, the Relative Frequency of Citation (RFC) value shows that plants such as ginger, betel, and moringa are the most frequently utilized by the community, with the highest RFC value reaching 0.905. Plants with low RFC values, such as cinnamon and guava, require more attention in terms of education and preservation so that they can be optimally utilized by the community.

REFERENCES

Andesmora, E. V., Fevi Mawadhah Putri, Widia Bela Oktaviani, and Dalli Yulio Saputra. 2022. Zingiberaceae: Jenis dan Pemanfaatannya oleh Masyarakat Lokal Jambi. EDU-BIO: Jurnal Pendidikan Biologi. 5(2): 19–30.

Applequist, W. L., Brinckmann, J. A., Cunningham, A. B., Hart, R. E., Heinrich, M., Katerere, D. R., and Van Andel, T. 2020. Scientists' warning on climate change and medicinal plants. Planta medica. 86(01): 10-18.

Audya, D. T., Nurpadila, E., and Supriyatna, A. 2023. Inventarisasi dan Identifikasi Keragaman Famili Asteraceae di Kawasan UIN Sunan Gunung Djati Bandung. Jurnal Riset Rumpun Ilmu Tanaman. 2(1): 117-130.

Azima, M. F., Rahmah, S., and Rahman, F. A. 2024. Analisis Karakteristik Morfologi Famili Zingiberaceae di Desa Segara Katon, Kecamatan Gangga Kabupaten Lombok Utara. Bioindikator: Jurnal Biologi dan Pendidikan Biologi. 1(1): 12-19.

Hamidah, S., Arifin, Y. F., and Fitriani, A. 2020. Studi Hasil Budidaya Secara Eksitu Beberapa Jenis Tumbuhan Obat Sebagai Pertimbangan Konsep Pengembangan Agroforestri Berbasis Tumbuhan Obat. Jurnal Hutan Tropis Volume. 8(1).

Izzati, K. A., Efendi, M. H., and Purwati, N. 2024. Analisis Karakteristik Morfologi Famili Poaceae (Gramineae) di Kawasan Lembuak Kebon, Kecamatan Narmada Kabupaten Lombok Barat. Bioindikator: Jurnal Biologi dan Pendidikan Biologi. 1(1): 20-31.

Karahan, F., Ozyigit, I. I., Saracoglu, I. A., Yalcin, I. E., Ozyigit, A. H., and Ilcim, A. 2020. Heavy metal levels and mineral nutrient status in different parts of various medicinal plants collected from eastern Mediterranean region of Turkey. Biological Trace Element Research. 197: 316-329.

Khairullah, R. A., Solikhah, I. T., Ansori, M. N. A., Hidayatullah, R. A., Hartadi, B. E., Ramandiniato, C. S., and Amaq, F. 2021. Review on the pharmacological and health aspects of Hylocereus or Pitaya: An update. Journal of Drug Delivery and Therapeutics. 11(6): 297–303.

Kristiana, L., Paramita, A., Maryani, H., and Andarwati, P. 2022. Eksplorasi Tumbuhan Obat Indonesia untuk Kebugaran: Analisis Data Riset Tumbuhan Obat dan Jamu Tahun 2012, 2015, dan 2017. Jurnal Kefarmasian Indonesia. 12(1): 79-89.

Lestari, N. 2022. Pemanfaatan Tanaman Obat Keluarga (TOGA) di Desa Jirak Kabupaten Sambas. Jurnal Paradigma: Jurnal Multidisipliner Mahasiswa Pascasarjana Indonesia, 3(1): 23-36.

Li, Y., Kong, D., Fu, Y., Sussman, M. R., and Wu, H. 2020. The effect of developmental and environmental factors on secondary metabolites in medicinal plants. Plant physiology and biochemistry. 148: 80-89.

Lutfiasari, N., and Dharmono, D. 2018. Keanekaragaman Spesies Tumbuhan Famili Myrtaceae di Hutan Pantai Tabanio, Kecamatan Takisung, Kabupaten Tanah Laut. In Prosiding Seminar Nasional Lingkungan Lahan Basah. 3(1).

Masuku, N. P., Unuofin, J. O., and Lebelo, S. L. 2020. Promising role of medicinal plants in the regulation and management of male erectile dysfunction. Biomedicine and Pharmacotherapy. 130: 110555.

Mbuni, Y. M., Wang, S., Mwangi, B. N., Mbari, N. J., Musili, P. M., Walter, N. O., ... and Wang, Q. 2020. Medicinal plants and their traditional uses in local communities around Cherangani Hills, Western Kenya. Plants. 9(3): 331.

Medeiros-Neves, B., Teixera, H. F., Von Poser, G. L. 2018. The Genus Pterocaulon (Asteraceae) – a Review on Traditional Medicinal Uses, Chemical Constituents and Biological Properties. J. Ethnopharmacol. 224: 451–464.

Mulyani, Y., Hasimun, P., and Sumarna, R. 2020. Kajian Etnofarmakologi Pemanfaatan Tanaman Obat Oleh Masyarakat Di Kecamatan Dawuan Kabupaten Subang Provinsi Jawa Barat. Jurnal Farmasi Galenika (Galenika Journal of Pharmacy)(e-Journal). 6(1): 37-54.

Nanisfi, M., Hidayati, A., Diniah, S., and Syukur, A. 2024. Utilization of Traditional Medicinal Plants by the Kerandangan Hamlet Community in the Kerandangan Nature Tourism Park, West Lombok. Jurnal Biologi Tropis. 24(2): 761-768.

Ngelu, F. Y., Marbun, F. D., Sihombing, A. M., Manalu, Y., Ate, V. R. K. M., and Riswanto, F. D. O. 2022. Potensi Ekstrak Seledri (Apium Graveolens L) Sebagai Antibakteri. Jurnal Jamu Kusuma. 2(1): 23-29.

Novinovrita, M., and Irawan, B. 2020. Etnobotani Familia Zingebaraceae (Suku Jahe-Jahean) di Desa Koto Dua Lama Kecamatan Air Hangat Kabupaten Kerinci. Symbiotic: Journal of Biological Education and Science. 1(1): 31-41.

Oktarina, R., and Salamah, A. 2017. Species identification of Asteraceae family at Universitas Indonesia, Depok. Jurnal Pro-Life. 4(1): 241-249

Pratama, G., Sari, D. M., and Nugroho, A. (2019). Analisis nilai RFC pada Tumbuhan Obat di Kawasan Konservasi. Jurnal Penelitian Kehutanan. 14(1), 88-97.

Putri, L. M., and Setiawan, B. (2020). Potensi Tanaman Obat sebagai Upaya Pelestarian Kearifan Lokal. Jurnal Biodiversitas Tropika. 7(3), 45-52.

Putri, N. I., Dwiputri, N. T., and Supriyatna, A. 2024. Inventarisasi Tiga Jenis Famili Tumbuhan Berberda di Universitas Islam Negeri Sunan Gunung Djati Bandung. Polygon: Jurnal Ilmu Komputer dan Ilmu Pengetahuan Alam. 2(4): 49-58.

Putri, N. S., Susanti, I., and Jayati, R. D. 2023. Eksplorasi Jenis Tumbuhan Berpotensi Anti Influenza Di Kecamatan Sumber Harta. Nusantara Hasana Journal. 3(3): 168-178.

Porwal, O., Singh, S. K., Patel, D. K., Gupta, S., Tripathi, R., and Katekhaye, S. 2020. Cultivation, collection and processing of medicinal plants. Bioactive Phytochemicals: Drug Discovery to Product Development. 17: 14-30.

Rahayu, A. O. S., Wati, Y. S., and Herawati, M. 2022. Peningkatan Kesehatan Masyarakat Melalui Pemberdayaan Wanita dalam Pemanfaatan Tanaman Obat Keluarga (TOGA) di Wilayah Kerja Puskesmas Rejosari Pekanbaru. Abdimas Universal. 4(1): 84–88.

Rahma, A. M., Zahra, A., and Supriatna, A. 2023. Inventarisasi Tumbuhan Famili Myrtaceae Di Kampung Andir, Rt. 01/Rw. 08, Desa Rancamulya, Sumedang. Jurnal Riset Rumpun Ilmu Tanaman. 2(1): 53-64.

Rahmayenti, S. 2024. Tumbuhan Obat yang Ditemukan di Dataran Tinggi Kabupaten Solok. Jurnal Pendidikan, Sains dan Teknologi. 3(2): 254-264.

Rasool, A., Bhat, K. M., Sheikh, A. A., Jan, A., and Hassan, S. 2020. Medicinal plants: Role, distribution and future. Journal of Pharmacognosy and Phytochemistry. 9(2): 2111-2114.

Rukmana, R., and Zulkarnain, Z. 2022. Etnobotani tanaman obat Famili Zingiberaceae sebagai bahan herbal untuk kesehatan di masa Pandemi Covid-19. Teknosains: Media Informasi Sains Dan Teknologi. 16(1): 74-80.

Sandika, S., and Putra, N. 2023. Identifikasi Jenis Tumbuhan Obat di Kecamatan Tanah Pinem Kabupaten Dairi. Biocaster: Jurnal Kajian Biologi. 3(4): 248-255.

Sembiring, M. B. 2022. Etnobotani Tumbuhan Berkhasiat Obat Yang Dimanfaatkan Oleh Masyarakat Di Desa Namo Mbelin Kecamatan Namorambe. BIOMA: Jurnal Biologi dan Pembelajarannya. 4(2): 26-34.

Shen, T., Yu, H., and Wang, Y. Z. 2021. Assessing the impacts of climate change and habitat suitability on the distribution and quality of medicinal plant using multiple information integration: Take Gentiana rigescens as an example. Ecological Indicators. 123: 107376.

Ssenku, J. E., Okurut, S. A., Namuli, A., Kudamba, A., Tugume, P., Matovu, P., ... and Walusansa, A. 2022. Medicinal plant use, conservation, and the associated traditional knowledge in rural communities in Eastern Uganda. Tropical Medicine and Health. 50(1): 39.

Umair, M., Altaf, M., Bussmann, R. W., and Abbasi, A. M. 2019. Ethnomedicinal Uses of the Local Flora in Chenab Riverine Area, Punjab Province Pakistan. Journal of Ethnobiology and Ethnomedicine Journal of Ethnobiology and Ethnomedicine 15(1): 1–31.

Utami, N. R., Rahayuningsih, M. A. R. G. A. R. E. T. A., Abdullah, M., and Haka, F. H. 2019. Etnobotani tanaman obat masyarakat sekitar di Gunung Ungaran, Jawa Tengah. In Prosiding Seminar Nasional Masyarakat Biodiversity Indonesia. 5(2): 205-208.

Yusro, F., Pranaka, R. N., Budiastutik, I., and Mariani, Y. 2020. Pemanfaatan Tumbuhan Obat oleh Masyarakat Sekitar Taman Wisata Alam (TWA) Bukit Kelam, Kabupaten Sintang, Kalimantan Barat. Jurnal Sylva Lestari. 8(2): 255-272.