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Diversity and use medicinal plants for traditional women's health care in Kalibawang, Wonosobo District, Indonesia

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Abstract. *Nuraini A, Rabbani AH, Jagatru AS, Azzahra AN, Azizia MS, Yasa A, Saensouk S, Setyawan AD. 2023. Diversity and use medicinal plants for traditional women's health care in Kalibawang, Wonosobo District, Indonesia. Asian J Ethnobiol 7: 145-155.* Indonesia, known as a country with "mega-biodiversity" and cultural diversity, has large and diverse natural resources, including medicinal plants that have not been fully explored. These medicinal plants play an important role in primary health care, as well as for women health care in various ethnics across the country. This study aims to determine the plants used for women's health in Kalibawang Sub-district, Wonosobo District, Central Java, Indonesia, with a focus on menstruation, pregnancy, lactation, and postpartum recovery. The research methods include interviews with 106 people who have knowledge of medicinal plants and field observations. The results of the study identified 33 plant species from 17 families for women health care, with the Zingiberaceae family as the mostly used. Plants such as *kunyit* (*Curcuma longa*), *jahe* (*Zingiber officinale*), *katuk* (*Sauropus androgynus*), and *sirih* (*Piper betle*) have an important role in women's reproductive health. *Curcuma longa* ranked highest in SUV (0.557) and RFC (0.038), with a Fidelity Level (FL) of 100%, reflecting consistent use for specific purposes. The study also found that medicinal plants not only provide physical health benefits, but also significant cultural and spiritual values for local communities.

Keywords: Health, mega-biodiversity, traditional medicine, women

Abbreviations: FL: fidelity level, RFC: relative frequency of citation, SUV: species use-value

INTRODUCTION

Indonesia is globally recognized as a "mega-biodiversity" country due to its vast natural resources, including a rich variety of medicinal plants. These plants play a significant role in healthcare, with Indonesia boasting approximately 110 million hectares of forest containing around 28,000 plant species. Among them, 7,000 species are medicinal plants, representing about 90% of Asia's total medicinal plant species (Kusuma et al. 2014; Cahyaningsih et al. 2021). The use of these plants has a long-standing tradition in Indonesia, predating modern medicine and remaining a key source of treatment for humans and animals (Salmerón-Manzano et al. 2020; Jamil et al. 2022).

The ethnobotanical identification of medicinal plants is a vital step in quality assurance for traditional medicine and discovering new therapeutic compounds (Ramdane et al. 2015). Despite the global rise of modern medicine, around 70-80% of the population worldwide continues to rely on medicinal plants for healthcare, driven by factors such as preventive health benefits, perceived safety, and cultural ties (Shanthi and Izzati 2014; Baydoun et al. 2015). In Indonesia, one of the most notable traditional medicines is *jamu*, herbal drink used for centuries to maintain health and treat illnesses. Considered safer than chemical-based drugs, *jamu* remains an integral part of Indonesian life, despite its often bitter taste (Sumarni et al. 2019; Fortuna et al. 2023).

In rural areas, natural medicines derived from the local environment are often used to address various ailments (Taek et al. 2019). Medicinal plants also hold a special place in women's healthcare, particularly for prenatal care, childbirth, and postpartum recovery (Susandrini et al. 2021). Women across Indonesia's ethnic groups have traditionally utilized medicinal plants to meet their health needs, solidifying *jamu* as a cultural practice. For instance, *jamu kunyit asam* made from turmeric and tamarind—is widely used to alleviate premenstrual syndrome (PMS) symptoms due to its analgesic and anti-inflammatory properties (Yusuf and Nurkhasanah 2015). Many women also consume *jamu* during the postpartum period to aid recovery (Yunitasari et al. 2017).

Around 50% of Indonesians aged 15 and above regularly consume *jamu* for health purposes. It is available in various forms, such as capsules, infusions, decoctions, and liquid tonics (Pangesti 2021). Among Indonesian women, *jamu* is especially valued for reproductive health. This highlights the potential of medicinal plants as an

affordable and culturally acceptable alternative to synthetic drugs.

The use of medicinal plants in women's health is not unique to Indonesia. Across Southeast Asia and beyond, herbal remedies are widely used to address issues such as fertility, menstrual regulation, and postpartum recovery. In Jordan, for instance, traditional medicine plays a crucial role in women's reproductive health, while in Katsina State, Nigeria, medicinal plants have been used for maternal health care for generations (Nagulapalli et al. 2017). Similarly, in rural Madagascar, communities with limited access to modern medicine rely heavily on medicinal plants for treatment (Rakotoarivelo et al. 2015). Studies in the United States and Australia also indicate that herbal products are used by a significant portion of pregnant women—45% in the U.S. and 36% in Australia (Kissal et al. 2017).

Indonesia's rich biodiversity offers significant potential for research on medicinal plants, especially in addressing health challenges specific to women. These include reproductive disorders, menopausal symptoms, and mental health issues. With growing concerns over the side effects of conventional drugs, medicinal plants provide a safer, natural alternative. Furthermore, such research promotes sustainability, healthcare independence, and the preservation of traditional knowledge.

This study focuses on identifying and documenting local herbal plants used in the Wonosobo area to address women's health issues. Wonosobo, known for its traditional practices, is an ideal location to explore the role of medicinal plants in health care. The research aims to raise awareness about the potential of herbal plants as sustainable treatments, offering affordable and culturally rooted solutions for women's health.

By advancing research on medicinal plants, these findings are expected to contribute not only to scientific knowledge but also to the well-being of women across diverse communities. Medicinal plants have the potential to improve quality of life by providing natural, cost-effective, and culturally resonant health solutions. In doing so, they reaffirm the enduring value of traditional medicine in a modern world.

MATERIALS AND METHODS

Study area

This research was conducted in four villages in Kalibawang Sub-district, Wonosobo District, Central Java Province, Indonesia, including Dempel Village, Karangsambung Village, Kalialang Village, and Mergolangu Village. The research area is located at coordinates 7°21′ N and 109°53′ E, with an area of 4,780 hectares or 4.86% of the area of Wonosobo District. The average temperature in this area is 22°C with rainfall of 264.40 mm/month in 2023. Based on BPS data in 2024, Kalibawang Sub-district is a mountainous area with an altitude of 643 to 984 meters above sea level (masl). This area has an average land slope of around 10 to 40%. In general, the land in Kalibawang Sub-district is classified as very fertile, so it has great potential for various types of plant cultivation, such as agriculture, food crops, horticulture, and plantations. The residents here are typical Javanese people who live in remote villages, where almost all of the population are Javanese, some of whom still adhere their Muslim ancestral culture, such as the celebration of the Javanese/Hijri New Year (*Merdi Dusun*), the birth of the Prophet Muhammad SAW (*Muludan*), grave pilgrimages to welcome Ramadan (*Ruwahan*), post-burial rituals (*Sur Tanah, Slametan, Yasinan*), etc.

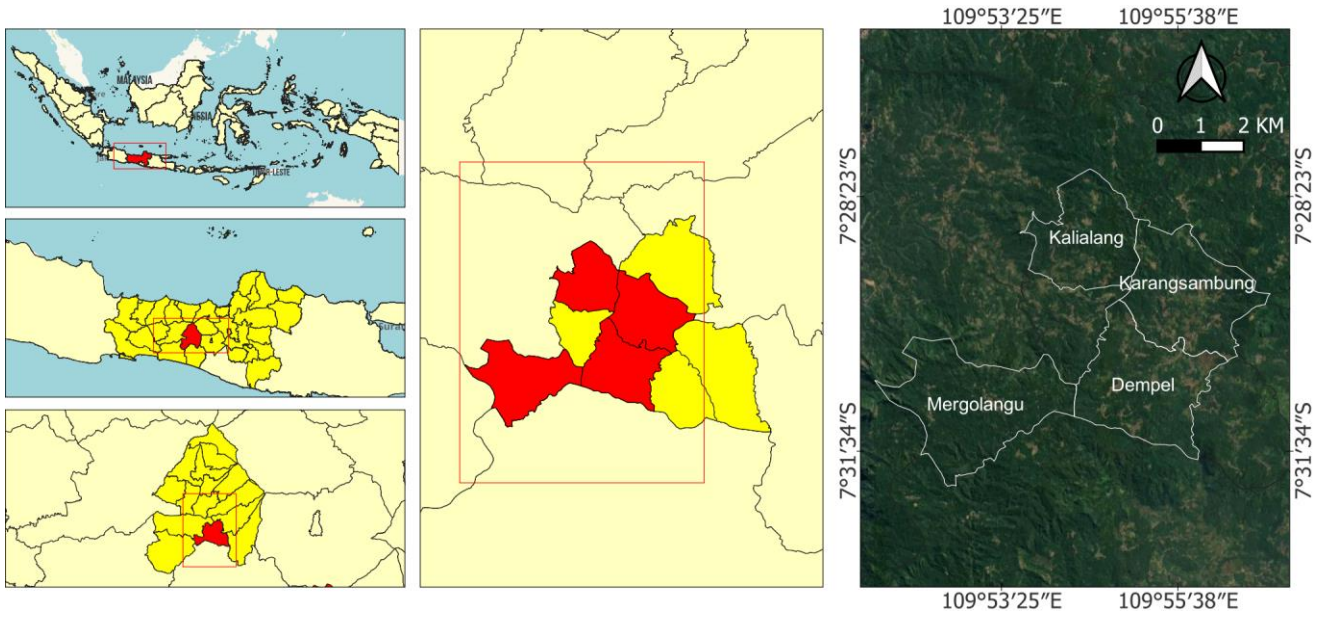

Figure 1. Map of the research area in Dempel, Karangsambung, Kalialang, Mergolangu Villages in Kalibawang Sub-district, Wonosobo District, Central Java, Indonesia

Procedures

This study uses primary data collected through semi-structured interviews and observations at the research location in October 2024. Interviews are the main method for collecting primary data in qualitative research (Adhabi and Anozie 2017). The purpose of this interview is to collect data related to etomedics. Based on data from the Central Statistics Agency (BPS) in 2024, the population of Kalibawang Sub-district was 27.101 people, consisting of 13,951 men and 13,150 women. The criteria for informants in this study were men or women who had good verbal skills and knew information about the use of plants for women's health, aged over 17 years old, had a minimum elementary school education, and were domiciled in the research area. The interviews focused on the traditional use of plants in maintaining women's health, including local plant names, categories of use, plant parts used, forms, preparation methods, and how to apply them. The local plant names that had been obtained were then identified by their scientific names using Plants of the World Online (POWO). In addition to interviews, field observations and plant documentation were also carried out to directly identify the types of plants that grow and are used by the local community for the purpose of maintaining women's health. Data from this observation aims to enrich information regarding plant availability and plant utilization patterns for women's health.

Data analysis

This study uses quantitative analysis with three quantitative indices applied, namely SUV, RFC, and FL in accordance with previous research by Utaminingrum et al. (2020) and Kosimov et al. (2023):

$$\text{SUV} = \Sigma \frac{Ui}{N}$$

$$\text{RFC} = \frac{Fc}{N}$$

$$\text{FL} = \frac{Ip}{Fc} x\ 100$$

SUV (Sum of Use Value*)* value shows the total benefits of a particular plant species utilized by the community. Where Ui value is the number of categories of utilization of a particular plant species and N is the total number of respondents. RFC (Relative Frequency of Citation) value is used to determine the relative frequency of the community knowing the benefits of a particular plant species. Where Fc is the frequency of mentioning a particular plant species and N is the total number of respondents. FL (Fidelity Level) value is used to determine the most popular plant species for a particular use purpose. Where Ip is the number of mentions of a specific utilization category of a plant species and Fc is the frequency of mentioning a particular plant species for various utilization categories.

RESULTS AND DISCUSSION

Respondent demographics

This study involved 106 respondents consisting of various age groups, ranging from teenagers to the elderly. Respondents were obtained through direct interviews in each village, which was the location of the study. The selection of the number of respondents was based on the aim of obtaining representative results and reflecting the actual conditions in the field. By involving diverse respondents, it is hoped that the results of this study can provide a comprehensive picture of the population and distribution of herbal plants as well as the level of public knowledge about plants that can be used for women's health. These results are expected to describe the condition of the population accurately, so that they can be used as a basis for generalizing the results of the study and contributing to the development of herbal plant-based health programs in the region.

There are several variables that reflect the characteristics of the respondents in this study. Based on demographic data (Table 1), the majority of respondents were female, namely 88 people (83.02%), while male informants were only 18 people (16.98%). The dominance of female respondents in this study was due to topics that were closely related to women's health or the important role they play in the family, especially in the context of health care and decision-making related to household health. In research that focuses on women's health, especially the use of herbal plants and traditional medicines, women often have a central role, because women are the ones who deal most with traditional medicine for themselves and other family members. In terms of age, most respondents were in the adult age group, namely 31-40 years old as many as 25 people (23.58%), 41-50 years old as many as 26 people (24.53%), and 51-60 years old as many as 26 people (24.53%). This age group tends to have more life experience and a good understanding of the health problems faced, especially related to reproductive health, menopause, and other health problems often experienced by adult women. Women are also more involved in the application of traditional herbal-based medicine, which has been known since childhood as part of the culture or family tradition.

In terms of education level, the majority of respondents have low education, with 52.83% elementary school graduates and 31.13% junior high school graduates. Meanwhile, respondents who have university education are only 1.89%. This shows that most respondents come from rural backgrounds with limited access to higher education. In terms of employment, the majority of respondents are housewives, as many as 67 people (63.21%), which shows that this study focuses on aspects of household life or family welfare. There are only a few respondents who work as laborers (3.77%) or teachers (1.89%), and there is 1 student (0.94%). Overall, the distribution of these variables shows that this study involves a community dominated by adult women with lower levels of education and economy, and have significant roles in the household and surrounding community.

Table 1. Demographics of respondents from the peoples in Kalibawang Sub-district, Wonosobo District, Central Java, Indonesia

Parameter	Specification	Frequency	Percentage
Total of respondents		106	100%
Gender	Male	18	16.98%
	Female	88	83.02%
Age	<20	3	2.83%
	21-30	17	16.04%
	31-40	25	23.58%
	41-50	26	24.53%
	51-60	26	24.53%
	>60	9	8.49%
Education	Elementary School	56	52.83%
	Junior High School	33	31.13%
	Senior High School	15	14.15%
	University	2	1.89%
Occupation	Housewife	67	63.21%
	Farmer	18	16.98%
	Entrepreneur	14	13.21%
	Laborer	4	3.77%
	Teacher	2	1.89%
	Student	1	0.94%

Utilization of medicinal plants for women's health

Information on medicinal plants used for women's health in Kalibawang Sub-district, Wonosobo is presented in Table 2. The table shows the types of plants, local names, parts used, how to make and use them. The data obtained showed that there were 17 families with 33 plant species used in Kalibawang Sub-district, namely Dempel, Karangsambung, Kalialang, and Mergolangu Village. The types of families available were Apiaciae, Fabaceae, Amaranthaceae, Zingiberaceae, Menispermaceae, Rutaceae, Cucurbitaceae, Poaceae, Phyllanthaceae, Moringaceae, Piperaceae, Lamiaceae, Euphorbiaceae, Primulaceae, Maliaceae, Araceae, and Acanthaceae. The diversity of medicinal plants used for women's health is in line with research conducted by Magtalas et al. (2023), which found 50 families and 153 species of medicinal plants in Philippines. However, based on this, it shows that the types of medicinal plants used by the people of Kalibawang Sub-district are not that many. The small number of species obtained during the study indicates a shift in community preferences from traditional medicine using medicinal plants to modern medicine based on chemicals to overcome various health problems. This can occur due to modernization so that only a few medicinal plants are still used.

In traditional medicine, people in Kalibawang Sub-district have utilized various types of plants from various families to overcome women's health problems, including postpartum, pregnancy, lactation, menstruation, leucorrhea, and immunity. Plants used for postpastrum include *bengle* (*Zingiber cassumunar*), *brotowali* (*Tinospora crispa*), *temulawak* (*Curcuma xanthorrhiza*), *dlingo* (*Acorus calamus*), *lengkuas* (*Alpinia galanga*), *kunyit* (*Curcuma longa*), *kencur* (*Kaempferia galanga*), *sirih* (*Piper betle*), *bunga telang* (*Clitoria ternatea*), and *kapulaga* (*Elettaria cardamomum*). Plants used for pregnancy include *akar fatimah* (*Labisia pumila*), *lengkuas* (*Alpinia galanga*), *kunyit* (*Curcuma longa*), and *jahe* (*Zingiber officinale*). Plant used for lactation include *bayam* (*Amaranthus sp.)*, *adas* (*Foeniculum vulgare*), *jipang* (*Sechium edule*), *daun singkong* (*Manihot esculenta*), *bunga telang* (*Clitoria ternatea*), *kacang hijau* (*Vigna radiata*), *kacang panjang* (*Vigna unguiculata*), *kelor* (*Moringa oleifera*), *katuk* (*Sauropus androgynus*), *kemukus* (*Piper cubeba*), and *lengkuas* (*Alpinia galanga*). Plants used for menstrustion include *erutkaya* (*Ricinus communis*), *bunga telang* (*Clitoria ternatea*), *kemangi* (*Ocimum basilicum*), *kumis kucing* (*Orthosiphon aristatus)*, *mahoni* (*Swietenia macrophylla*), *malikinang* (*Phyllanthus urinaria*), *lengkuas* (*Alpinia galanga*), *kunir* (*Curcuma longa*), *kunyit putih* (*Curcuma zedoaria*), *kapulaga* (*E. cardamomum*), *kencur* (*Kaempferia galanga*), and *jahe* (*Zingiber officinale*). Plant used for leucorrhea include *sirih* (*Piper betle*) and *alang-alang* (*Imperata cylindrica*). The last category of plant utilization for immunity includes *kamijara/serai* (*Cymbopogon citratus*), *mojo* (*Aegle marmelos*), *kapulaga* (*Elettaria cardamomum*), *jeruk nipis* (*Citrus aurantiifolia*) and *kencur* (*Kaempferia galanga*).

Based on the research results, it is known that the most dominant family utilized by the community is Zingiberaceae (Figure 2). Zingiberaceae family is the most dominant because it contains active compounds that are efficacious in overcoming various women's health conditions, such as relieving pain, facilitating breast milk, and accelerating postpartum recovery. Species in the Zingiberaceae family that are often utilized by the Kalibawang community include *A. galanga, C. longa, C. xanthorrhiza, C. zedoaria, E. cardamomum, K. galanga, Z. cassumunar,* and *Z. officinale*. Zingiberaceae, which is famous for several of its members such as *Z. officinale, A. galanga,* and *C. longa*, is known to have properties as an anti-inflammatory, analgesic, and galactagogue (increase breast milk production). *Zingiber officinale* is often used to reduce pain and cramps during menstruation, while *C. longa* is used in postpartum care to help the body recover and prevent infection. This is in line with research conducted by (Nikmawati et al. 2024), which states that *C. longa* has anti-inflammatory and antioxidant properties. *Curcuma longa* and tamarind have an effect on the ability of postpartum mothers to heal perineal lacerations. The use of various types of plant species in traditional medicine for women's health shows the diversity of ethnopharmacological knowledge in society.

Table 2. Medicinal plants used for women's health in Kalibawang Sub-district, Wonosobo District, Central Java, Indonesia

Family	Scientific name	Local name	SUV	RFC	Life form	Use Category (FL)	Utilized part	Preparation	Application
Acanthaceae	*Strobilanthes crispus* (L.) Blume	*Keji beling*	0.009	0.009	Shrub	Postpartum (100%)	Leaf	Boiled	Oral
Amaranthaceae	*Amaranthus* sp.	*Bayam*	0.009	0.066	Herb	Lactation (100%)	Leaf	Cooked	Oral
Apiaciae	*Foeniculum vulgare* Mill.	*Adas*	0.009	0.085	Herb	Lactation (100%)	Leaf	Cooked	Oral
Araceae	*Acorus calamus* L.	*Dlingo*	0.009	0.075	Herb	Postpartum (100%)	Rhizome	Pounded	Topical
Cucurbitaceae	*Sechium edule* (Jacq.) Sw.	*Jipang*	0.009	0.057	Climber	Lactation (100%)	Fruit	Cooked	Oral
Euphorbiaceae	*Manihot esculenta* Crantz	*Singkong*	0.009	0.009	Shrub	Lactation (100%)	Leaf	Cooked	Oral
Euphorbiaceae	*Ricinus communis* L.	*Erutkaya/jarak*	0.009	0.009	Shrub	Menstruation (100%)	Leaf	Boiled	Oral
Fabaceae	*Clitoria ternatea* L.	*Bunga telang*	0.009	0.009	Climber	Postpartum (100%)	Flower	Brewed	Oral
Fabaceae	*Tamarindus indica* L.	*Asem ireng*	0.019	0.075	Tree	Lactation (38%), Menstruation (100%)	Fruit	Infusion	Oral
Fabaceae	*Vigna radiata* (L.) R.Wilczek	*Kacang hijau*	0.009	0.009	Herb	Lactation (100%)	Seed	Boiled	Oral
Fabaceae	*Vigna unguiculata* subsp. *Sesquipedalis* (L.) Verdc.	*Lembayung/kacang panjang*	0.009	0.019	Climber	Lactation (100%)	Leaf	Raw, Cooked	Oral
Lamiaceae	*Ocimum basilicum* L.	*Kemangi*	0.009	0.019	Shrub	Menstruation (100%)	Leaf	Raw	Oral
Lamiaceae	*Orthosiphon aristatus* (Blume) Miq.	*Kumis kucing*	0.009	0.009	Herb	Menstruation (100%)	Leaf	Boiled	Oral
Malingaceae	*Swietenia macrophylla* G.King	*Mahoni*	0.009	0.028	Tree	Menstruation (100%)	Seed	Raw	Oral
Menispermaceae	*Tinospora crispa* (L.) Miers ex Hook.fil. & Thomson	*Brotowali*	0.009	0.75	Climber	Postpartum (100%)	Stem	Infusion	Oral
Moringaceae	*Moringa oleifera* Lam.	*Kelor*	0.009	0.085	Tree	Lactation (100%)	Leaf	Cooked	Oral
Phyllanthaceae	*Phyllanthus urinaria* L.	*Malikinang/meniran*	0.009	0.009	Shrub	Menstruation (100%)	Leaf	Boiled	Oral
Phyllanthaceae	*Sauropus androgynus* (L.) Merr.	*Katuk*	0.009	0.538	Shrub	Lactation (100%)	Leaf	Cooked	Oral
Piperaceae	*Piper betle* L.	*Sirih*	0.019	0.358	Climber	Postpartum (11%), Leucorrhea (100%)	Leaf	Boiled, Pounded	Topical
Piperaceae	*Piper cubeba* L.fil.	*Kemukus*	0.009	0.075	Herb	Lactation (100%)	Fruit	Boiled	Oral
Poaceae	*Cymbopogon citratus* (DC.) Stapf	*Kamijara/serai*	0.019	0.075	Herb	Postpartum (38%), Immunity (100%)	Stem/Leaf	Boiled, Tea	Oral
Poaceae	*Imperata cylindrica* (L.) Raeusch.	*Alang alang*	0.009	0.009	Herb	Leucorrhea (100%)	Root	Boiled	Oral
Primulaceae	*Labisia pumila* (Blume) Fern.-Vill.	*Akar fatimah*	0.009	0.009	Shrub	Pregnancy (100%)	Root	Boiled	Oral
Rutaceae	*Aegle marmelos* (L.) Corrêa	*Mojo*	0.009	0.019	Tree	Immunity (100%)	Fruit	Boiled	Oral
Rutaceae	*Citrus aurantiifolia* (Christm.) Swingle	*Jeruk nipis*	0.009	0.009	Tree	Immunity (100%)	Fruit	Infusion, Tea	Oral
Zingiberaceae	*Alpinia galanga* (L.) Willd.	*Lengkuas*	0.019	0.019	Herb	Pregnancy (100%), Menstruation (50%)	Rhizome	Infusion	Oral
Zingiberaceae	*Curcuma longa* L.	*Kunir/kunyit*	0.038	0.557	Herb	Postpartum (8%), Pregnancy (25%), Lactation (12%), Menstruation (100%)	Rhizome	Infusion	Oral
Zingiberaceae	*Curcuma xanthorrhiza* D.Dietr.	*Temulawak*	0.009	0.123	Herb	Postpartum (100%)	Rhizome	Infusion	Oral
Zingiberaceae	*Curcuma zedoaria* (Christm.) Roscoe	*Kunyit putih*	0.009	0.009	Herb	Menstruation (100%)	Rhizome	Infusion	Oral
Zingiberaceae	*Elettaria cardamomum* (L.) Maton	*Kapulaga*	0.019	0.047	Herb	Menstruation (60%), Immunity (100%)	Seed	Boiled	Oral
Zingiberaceae	*Kaempferia galanga* L.	*Kencur*	0.028	0.142	Herb	Postpartum (40%), Menstruation (60%), Immunity (100%)	Rhizome	Infusion	Oral
Zingiberaceae	*Zingiber cassumunar* Roxb.	*Bengle*	0.009	0.075	Herb	Postpartum (100%)	Rhizome	Pounded	Topical
Zingiberaceae	*Zingiber officinale* Roscoe	*Jahe*	0.019	0.34	Herb	Pregnancy (42%), Menstruation (69%)	Rhizome	Boiled	Oral

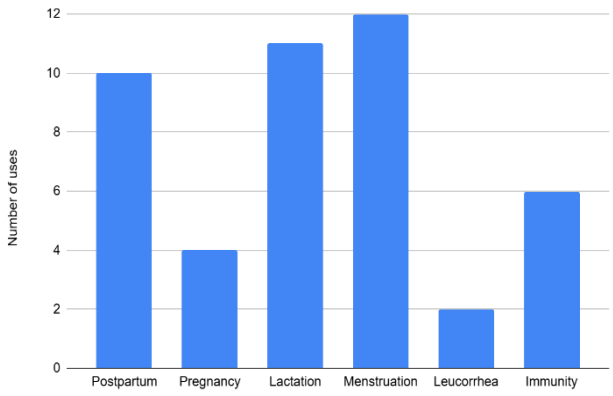

Figure 2. Number of plants used for each disorder related to women's health care in Kalibawang, Wonosobo District, Indonesia

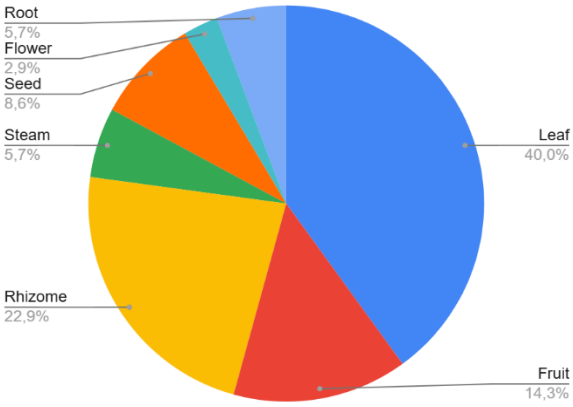

Figure 3. Plant parts used for women's health care in Kalibawang, Wonosobo District, Indonesia

The types of plants obtained during the study showed diverse life forms, namely shrubs, herbs, climbers, and trees. Based on Table 2 above, it is known that herbaceous plants are more commonly found because herbaceous plants tend to be easily found in many habitats, including gardens, fields, and yards. The use of herbs is also preferred in medicinal plants based on research Yemele et al. (2015), because of its higher effectiveness in treating diseases compared to other forms of growth. Herbs are short plants with soft, green, and smooth stems without woody tissue. Herbs complete their life cycle in one or two seasons. Generally, plants have few or no branches. These branches can be easily removed from the ground. Herbs contain quite a lot of nutritional benefits, including vitamins and minerals, so they can be part of a healthy balanced diet. Herbs usually have a faster life cycle than trees or vines. This makes them easier to cultivate and harvest, so they are more widely used traditionally and better known as medicinal plants.

Various plant species are used to support women's health by utilizing various parts of the plant (Figure 3), including leaves (40%), rhizomes (22.9%), fruits (14.3%), seeds (8.6%), roots (5.7%), stems (5.7%), and flowers (2.9%). The leaves are the most commonly used, such as from *S. crispus*, *Amaranthus* sp., *F. vulgare*, *M. esculenta*, and *O. basilicum*, widely used for lactation, menstruation, and postpartum recovery. These data show that leaves are the most dominant part used in traditional medicine practices to support women's health in the community. The predominance of leaf use may be explained by the fact that leaves are the site of photosynthesis and therefore the storage of most secondary metabolites (Kankara et al. 2015). Although leaf use appears to be less harmful to plant biodiversity than the use of whole plants, it may also contribute to global warming effects by reducing carbon dioxide uptake and oxygen production.

Specific Use Value (SUV), Relative Frequency of Citation (RFC), and Fidelity Level (FL)

The SUV (Specific Use Value) is used to measure the extent of a plant's benefits in a specific context, thereby determining the importance of a plant species for particular purposes (Ifnaini et al. 2023). In this study focusing on ethnobotany or traditional medicine, SUV reflects the utility or popularity of the plant within the community. The SUV calculation involves comparing the number of specific uses within a certain category, such as women's health, against the total recorded uses. The higher the SUV of a species, the more frequently the plant is used or considered important by the community for specific health needs, such as supporting lactation or postpartum recovery. Thus, the SUV helps researchers assess the level of trust and utilization of plants in traditional medicine across various health categories. Plants with high SUV values indicate that they are widely used for various purposes by respondents. In this data *C. longa* ranks highest with an SUV of 0.038 (Figure 4). This means that *C. longa* is often used in many contexts, both as a traditional medicine for various health conditions and as a cooking ingredient. *C. longa* is known for its anti-inflammatory, antioxidant properties, and ability to improve digestion, making it a top choice for many species traditional medicine. In second place, *S. androgynus* has an SUV of 0.028, indicating that have a wide variety of uses, especially in the context of increasing breast milk production and women's health after childbirth. *Sauropus androgynus* has long been considered an effective natural breast milk-producing plant, making it popular among breastfeeding mothers. Meanwhile, *P. betle* with an SUV of 0.019 remains a significant plant. *P. betle* are known for their antiseptic properties, so they are often used in the treatment of minor infections, such as vaginal discharge, as well as to maintain oral and dental health. This shows that despite their heterogeneity in use *C. longa* and *P. betle* still have an important place in traditional health practices.

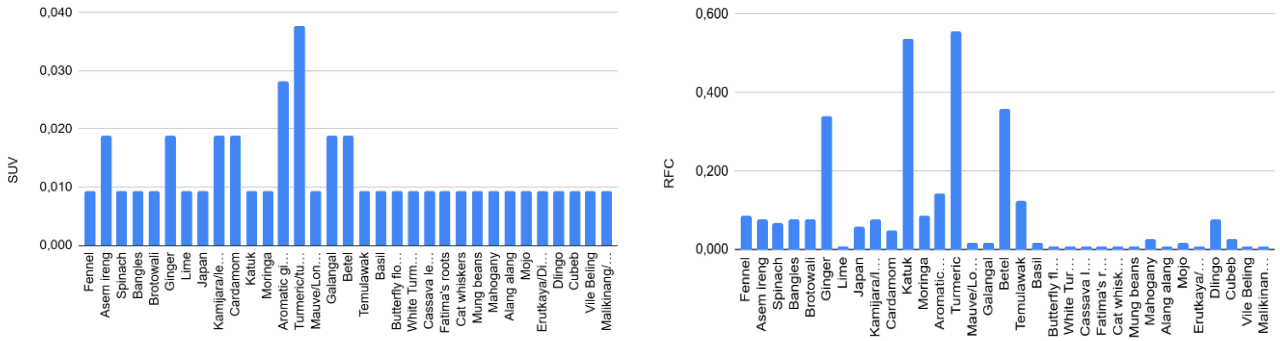

Figure 4. SUV and RFC for women's health care in Kalibawang, Wonosobo District, Indonesia

Relative Frequency of Citation (RFC) measures how often a plant species is mentioned by respondents. The higher the RFC value, the more often the plant is recognized by the community. In this case, *C. longa* is again the most dominant with the highest RFC value of 0.557. This indicates that *C. longa* is a plant that is very well known and appreciated by respondents for its various uses, especially for treating menstrual disorders, inflammation, and as a general tonic. *Sauropus androgynus* has the second highest RFC value, at 0.538. This shows that *S. androgynus* has specific uses that are highly valued in some communities. Meanwhile, *P. betle* with an RFC of 0.358, although less mentioned, still has an important place, especially among mothers who need natural solutions to clean the feminine area. This shows that although katuk is better known in certain contexts, it has a very significant role in the field.

Fidelity Level (FL) reflects the specificity of plant use, indicating how consistently each species is associated with a specific purpose. In this category, *S. androgynus*, *C. longa*, and *P. betle* all achieved an FL of 100%. This shows that whenever these plants are mentioned, they are always associated with a specific and important use, emphasizing their reliability and special role in traditional and cultural medicinal practices. These high FL values indicate that the importance of these plants is not only broad, but also targeted, as each mention refers to a well-defined and consistent application.

Herbal plants such as *S. androgynus*, *C. longa*, *Z. officinale*, and *P. betle* have long been used in traditional medicine to support women's health. This plant is the most common and often found by local people. *Sauropus androgynus* is known as a plant that is very useful for facilitating breast milk production for breastfeeding mothers. *Sauropus androgynus* contain around 7% protein and 19% crude fiber, and contain vitamin K, pro-vitamin A (beta-carotene), vitamin B, and vitamin C. The minerals contained in it include calcium (2.8%), iron, potassium, phosphorus, and magnesium which help improve maternal health after giving birth and improve the quality of breast milk (Dolang et al. 2021). In addition, *S. androgynus* contain steroid and polyphenol compounds that can increase prolactin levels, a hormone that plays a role in facilitating breast milk production. This increase in prolactin levels can help increase, accelerate, and facilitate breast milk production (Syahadat et al. 2020). In addition, *S. androgynus* can also help maintain healthy skin and reduce the risk of anemia in women thanks to their iron and antioxidant content. With these various benefits, *S. androgynus* is a popular choice in women's health care. In addition to *S. androgynus*, other plants that are often used by people to facilitate breast milk include *Amaranthus* sp., *M. oleifera*, *F. vulgare*, and *V. unguiculata* subsp. *sesquipedalis*, people there often call them *mbayung* or *lembayung*.

Kunyit (Curcuma longa) is a plant that is well-known in women's health because of its curcumin content, which has anti-inflammatory and antioxidant properties. *C. longa* is widely used by the community to overcome menstrual pain, digestive disorders, and maintain the health of reproductive organs. Based on the results of the interview, *C. longa* mixed with *C. xanthorrhiza* is used by the community to overcome post-delivery bleeding. *Z. officinale* is also useful in relieving menstrual pain and nausea in pregnancy thanks to gingerol which is an anticoagulant, namely preventing blood clotting, thereby preventing blockage of blood vessels (Sugiarti et al. 2014). *Z. officinale* can be consumed in the form of tea or as an addition to cooking, it is best drunk 2 times a day for vaginal discharge and menstruation. Some other plants that are used during menstruation include *T. crispa*, *O. aristatus*, and *O. basilicum*.

In addition, *sirih* (*P. betle)* also has special uses in women's health, especially in maintaining the cleanliness and health of the feminine area. *Piper betle* are known to have natural antiseptic properties thanks to the eugenol and tannin content which are effective in killing bacteria. Depending on personal hygiene and health needs because the flavonoid compounds act as antioxidants, anti-inflammatories, and antibacterials, while the tannins in green *P. betle* function as antidiarrheals, antiseptics, and antifungals (Dewi 2020). The benefits of these four plants as a whole help maintain women's reproductive health, strengthen the immune system, and reduce physical discomfort that women often experience at various stages of life.

In addition to *S. androgynus*, *C. longa*, *Z. officinale*, and *P. betle*, there is important information about *bengle* (*Zingiber cassumunar*) obtained during interviews with respondents in Karangsambung village. *Zingiber*

cassumunar is a plant that is often used in traditional medicine, especially in treating the health of pregnant women and babies. Based on interviews, *Z. cassumunar* is pounded and then rubbed on the forehead or chest of pregnant women or babies to ward off '*sawan'* (a disorder believed to be caused by evil energy) or to protect them from negative influences. This application is done once a day for one week as part of a prevention ritual. The use of this bengle plant is still very common in rural communities that hold fast to beliefs in traditional health that have been passed down from generation to generation. *Z. cassumunar* contains active compounds such as essential oils, flavonoids, and curcuminoids which have anti-inflammatory, antiseptic effects, and help relieve certain symptoms in babies and pregnant women (Pratiwi and Ningsih 2022). In Kalibawang Sub-district, *Z. cassumunar* is more commonly found and is still an important part of local traditions, especially in the context of reproductive health and baby care. This confirms that the use of medicinal plants is not only functional from a medical perspective, but also has deep cultural and spiritual meaning for local communities.

Based on the research results, people in Kalibawang Sub-district still widely use herbal plants to support their health, namely in the categories of lactation and menstruation. For lactation, the most widely used plant is *S. androgynus*, which is known to be effective in facilitating breast milk production. Meanwhile, for menstruation, people mostly use *C. longa* because of its high curcumin content, which is effective as an anti-inflammatory and analgesic, making it effective for relieving menstrual pain and facilitating menstruation. The use of *S. androgynus* and *C. longa* is traditionally believed to have a positive effect in supporting the health of breastfeeding mothers and overcoming menstrual problems. The use of this common herbal medicine is also influenced by local midwives who prescribe herbal medicines that have been passed down from generation to generation. Meanwhile, for other health problems, such as postpartum, pregnancy, leukorrhea, and immunity, only a few plants are still used by the local community. This is due to the tendency of people who have chosen modern medicine at the nearest health center.

Preparation and application of plants

The preparation stage refers to how each part of the plant is processed to make medicine, with several methods used depending on the intended use of the plant and the nature of its active compounds. Based on the observation results presented in Figure 6, there are several methods used to prepare plants into medicine. These methods consist of boiling, infusion, cooking, raw, tea, brewing, and pounding. Boiling is a common technique, where plant parts such as leaves, stems, or roots are soaked in water and heated to extract their active components. This method was used for 33.3% of plants, including *S. crispus*, *R. communis*, *L. pumila*, *T. indica*, *S. androgynus*, *C. longa*, and *A. calamus*. Boiling is used as the most common method because it is a simple process to do and it is believed that boiling will dissolve the compound content in the plant so that its properties can be absorbed more effectively when consumed. In addition, based on research Kankara et al. (2015), it is also known that pregnant women and breastfeeding mothers are advised to consume warm foods and drinks so that the boiling method is the choice for processing medicinal plants.

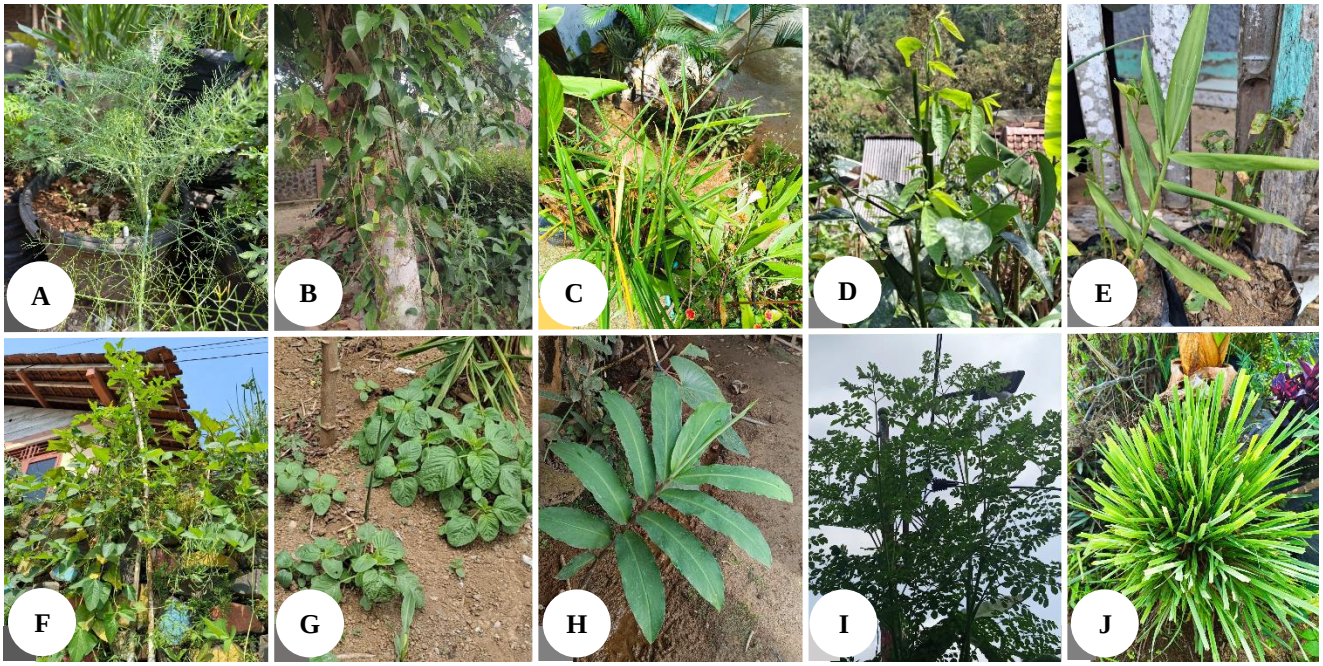

Figure 5. List of herbal plants for women's health care in Kalibawang, Wonosobo District, Indonesia: A. *Foeniculum vulgare*; B. *Piper betle*; C. *Zingiber officinale*; D. *Sauropus androgynus*; E. *Zingiber cassumunar*; F *Vigna unguiculata* subsp. *Sesquipedalis*; G. *Amaranthus* sp.; H. *Alpinia galanga*; I. *Moringa oleifera*; J. *Cymbopogon citratus*

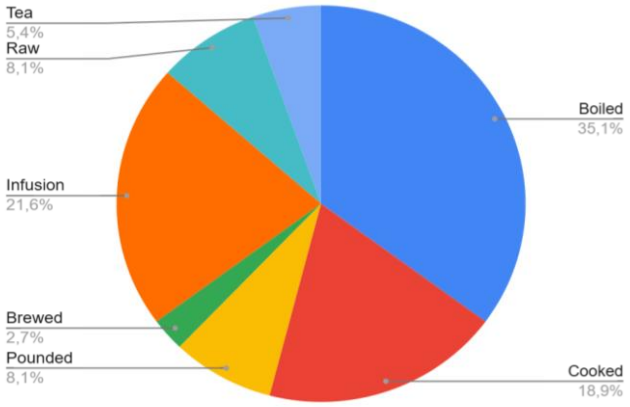

Figure 6. Plant preparation for women's health care in Kalibawang, Wonosobo District, Indonesia

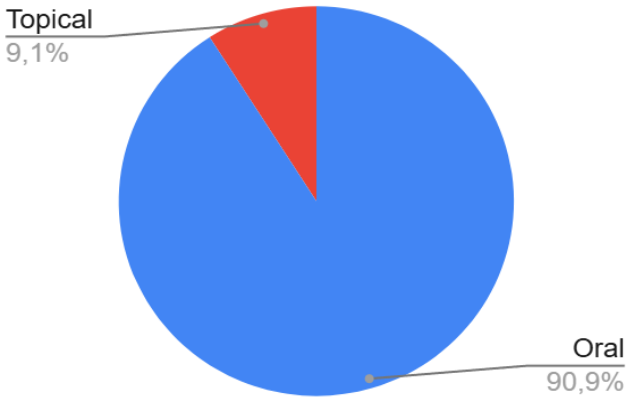

Figure 7. Plant application for women's health care in Kalibawang, Wonosobo District, Indonesia

Then with the cooking method is another popular approach, which includes 18.2% of the plants, with examples such as *Amaranthus* sp., *F. vulgare, M. esculenta, M. oleifera, Z. officinale, Z. cassumunar, P. betle,* and *O. basilicum*, where various heating methods release beneficial properties. Infusion is a gentler extraction process, used for 21.2% of plants such as *T. indica, A. galanga, S. macrophylla*, and *P. cubeba*, where plant parts are steeped in hot water to extract active ingredients. Brewing is a similar method where flowers such as *C. ternatea* are prepared as tea, and tea preparation specifically refers to the brewing of plants such as *C. citratus*. Some plants (6.1%), such as *M. oleifera* and *S. macrophylla*, are used raw without processing, while pounding is applied to 6.1% of plants, including *T. crispa* and *S. crispus*, to extract essential oils or extracts for topical use. Other specific preparations include *V. radiata* as infusion and tea (3%), *M. esculenta* as decoction and tea (3%), and *C. ternatea* as decoction and pounding (3%).

Based on the data displayed in Figure 7, medicinal plants used for women's health are consumed orally and topically. Most plants with a percentage of 90.9% are used orally. Oral application is the dominant method, where medicines are consumed to provide systemic effects, such as increasing lactation or regulating menstrual symptoms. This is common in plants that are processed through various methods, including boiling, cooking, infusion and brewing. Oral use carried out by the people of Kalibawang Sub-district such as *Amaranthus* sp., *M. oleifera, F. vulgare, S. androgynus*, and *V. unguiculata* which are cooked into *urap* or soup (*sayur bening*). It is recommended to consume it 1-2 times a day during breastfeeding to maintain optimal breast milk supply. In addition to being consumed in the form of cooking, medicinal plants are also drunk in the form of herbal medicine or tea such as *C. longa, C. xanthorrhiza*, and *Z. officinale* which can be drunk 2-3 times a week or as needed. In contrast, only a small number of plants are used topically (9.1%), which is applied by pounding and then applying externally, such as *P. betle, Z. cassumunar*, and *A. calamus*. In the use of *P. betle*, information was obtained from the community that the use of boiled *P. betle* water is recommended 2-3 times a week. This topical application, although less common, is specifically intended for direct therapeutic effects on the skin or surface-level diseases. These data indicate that most of the medicinal plants in this dataset are intended for oral use rather than topical application.

In conclusion, this study is that there are around 17 families consisting of 33 plant species used by the community for women's health, with the Zingiberaceae family as the dominant family. Plants such as *Curcuma longa, Zingiber officinale, Sauropus androgynus*, and *Piper betle* play an important role in women's reproductive health, from overcoming menstrual problems to supporting postpartum recovery. The Specific Use Value (SUV) shows *Curcuma longa* as the most frequently used (0.038), followed by *Sauropus androgynus* (0.028) and *Piper betle* (0.019). The Relative Frequency of Citation (RFC) confirms the dominance of *Curcuma longa* (0.557), followed by *Sauropus androgynus* (0.538), and *Piper betle* (0.358), with all three having a Fidelity Level (FL) of 100%, indicating consistent use for specific purposes. The rhizomes of *C. longa* and *Z. officinale* are the most commonly used due to their anti-inflammatory, antioxidant, and breast milk production properties. In addition, *Z. cassumunar* plant has emerged, which is quite well-known in Wonosobo but not very familiar outside the area, reflecting that the use of medicinal plants not only has physical health benefits but also contains important cultural and spiritual values. The dominant community uses medicinal plants in the form of leaves, processed by boiling and applied orally.

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