



Traditional Herbal Remedies Used During Pregnancy in Indonesia: A Qualitative Study Exploring Safety and Efficacy

Fifia Ardinanti¹, Agnes Mariska², Dedi Sucipto^{3*}

¹Department of Herbal Medicine and Complementary Therapy, CMHC Research Center, Palembang, Indonesia

²Department of Internal Medicine, Jayawijaya Private Clinic, Jayapura, Indonesia

³Department of Internal Medicine, Phlox Institute, Palembang, Indonesia

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***Corresponding author:**

Dedi Sucipto

E-mail address:

dedi.sucipto@phlox.or.id

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A B S T R A C T

Introduction: Traditional herbal remedies are widely used during pregnancy in Indonesia. However, limited information exists regarding their safety and efficacy. This study aimed to explore the types of herbal remedies used, reasons for their use, perceived benefits and risks, and information sources guiding their use among pregnant women in Indonesia. **Methods:** A qualitative study was conducted involving in-depth interviews with 30 pregnant women residing in three different regions of Indonesia: urban Jakarta, rural West Java, and remote Papua. Participants were recruited through purposive sampling from community health centers and traditional birth attendant networks. Interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis. **Results:** A wide variety of herbal remedies were reported, including ginger, turmeric, tamarind, and various leaf decoctions. Reasons for use included alleviating pregnancy-related complaints (nausea, back pain, fatigue), promoting fetal health, and easing labor. Perceived benefits included natural origin, affordability, and cultural acceptance. Concerns included potential adverse effects on the fetus and lack of scientific evidence. Information sources were primarily family members, traditional healers, and community beliefs. Notable variations in practices were observed across the three regions, reflecting diverse cultural influences and access to healthcare. **Conclusion:** This study highlights the widespread use of traditional herbal remedies among pregnant women in Indonesia. While perceived as natural and beneficial, safety and efficacy concerns warrant attention. Healthcare providers should engage in open dialogue with pregnant women regarding their herbal use, providing evidence-based information and culturally sensitive counseling to ensure maternal and fetal well-being.

1. Introduction

Pregnancy, a transformative phase in a woman's life, is accompanied by a myriad of physiological and emotional changes. As the body undergoes profound adaptations to nurture the developing fetus, expectant mothers often seek ways to enhance their well-being and ensure a healthy pregnancy. In many cultures around the world, traditional medicine, particularly the use of herbal remedies, has played a significant role in prenatal care for centuries. Indonesia, with its

rich biodiversity and deep-rooted cultural traditions, is no exception. Indonesia is a vast archipelago nation in Southeast Asia, home to a diverse array of ethnic groups, languages, and cultural practices. This cultural diversity is reflected in the country's traditional medicine systems, which vary across different regions and communities. Herbal remedies, often derived from locally sourced plants, are deeply ingrained in Indonesian healthcare practices, particularly in rural areas where access to modern

healthcare facilities may be limited. During pregnancy, Indonesian women commonly use herbal remedies to address various health concerns, including pregnancy-related discomforts, promoting fetal development, and preparing for childbirth. These remedies are often passed down through generations, embedded in cultural beliefs and practices. While some herbal remedies may offer potential benefits, concerns remain regarding their safety and efficacy, especially during pregnancy, a vulnerable period for both the mother and the developing fetus.¹⁻³

The use of herbal remedies during pregnancy is not unique to Indonesia. In many parts of the world, traditional medicine continues to play a vital role in prenatal care. The World Health Organization estimates that up to 80% of the world's population relies on traditional medicine for some aspect of their healthcare needs. In developing countries, where access to modern healthcare may be limited, the use of herbal remedies is particularly prevalent. A growing body of research has explored the use of herbal remedies during pregnancy in various cultural contexts. Studies have documented the types of herbs used, reasons for their use, perceived benefits and risks, and information sources guiding their selection. Some commonly reported herbal remedies used during pregnancy include ginger for nausea and vomiting, raspberry leaf for uterine toning, chamomile for relaxation, and peppermint for digestive issues. While some herbal remedies have shown promising results in clinical studies, the safety and efficacy of many others remain largely unknown. The lack of scientific evidence, coupled with potential risks such as adverse effects on the fetus or interactions with prescribed medications, raises concerns about the indiscriminate use of herbal remedies during pregnancy. Indonesia has a long and rich history of utilizing herbal medicine, known locally as "jamu." Jamu is an integral part of Indonesian culture, deeply rooted in traditional beliefs and practices. The country's diverse flora provides a vast array of medicinal plants, many of which have been used for generations to address various health conditions, including those related to pregnancy. Traditional healers, known as "dukun bayi" or "tabib," play a crucial role in Indonesian

healthcare, particularly in rural communities. These healers possess extensive knowledge of local plants and their medicinal properties, passed down through oral traditions and apprenticeships. They provide guidance and remedies to pregnant women, often incorporating herbal preparations into prenatal care. The use of herbal remedies during pregnancy in Indonesia is influenced by a complex interplay of factors, including cultural beliefs, accessibility, affordability, and perceived safety. Many Indonesians believe that herbal remedies are natural and therefore safer than conventional medications, especially during pregnancy. Additionally, herbal remedies are often more affordable and accessible than modern healthcare, particularly in rural areas where healthcare facilities may be limited.⁴⁻⁷

Despite the widespread use of herbal remedies during pregnancy in Indonesia, limited scientific research has been conducted to evaluate their safety and efficacy. This lack of evidence-based information poses challenges for healthcare providers in advising pregnant women about the potential risks and benefits of herbal use. Furthermore, the diversity of herbal remedies used in Indonesia, coupled with regional variations in practices, underscores the need for comprehensive research to document and analyze these traditions. Understanding the specific types of herbs used, their preparation methods, dosages, and potential interactions with other medications is crucial for ensuring the safe and effective use of herbal remedies during pregnancy. This research gap highlights the need for studies that bridge the gap between traditional knowledge and modern science. By systematically investigating the use of herbal remedies during pregnancy in Indonesia, researchers can contribute to a deeper understanding of these practices, identify potential risks and benefits, and inform the development of culturally sensitive and evidence-based healthcare strategies.⁸⁻¹⁰ This qualitative study aimed to explore the practices, beliefs, and experiences surrounding the use of traditional herbal remedies among pregnant women in Indonesia.

2. Methods

This qualitative study employed in-depth interviews to explore the experiences and perspectives of pregnant women regarding the use of traditional herbal remedies. The study was conducted in three distinct regions of Indonesia: urban Jakarta, rural West Java, and remote Papua. These diverse settings were selected to capture the potential variations in herbal remedy use across different geographical and sociocultural contexts within Indonesia.

A qualitative study design was chosen for this study because it is well-suited to exploring complex social phenomena, such as the use of traditional herbal remedies during pregnancy, in a naturalistic setting. Qualitative research allows for an in-depth understanding of the meaning and significance of these practices from the perspective of the individuals involved. The study aimed to generate rich, descriptive data that captures the nuances of pregnant women's experiences and beliefs surrounding herbal remedies. This approach aligns with the study's objective of gaining insights into the factors that influence decision-making regarding the use of herbal remedies during pregnancy, including cultural norms, personal beliefs, and access to information. The qualitative design allows for a holistic and nuanced understanding of this complex phenomenon, going beyond merely quantifying the prevalence of herbal remedy use.

The study was conducted in three geographically and culturally diverse regions of Indonesia; Urban Jakarta: Representing a metropolitan area with relatively high access to modern healthcare facilities; Rural West Java: Characterized by a mix of traditional and modern healthcare practices; Remote Papua: A region with limited access to healthcare and a strong reliance on traditional medicine. In each region, participants were recruited from community health centers (Puskesmas) and through networks of traditional birth attendants (dukun bayi). This purposive sampling strategy aimed to ensure that the study participants reflected the diversity of healthcare access and cultural practices within each region. The inclusion criteria for the study were; Currently pregnant (any trimester); Age 18 years or older;

Residing in the selected region for at least one year; Willingness to participate in an in-depth interview. A total of 30 pregnant women were recruited, with 10 participants from each region. This sample size was deemed appropriate for a qualitative study, allowing for in-depth exploration of the research topic while remaining manageable within the scope of the study.

Data collection for this study involved individual in-depth interviews conducted by trained female researchers. These researchers had a background in qualitative research and cultural sensitivity, ensuring that the interviews were conducted in an appropriate and respectful manner. The interviews were conducted in the participants' preferred language, either Indonesian or the local dialect of the region, to facilitate open and comfortable communication. The interviews took place in private settings, either at the participants' homes or community health centers, to maintain confidentiality and create a safe space for sharing personal experiences. A semi-structured interview guide was used to facilitate the interviews. This approach provided a flexible framework for the discussions while allowing the participants to share their experiences and perspectives in their own words. The interview guide covered the following key topics; Types of herbal remedies used during pregnancy; Frequency and methods of preparation and consumption; Reasons for using herbal remedies; Perceived benefits and risks of herbal remedies; Sources of information about herbal remedies; Experiences and beliefs related to traditional medicine and pregnancy. The interviews were audio-recorded with the participants' consent, ensuring that their narratives were accurately captured. The recordings were transcribed verbatim, creating a textual record of the interviews for subsequent analysis. In addition to the audio recordings, the researchers also took field notes during the interviews. These field notes captured non-verbal cues, contextual information, and the researchers' initial observations, adding depth and richness to the data collected.

The data collected through the interviews were analyzed using thematic analysis, a widely used qualitative data analysis method. This approach involves systematically identifying, analyzing, and

reporting patterns or themes within the data. The process of thematic analysis in this study involved the following steps; Familiarization: The researchers immersed themselves in the data by repeatedly reading the transcripts and field notes, gaining a thorough understanding of the participants' narratives; Coding: Initial codes were generated to identify key themes and patterns emerging from the data. These codes served as labels for meaningful segments of the text; Theme development: Codes that shared commonalities were grouped and organized into broader themes and subthemes. This step involved identifying relationships between codes and developing a thematic framework; Reviewing themes: The developed themes were reviewed and refined to ensure they accurately reflected the data. This iterative process involved revisiting the transcripts and checking the consistency and coherence of the themes; Defining and naming themes: Clear definitions and names were assigned to each theme, capturing the essence of the underlying patterns in the data; Producing the report: The findings were presented in a narrative form, supported by illustrative quotes from the participants. This step involved weaving together the thematic findings with supporting evidence from the data.

Ethical approval for this study was obtained from the Ethics Committee of CMHC Indonesia prior to the commencement of data collection. This ensured that the study adhered to ethical guidelines for research involving human subjects. Informed consent was obtained from all participants before the interviews. The participants were informed about the study's purpose, procedures, and their right to withdraw from the study at any time without consequence. This ensured that their participation was voluntary and informed. To maintain confidentiality and anonymity, pseudonyms were used throughout the study, and any identifying information was removed from the data. This protected the participants' identities and ensured that their responses could not be linked back to them.

The researchers adhered to strict data management protocols to safeguard the participants' privacy.

3. Results

Table 1 provides a fascinating glimpse into the diverse world of traditional herbal remedies used by pregnant women in Indonesia. The table shows a variety of plant parts used – rhizomes (ginger, turmeric, galangal), leaves (lemongrass, papaya, moringa, cat's whiskers, betel), and fruit pulp (tamarind). This highlights the resourcefulness in utilizing different parts of plants for medicinal purposes. These herbs are used to address a wide spectrum of pregnancy-related concerns, from common complaints like nausea and fatigue to more specific issues like urinary tract infections and low breast milk production. This suggests a holistic approach to prenatal care using herbal remedies. Most remedies involve boiling plant parts in water to make a tea or decoction, indicating a common and accessible method of preparation across different herbs. Some herbs, like tamarind and galangal, can be consumed directly or made into a paste, showcasing flexibility in consumption methods. Many of the perceived benefits align with known properties of these herbs. For example, ginger is well-regarded for relieving nausea, and turmeric has anti-inflammatory properties. Interestingly, some benefits, like boosting immunity and promoting fetal health, are more general and may reflect cultural beliefs about the overall health-promoting properties of these herbs. Potential concerns are also noted, such as the risk of uterine contractions with papaya leaf and potential drug interactions with cat's whiskers. This highlights the importance of cautious use and seeking advice from knowledgeable sources. The table reveals regional differences in the use of certain herbs. For instance, tamarind is more common in rural areas and West Java, while moringa is gaining popularity in urban areas. This suggests that cultural practices and access to specific plants influence regional preferences.

Table 1. Types of herbal remedies used during pregnancy.

Herbal remedy (Indonesian Name)	Plant part used	Preparation method	Reported use	Perceived benefits	Potential concerns	Regional variations
Ginger (Jahe)	Rhizome	Boiled in water, consumed as a tea or added to food	Nausea, vomiting, morning sickness	Relieves nausea, improves digestion	Generally safe, high doses may cause heartburn	Widely used across all regions
Turmeric (Kunyit)	Rhizome	Boiled in water, consumed as a tea, added to food, or applied topically as a paste	Improving digestion, boosting immunity, promoting fetal health, relieving back pain	Anti-inflammatory, antioxidant properties	Generally safe, high doses may cause stomach upset	Widely used across all regions, particularly in West Java
Tamarind (Asam Jawa)	Fruit pulp	Consumed directly, made into a drink, or added to food	Constipation, loss of appetite	Relieves constipation, improves appetite, source of vitamins and minerals	Generally safe, excessive consumption may cause diarrhea	More common in rural areas and West Java
Lemongrass (Serai)	Leaves	Boiled in water and consumed as a tea	Fatigue, anxiety, insomnia	Relaxing, calming, aids sleep	Generally safe, may cause allergic reactions in some individuals	Commonly used in all regions, often combined with ginger
Papaya Leaf (Daun Pepaya)	Leaves	Boiled in water and consumed as a tea, sometimes with other ingredients like honey or ginger	Increasing breast milk production, improving digestion	Believed to stimulate milk production, aid digestion, boost immunity	May stimulate uterine contractions, potentially unsafe in early pregnancy	More common in rural areas and Papua
Moringa Leaf (Daun Kelor)	Leaves	Consumed fresh in salads, cooked as a vegetable, or dried and powdered for tea	Boosting immunity, increasing energy levels, improving iron levels	Rich in vitamins and minerals, antioxidant properties	Generally safe, high doses may cause digestive upset	Increasingly popular in urban areas, also used in rural West Java and Papua
Cat's Whiskers (Kumis Kucing)	Leaves	Boiled in water and consumed as a tea	Urinary tract infections, hypertension	Diuretic properties, believed to lower blood pressure	May interact with certain medications	More common in rural areas and West Java
Galangal (Kencur)	Rhizome	Consumed raw, boiled in water, or ground into a paste for topical application	Relieving coughs and colds, improving appetite	Anti-inflammatory, expectorant properties	Generally safe, may cause stomach upset in some individuals	Used in all regions, particularly for respiratory ailments
Betel Leaf (Daun Sirih)	Leaves	Chewed or applied topically as a paste	Oral hygiene, wound healing	Antiseptic, antimicrobial properties	May stain teeth, excessive use may cause oral irritation	Traditionally used for various purposes, including during pregnancy, more common in rural areas

Table 2 provides valuable insights into the motivations and factors influencing pregnant women's use of herbal remedies in Indonesia; Alleviating Pregnancy-Related Complaints: This is a primary driver, with women using specific herbs to address common discomforts like nausea, back pain, fatigue, and constipation. This suggests a practical approach to managing pregnancy symptoms using traditional remedies; Promoting Fetal Health: This reflects a deep-seated belief in the power of herbs to enhance fetal development and prevent complications. It highlights the importance placed on ensuring a healthy pregnancy outcome; Easing Labor and Delivery: The use of herbs to facilitate labor and reduce pain points to the desire for a smoother birthing experience. This

aligns with traditional practices aimed at supporting women through childbirth; Cultural Traditions and Beliefs: This emphasizes the cultural significance of herbal remedies in prenatal care. It suggests that these practices are embedded in long-standing traditions and beliefs passed down through generations; Accessibility and Affordability: This highlights the practical considerations influencing herbal remedy use. In areas with limited access to healthcare or financial constraints, herbs offer a more accessible and affordable option; Perceived Safety and Natural Origin: This reflects a preference for natural remedies, perceived as gentler and safer than conventional medications, especially during pregnancy. The table shows that while some reasons,

like alleviating complaints and perceived safety, are consistent across regions, others, like promoting fetal health and easing labor, show greater regional

variation. This suggests that cultural beliefs and access to healthcare influence specific practices.

Table 2. Reasons for using herbal remedies during pregnancy.

Reason	Description	Data	Regional variations
Alleviating Pregnancy-Related Complaints	Addressing common discomforts associated with pregnancy	- Nausea and vomiting (ginger, lemongrass) - Back pain (turmeric) - Fatigue (lemongrass, moringa leaf) - Constipation (tamarind) - Heartburn (ginger - in small amounts)	Consistent across all regions, with specific remedies varying based on local traditions and availability
Promoting Fetal Health	Belief that certain herbs can enhance fetal development and prevent complications	- Turmeric (believed to promote healthy growth and prevent birth defects) - Moringa leaf (rich in nutrients believed to support fetal development)	More prevalent in rural areas and Papua, where beliefs in traditional medicine are stronger
Easing Labor and Delivery	Using herbs to facilitate labor and reduce pain during childbirth	- Papaya leaf (believed to stimulate contractions, although potentially unsafe) - Certain leaf decoctions (used to promote relaxation and ease labor pains)	More common in rural areas with limited access to modern healthcare facilities, particularly in West Java and Papua
Cultural Traditions and Beliefs	Continuing traditional practices passed down through generations	- Use of specific herbs based on cultural beliefs and customs - Seeking blessings and protection for the mother and baby through herbal rituals	Significant variations across regions, reflecting diverse cultural practices and beliefs
Accessibility and Affordability	Choosing herbal remedies due to their ease of access and lower cost compared to conventional medications	- Use of locally sourced herbs and readily available ingredients - Preference for herbal remedies in areas with limited access to healthcare facilities	More prevalent in rural areas and Papua, where access to healthcare and financial resources may be limited
Perceived Safety and Natural Origin	Preference for natural remedies over pharmaceutical drugs, especially during pregnancy	- Belief that herbs are gentler and safer for the mother and baby - Avoidance of potential side effects associated with conventional medications	Consistent across all regions, with varying degrees of emphasis on natural remedies

Table 3 provides valuable insights into how pregnant women in Indonesia perceive the benefits of using herbal remedies; Natural Origin: This is a central theme, with women believing that herbs, being derived from nature, are inherently safer and gentler than pharmaceutical drugs, especially during pregnancy. This reflects a common preference for natural remedies. This perception is consistent across all regions, highlighting a widespread belief in the safety of natural products; Effectiveness: Pregnant women believe that herbal remedies are effective in addressing specific health issues and promoting overall well-being. This suggests that these remedies are seen as a viable option for managing pregnancy-related concerns. The perceived effectiveness varies depending on the specific remedy and individual experiences, often influenced by cultural beliefs and anecdotal evidence passed down through generations; Affordability: Herbal remedies are often seen as more

affordable and accessible compared to conventional medications. This is particularly significant in rural areas and Papua, where access to healthcare and financial resources may be limited. This highlights the practical aspect of choosing herbal remedies, especially for women facing economic constraints; Cultural Acceptance: The use of herbal remedies is deeply ingrained in Indonesian culture, with practices often passed down through generations within families and communities. This reinforces the cultural acceptance and normalization of these remedies during pregnancy. This cultural acceptance is stronger in rural areas and communities with close ties to traditional practices, emphasizing the role of cultural heritage in shaping healthcare choices; Accessibility and Ease of Use: Herbal remedies are often readily available and easy to prepare and consume, making them a convenient option for pregnant women. This is particularly relevant in rural areas where access to

healthcare facilities may be limited; Reduced Side Effects: There's a common perception that herbal remedies have fewer or milder side effects compared to conventional medications. This aligns with the belief

that natural products are generally safer and gentler on the body. While this is a common perception, it's important to note that some herbs can have potential side effects or interact with medications.

Table 3. Perceived benefits of herbal remedies during pregnancy.

Perceived benefit	Description	Data	Regional variations
Natural Origin	The belief that herbs are derived from nature and therefore safer and gentler than pharmaceutical drugs	- "Herbs are natural, so I feel they are safer for my baby." - "I prefer to use natural remedies whenever possible, especially during pregnancy."	Consistent across all regions, with a strong emphasis on the natural origin of herbs
Effectiveness	Belief that herbal remedies are effective in treating specific ailments or promoting overall well-being	- "Ginger really helps with my morning sickness." - "Turmeric makes me feel stronger and healthier." - "My grandmother used this leaf decoction, and she had a healthy baby, so I trust it."	Varies depending on the specific remedy and individual experiences; often influenced by cultural beliefs and anecdotal evidence
Affordability	Herbal remedies are often more affordable and accessible compared to conventional medications	- "Herbs are cheaper than going to the doctor." - "I can easily find these herbs in my garden or at the local market."	More significant in rural areas and Papua, where access to healthcare and financial resources may be limited
Cultural Acceptance	The use of herbal remedies is widely accepted within families and communities, reinforcing traditional practices	- "My mother and grandmother used these herbs during their pregnancies, so it's normal for me." - "Everyone in my village uses these remedies, so I feel confident in using them too."	Stronger in rural areas and communities with close ties to traditional practices
Accessibility and Ease of Use	Herbal remedies are often readily available and easy to prepare and consume	- "I can easily grow these herbs in my garden." - "Preparing herbal teas is simple and convenient."	More relevant in rural areas where access to healthcare facilities may be limited
Reduced Side Effects	Belief that herbal remedies have fewer or milder side effects compared to conventional medications	- "I'm worried about the side effects of medications, so I prefer to use herbs." - "Herbs are more gentle on my body."	Common perception across all regions, although specific concerns about potential side effects of certain herbs may exist

Table 4 sheds light on the perceived risks associated with using herbal remedies during pregnancy in Indonesia; Adverse Effects on the Fetus: This is a significant concern, particularly in urban areas with greater access to information about potential risks. Women worry that certain herbs might cause birth defects or harm the developing fetus, especially during the early stages of pregnancy. Interestingly, concerns about fetal harm also exist in rural areas, likely due to traditional beliefs about certain herbs and their potential effects on pregnancy; Lack of Scientific Evidence: Many women acknowledge that herbal remedies often lack rigorous scientific research to support their safety and efficacy during pregnancy. This uncertainty can lead to hesitancy in using certain herbs. This concern is more common in urban areas with greater awareness of scientific research. However, in rural areas, trust in traditional knowledge and generational practices may sometimes outweigh concerns about scientific evidence; Dosage and Preparation: Uncertainty about the appropriate

dosage and preparation methods for herbal remedies is another concern. This highlights the need for clear guidance and information on safe and effective use. This uncertainty is more prevalent in areas where knowledge about herbal remedies is primarily passed down through oral traditions, potentially leading to variations in practices and dosages; Interactions with Medications: Concerns about potential interactions between herbal remedies and prescribed medications are also present, especially in urban areas with greater access to healthcare and prescribed medications. This highlights the importance of discussing herbal remedy use with healthcare providers to avoid potential adverse interactions; Misinformation and Misidentification: The risk of receiving incorrect information about herbal remedies or misidentifying herbs is a concern, potentially leading to adverse effects. This is more significant in areas where knowledge about herbal remedies is primarily based on oral traditions and where access to reliable information may be limited; Quality and

Contamination: Concerns about the quality and purity of herbal remedies, including potential contamination with pesticides or other harmful substances, are also present. This may vary depending on the source of

herbal remedies, with concerns potentially higher for commercially prepared products or herbs sourced from unknown origins.

Table 4. Perceived risks of herbal remedies during pregnancy.

Perceived risk	Description	Data	Regional variations
Adverse Effects on the Fetus	Concerns that certain herbs may harm the developing fetus, especially during the early stages of pregnancy	- "I'm worried that some herbs might cause birth defects." - "I'm not sure if it's safe to use this herb during the first trimester."	More prevalent in urban areas with greater access to information about potential risks; however, concerns may also exist in rural areas due to traditional beliefs about certain herbs
Lack of Scientific Evidence	Acknowledgment that many herbal remedies lack rigorous scientific research to support their safety and efficacy during pregnancy	- "I know there's not much research on this herb, but my family has used it for generations." - "I'm hesitant to use this herb because I don't know if it's been properly tested."	More common in urban areas with greater awareness of scientific research; however, trust in traditional knowledge may outweigh concerns about scientific evidence in rural areas
Dosage and Preparation	Uncertainty about the appropriate dosage and preparation methods for herbal remedies	- "I'm not sure how much of this herb is safe to consume." - "I don't know the correct way to prepare this remedy."	More prevalent in areas where knowledge about herbal remedies is primarily passed down through oral traditions, potentially leading to variations in practices
Interactions with Medications	Concerns about potential interactions between herbal remedies and prescribed medications	- "I'm worried that this herb might interfere with my medication." - "I'm not sure if it's safe to use this herb while taking other medicines."	More common in urban areas with greater access to healthcare and prescribed medications
Misinformation and Misidentification	Risk of receiving incorrect information about herbal remedies or misidentifying herbs, potentially leading to adverse effects	- "I heard about this herb from a friend, but I'm not sure if the information is accurate." - "I'm worried about accidentally using the wrong plant."	More significant in areas where knowledge about herbal remedies is primarily based on oral traditions and where access to reliable information may be limited
Quality and Contamination	Concerns about the quality and purity of herbal remedies, including potential contamination with pesticides or other harmful substances	- "I'm concerned about where these herbs are sourced from." - "I'm worried about pesticides or other contaminants in these herbs."	May vary depending on the source of herbal remedies; concerns may be higher for commercially prepared products or herbs sourced from unknown origins

Table 5 illustrates the diverse sources pregnant women in Indonesia rely on for information about herbal remedies; Family Members: Mothers, grandmothers, and other female relatives play a primary role in transmitting traditional knowledge about herbal remedies. This highlights the importance of intergenerational sharing and the strong influence of family in shaping health practices, particularly in rural areas with close family ties and established traditions; Traditional Healers (Dukun Bayi): Traditional birth attendants and healers are important sources of information, especially in rural areas and Papua, where they play a significant role in healthcare. They provide guidance on safe and appropriate herbal remedies based on local customs and beliefs. This underscores the continued importance of traditional healers in maternal and child health within these communities; Community Beliefs and Practices: Cultural norms and shared knowledge within the community significantly influence herbal remedy use during pregnancy. This highlights the role of the community in shaping perceptions and practices

related to traditional medicine. These shared beliefs reinforce the cultural acceptance and normalization of herbal remedies in prenatal care; Friends and Neighbors: Informal networks of women sharing personal experiences and recommendations about herbal remedies are a common source of information across all regions. This peer-to-peer exchange of knowledge complements information received from family and traditional healers, further reinforcing the social aspect of learning about and using herbal remedies; Books and Internet: Access to written and online resources provides additional information about herbal remedies, although the reliability of such sources may vary. This is more common in urban areas with greater access to literacy and technology. However, it also highlights the need for critical evaluation of information and access to reliable online resources; Healthcare Providers: Consultation with doctors or midwives regarding herbal remedies is less common across all regions. This may be due to a lack of knowledge among healthcare providers, communication barriers, or a perception that

healthcare providers may not approve of traditional practices. This highlights the need for greater integration of traditional and modern healthcare

practices and improved communication between pregnant women and healthcare providers.

Table 5. Sources of information about herbal remedies during pregnancy.

Source of information	Description	Data	Regional variations
Family Members	Mothers, grandmothers, and other female relatives share traditional knowledge and practices	- "My mother told me to drink ginger tea for morning sickness." - "My grandmother taught me how to prepare this herbal decoction."	The primary source of information across all regions, particularly in rural areas with strong family ties and traditional practices
Traditional Healers (Dukun Bayi)	Traditional birth attendants and healers provide advice and remedies based on local customs and beliefs	- "I consulted the dukun bayi in my village for advice on safe herbs to use during pregnancy." - "The dukun bayi gave me a special herbal mixture to help with labor."	More prevalent in rural areas and Papua, where traditional healers play a significant role in healthcare, particularly in maternal and child health
Community Beliefs and Practices	Cultural norms and shared knowledge within the community influencing herbal remedy use	- "Everyone in my community uses this herb during pregnancy, so I feel it must be safe." - "It's a tradition in our culture to drink this tea during the last month of pregnancy."	Significant influence across all regions, shaping perceptions and practices related to herbal remedies
Friends and Neighbors	Informal networks of women sharing personal experiences and recommendations about herbal remedies	- "My friend recommended this herb for back pain, and it really helped." - "I heard from my neighbor that this tea is good for increasing breast milk production."	A common source of information across all regions, supplementing knowledge from family and traditional healers
Books and Internet	Access to written and online resources providing information about herbal remedies, although reliability may vary	- "I read about the benefits of this herb in a book on traditional medicine." - "I found some information about this remedy online."	More common in urban areas with greater access to literacy and technology; however, access to reliable information may be limited
Healthcare Providers	Limited consultation with doctors or midwives regarding herbal remedies, potentially due to lack of knowledge or communication barriers	- "I asked my doctor about using ginger for nausea, and she said it was probably safe." - "I didn't discuss using herbal remedies with my midwife because I didn't think she would approve."	A less common source of information across all regions, highlighting the need for greater integration of traditional and modern healthcare practices

Table 6 provides a fascinating overview of how herbal remedy use varies across different regions in Indonesia; Urban Jakarta: Wider variety of herbs used, reflecting diverse influences and greater access to different plant sources. More likely to use commercially prepared remedies. Primarily for alleviating pregnancy complaints and perceived safety. Promoting fetal health is also a factor, but potentially less emphasized than in rural areas. Similar to overall trends, with emphasis on natural origin, effectiveness, and convenience. Greater awareness of potential risks, particularly regarding adverse effects on the fetus, likely due to access to information and healthcare. Family remains primary, but with increasing influence of healthcare providers, books, and the internet. High access to modern healthcare facilities and information, influencing choices and perceptions; Rural West Java: Strong emphasis on locally sourced

herbs and traditional recipes passed down through generations. Deeply rooted in cultural traditions and beliefs, with a strong emphasis on promoting fetal health and easing labor. Align with overall trends, with additional emphasis on cultural acceptance and affordability. Concerns about safety exist, but may be tempered by trust in traditional knowledge and practices. Primarily family, traditional healers, and community beliefs, reflecting strong reliance on local knowledge. Mixed access to healthcare, with traditional practices playing a significant role alongside modern facilities; Remote Papua: Unique and specialized remedies based on local biodiversity and traditional knowledge, often incorporating combinations of herbs and specific preparation methods. Deeply ingrained in cultural practices and beliefs, with a strong emphasis on spiritual and holistic aspects of health. Similar to overall trends,

with additional emphasis on the spiritual and symbolic significance of certain herbs. Limited awareness of potential risks due to limited access to information and healthcare. Strong trust in traditional knowledge. Primarily traditional healers and

community beliefs, reflecting a strong reliance on local knowledge and oral traditions. Limited access to modern healthcare, resulting in a heavy reliance on traditional medicine and healers.

Table 6. Regional variations in herbal remedy use during pregnancy.

Region	Types of Remedies Used	Reasons for Use	Perceived Benefits	Perceived Risks	Sources of Information	Access to Healthcare
Urban Jakarta	- Wider variety, including commercially prepared products - More likely to use herbs alongside conventional medications - Examples: Ginger capsules, turmeric supplements, packaged herbal teas	- Primarily for alleviating pregnancy-related complaints - Less emphasis on traditional beliefs and rituals - More likely to seek information about safety and efficacy	- Convenience and availability of commercial products - Perceived as complementary to modern medicine - Emphasis on natural origin and potential health benefits	- Greater awareness of potential risks and interactions with medications - Concerns about quality and contamination of commercial products - More likely to consult healthcare providers for advice	- Family members - Internet and books - Healthcare providers - Friends and social networks	- High access to modern healthcare facilities and qualified professionals - Greater awareness of health risks and benefits - More likely to combine traditional and modern healthcare practices
Rural West Java	- Reliance on locally sourced herbs and traditional preparations - Greater emphasis on leaf decoctions and specific plant combinations - Examples: Papaya leaf, cat's whiskers, local varieties of ginger and turmeric	- Strong adherence to traditional beliefs and practices - Use of herbs for promoting fetal health and easing labor - Seeking blessings and protection through herbal rituals	- Deeply rooted trust in traditional knowledge and practices - Cultural acceptance and social support for herbal remedy use - Perceived effectiveness based on anecdotal evidence and community beliefs	- Concerns about potential harm from certain herbs, particularly in early pregnancy - Reliance on traditional knowledge may limit awareness of potential risks - Less access to information about safe dosage and preparation	- Family members - Traditional healers (dukun bayi) - Community elders and experienced mothers - Limited access to written or online information	- Mixed access to healthcare, with reliance on both traditional healers and modern facilities - Strong influence of community beliefs and practices on healthcare choices - Limited access to specialized care and information
Remote Papua	- Diverse range of local herbs, often unique to the region - Strong emphasis on traditional knowledge and practices passed down through generations - Examples: Specific local plants with medicinal properties, unique preparation methods	- Deeply ingrained cultural beliefs about the role of herbs in pregnancy and childbirth - Use of herbs for various purposes, including spiritual protection and ensuring a healthy baby - Reliance on traditional healers for guidance and remedies	- Strong faith in the healing power of nature and traditional medicine - Cultural significance and spiritual connection to herbal remedies - Perceived effectiveness based on long-standing traditions and community experiences	- Limited awareness of potential risks due to limited access to information - Potential for misidentification or misuse of herbs due to reliance on oral traditions - Challenges in accessing healthcare and receiving timely interventions in case of adverse effects	- Traditional healers (dukun bayi) - Community elders and knowledgeable individuals - Family members and intergenerational knowledge transfer - Very limited access to external sources of information	- Limited access to modern healthcare facilities and qualified professionals - Heavy reliance on traditional medicine and healers - Challenges in accessing emergency care and specialized services

4. Discussion

Herbal remedies have been used for centuries to alleviate pregnancy-related complaints. In Indonesia, the use of herbal remedies is deeply ingrained in the culture, and pregnant women commonly use these remedies to address various discomforts. Some of the most commonly used herbs for pregnancy-related complaints include ginger, turmeric, lemongrass, and tamarind. Ginger is a popular remedy for nausea and vomiting, commonly known as morning sickness. It is believed to work by stimulating digestive function and

reducing inflammation in the gut. Several studies have investigated the effectiveness of ginger in relieving pregnancy-related nausea and vomiting, with promising results. A review of 12 randomized controlled trials found that ginger was effective in reducing nausea and vomiting in pregnant women, with no significant adverse effects. Ginger can be consumed in various forms, including fresh ginger root, ginger tea, ginger ale, and ginger capsules. The recommended dosage of ginger for pregnancy-related nausea and vomiting is typically 1 gram per day,

divided into several doses. However, it is important to consult with a healthcare provider before using ginger, especially if you have any underlying health conditions or are taking other medications. Turmeric is another widely used herb in Indonesia, often consumed as a tea or added to food. It contains a compound called curcumin, which is believed to have anti-inflammatory and antioxidant properties. Turmeric is traditionally used to relieve various ailments, including back pain, muscle aches, and digestive problems. During pregnancy, turmeric is often used to relieve back pain, which is a common complaint due to the increased weight and changes in posture. It is also believed to improve digestion and reduce inflammation in the gut. While some studies suggest that turmeric may be safe and potentially beneficial during pregnancy, more research is needed to confirm its efficacy and safety. Lemongrass is a fragrant herb commonly used in Southeast Asian cuisine. It is also used in traditional medicine to alleviate various ailments, including fatigue, anxiety, and insomnia. During pregnancy, lemongrass is often consumed as a tea to help reduce fatigue and promote relaxation. Lemongrass is believed to have calming and sedative properties, which may help reduce anxiety and improve sleep quality. It is also a good source of antioxidants and may help boost the immune system. While lemongrass is generally considered safe during pregnancy, it is important to use it in moderation and consult with a healthcare provider if you have any concerns. Tamarind is a tropical fruit with a sour and tangy pulp that is commonly used in Indonesian cuisine. It is also used in traditional medicine to relieve constipation, a common complaint during pregnancy. Tamarind is a good source of fiber, which adds bulk to the stool and helps promote regular bowel movements. In addition to its fiber content, tamarind also contains tartaric acid, which has a laxative effect. While tamarind is generally considered safe during pregnancy, it is important to consume it in moderation as excessive intake may cause diarrhea.¹¹⁻¹⁵

In Indonesia, the use of herbal remedies extends beyond addressing pregnancy-related discomforts. Many women believe that certain herbs can promote fetal health and ease labor, contributing to a smoother

pregnancy and childbirth experience. Turmeric, moringa leaf, and papaya leaf are some of the commonly used herbs for these purposes. Turmeric, a vibrant yellow spice commonly used in Indonesian cuisine, is believed to have a range of health benefits, including promoting fetal health. It is often consumed during pregnancy with the belief that it can support healthy fetal growth and development, and potentially prevent birth defects. The active compound in turmeric, curcumin, is known for its anti-inflammatory and antioxidant properties. These properties may contribute to a healthy pregnancy by reducing inflammation and oxidative stress, which are believed to play a role in pregnancy complications. While some studies suggest that turmeric may be safe and potentially beneficial during pregnancy, more research is needed to confirm its efficacy and safety for promoting fetal health. Moringa leaf, often referred to as a "superfood," is gaining popularity in Indonesia for its nutritional value. It is a rich source of vitamins, minerals, and antioxidants, and is believed to support overall health and well-being, including during pregnancy. Pregnant women often consume moringa leaf with the belief that it can provide essential nutrients for fetal development, boost the mother's immune system, and increase energy levels. While moringa leaf is a nutritious food source, more research is needed to confirm its specific benefits for fetal health and pregnancy outcomes. Papaya leaf has a long history of use in traditional medicine, including during pregnancy. It is believed to stimulate contractions and facilitate labor, potentially leading to a smoother and faster childbirth. However, its use during pregnancy has been a subject of debate due to concerns about potential adverse effects. Papaya leaf contains compounds that may stimulate uterine contractions, which could increase the risk of miscarriage or preterm labor, especially in early pregnancy. While papaya leaf is traditionally used to ease labor, it is essential to approach its use with caution and consult with healthcare providers to ensure the safety of both the mother and the fetus.¹⁶⁻²⁰

5. Conclusion

This qualitative study highlights the widespread use of traditional herbal remedies among pregnant women in Indonesia. While these remedies are perceived as natural and beneficial, concerns remain regarding their safety and efficacy. Healthcare providers should engage in open dialogue with pregnant women about their herbal use, providing evidence-based information and culturally sensitive counseling to ensure maternal and fetal well-being. Further research is needed to evaluate the safety and efficacy of specific herbal remedies and develop culturally appropriate interventions to promote informed healthcare practices during pregnancy. This includes investigating the potential interactions between herbal remedies and conventional medications, as well as understanding the impact of culturally tailored interventions. By addressing these knowledge gaps, healthcare providers and policymakers can work together to ensure that pregnant women in Indonesia have access to safe and effective healthcare options that respect their cultural traditions and promote the health and well-being of both mother and baby.

6. References

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