

Knowledge and practices regarding the use of medicinal plants during pregnancy in Costa Rica

Conocimientos y las prácticas sobre el uso de plantas medicinales durante el embarazo en Costa Rica

Authors:

Sandra Liliana Hernández-Salón
Universidad Internacional de las Américas
(UIA) y Universidad San Judas, Costa Rica

Denyer Sánchez-Pérez
Universidad Internacional de las Américas
(UIA) y Universidad Hispanoamericana (UH),
Llorente, Costa Rica

Javier Alonso León-Chavarría
Universidad Ciencias Médicas (UCIMED), La
Sabana, Costa Rica

Nicol García-Carvajal
Universidad Internacional de las Américas
(UIA), Costa Rica

Corresponding author:

Sandra Liliana Hernández-Salón
sandrasalon2000@gmail.com

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Abstract

This study aims to identify the knowledge and practices regarding the use of medicinal plants and analyze how gender and educational level influence such knowledge and practices during pregnancy in Costa Rica, addressing research gaps. A total of 144 individuals aged 20 to 49 were surveyed. 59% of respondents were aware of the risks associated with the use of medicinal plants during pregnancy, with women showing greater knowledge than men. A higher educational level was associated with greater concern about risks such as abortion and fetal malformations. The most commonly used plants were *Matricaria chamomilla*, *Ruta graveolens*, *Satureja viminea*, and *Zingiber officinale*, with leaves being the most frequently used part and infusions the most common preparation method. These plants were primarily used to treat nausea and gastrointestinal issues. The study concluded that further research is needed to guide healthcare professionals and the public on the safe use of medicinal plants during pregnancy in Costa Rica.

Keywords: medicinal plants, pregnancy, perception of use of medicinal plants, risk of using medicinal plants, ethnobotany.

Resumen

Este estudio tiene como objetivo identificar el conocimiento y las prácticas relacionadas con el uso de plantas medicinales y analizar cómo el género y el nivel educativo influyen en dichos conocimientos y prácticas, durante el embarazo en Costa Rica, abordando brechas de investigación. Se encuestaron 144 personas de 20 a 49 años. El 59% de los encuestados conocía los riesgos del uso de plantas medicinales en el embarazo, y las mujeres mostraron mayor conocimiento que los hombres. Un mayor nivel educativo se asoció con mayor preocupación por riesgos como el aborto y las malformaciones fetales. Las plantas más usadas fueron *Matricaria chamomilla*, *Ruta graveolens*, *Satureja viminea* y *Zingiber officinale*, siendo las hojas la parte más empleada y las infusiones el método de preparación más común. Se utilizaron principalmente para tratar náuseas y problemas gastrointestinales. El estudio concluyó que es necesario más investigación para guiar a los profesionales de la salud y al público en el uso seguro de plantas medicinales durante el embarazo en Costa Rica.

Palabras clave: plantas medicinales, embarazo, percepción del uso de plantas medicinales, riesgo del uso de plantas medicinales, etnobotánica.

1. Introduction

The use of medicinal plants as a therapeutic resource dates back to a time even before the existence of human beings, being a practice observed among various species of mammals and birds (Pattanayak, 2024). For humans, medicinal plants have historically been the primary source of remedies for treating a wide variety of ailments and diseases. This practice remained the primary therapeutic approach until the mid-20th century. Even today, medicinal plants continue to play a significant role in healthcare, with an estimated 80% of the global population relying on them, either as complementary treatments or, in many cases, as the sole form of medicine (Kéry, 2023).

During pregnancy, a large percentage of women (50-90%) experience nausea, vomiting, and exacerbated health issues. Medicinal plants, including those that aid in childbirth, serve as a source of relief (Dekkers et al., 2020). The prevalence of medicinal plant use during pregnancy varies widely, from 1% to 71.8% across different regions, influenced by cultural practices and traditional knowledge (Balarastaghi et al., 2022; Jackson et al., 2024; Jahan et al., 2022; Quzmar et al., 2021).

Globally, the use of medicinal plants in maternal health is well-documented in traditional medicine systems, particularly in countries with strong cultural ties to herbal remedies. Research highlights that medicinal plants are frequently used in Asia, Africa, and Latin America for managing symptoms such as nausea and gastrointestinal issues, as well as for labor facilitation. However, while certain plants like *Matricaria chamomilla* (chamomile) and *Zingiber officinale* (ginger) are commonly used, they can carry risks if not standardized or properly dosed (Im et al., 2023; Balarastaghi et al., 2022). This underscores the importance of regulated use to prevent adverse effects, a concern that holds especially true in Costa Rica, where limited research has explored the impact and safety of these plants during pregnancy across diverse populations.

In Costa Rica, research on medicinal plant use during pregnancy remains scarce, with only a few studies primarily focused on indigenous populations in Central America (Locklear et al., 2013) and the Coto Brus region (Solano-Acuña and Rodríguez-Brenes, 2015). This narrow focus leaves a substantial gap in our understanding of how these plants are used across different Costa Rican communities. Extensive research is necessary to document the use of medicinal plants during pregnancy nationwide, as this knowledge could contribute to the preservation of traditional medicinal practices and inform public health policies that address the specific needs of Costa Rican society.

Despite the potential benefits, the use of certain medicinal plants during pregnancy presents risks. The World Health Organization (WHO) has raised concerns about the unregulated use of herbal medicine due to possible teratogenic effects or premature contractions induced by some plants. For instance, studies have identified *Ruta graveolens* (rue) and *Cinnamomum verum* (cinnamon) as plants with uterotonic effects, which could lead to premature contractions if used improperly (Bernstein et al., 2021; Kothari & DeGolier, 2022). Moreover, high doses of chamomile and ginger have been linked to increased uterine contractility and bleeding risks, highlighting the importance of professional guidance when using these herbs (de Abreu Tacon et al., 2020).

The socio-cultural and educational background of individuals also influences their perception and use of medicinal plants during pregnancy. Research suggests that women with higher educational levels are more aware of the potential risks associated with herbal medicine, while those with less formal education are more likely to rely on traditional knowledge (Mustofa & Rahmawati, 2020). In Latin America, particularly among indigenous communities, medicinal plants remain a primary option for maternal care. Studies have

shown that traditional plant use is often the first line of treatment, especially in rural areas with limited access to modern healthcare facilities (Locklear et al., 2013). Therefore, understanding these practices within the Costa Rican context requires examining the socio-cultural dynamics that drive plant use in maternal care.

From a public health perspective, the integration of medicinal plant use in maternal healthcare is essential to developing inclusive health policies. The World Health Organization has established guidelines for the safe use of traditional medicine, emphasizing the importance of awareness campaigns and regulatory policies (World Health Organization, 2013). Countries such as Brazil have adopted health policies that address the safe use of traditional medicine in maternal care, aiming to minimize risks while preserving cultural heritage (Leite et al., 2021). Adopting similar frameworks in Costa Rica could guide both healthcare professionals and the public towards the safe use of medicinal plants during pregnancy.

Presented below are the hypotheses, specific objectives, and research questions that guided the course of this study.

Hypotheses:

1. Women in Costa Rica possess greater knowledge and awareness of the risks associated with the use of medicinal plants during pregnancy compared to men.

2. Higher educational levels correlate with increased concern about risks such as miscarriage and fetal malformations resulting from the use of medicinal plants during pregnancy.

Specific Objectives:

1. To assess the level of knowledge about the use of medicinal plants during pregnancy in the Costa Rican population
2. To identify the most common practices related to medicinal plants during pregnancy, including the species used, the parts employed, and the preparation methods.
3. To explore gender differences in knowledge and practices related to the use of medicinal plants during pregnancy.
4. To analyze the relationship between educational levels and the use of medicinal plants during pregnancy.

Research Questions:

1. What is the level of knowledge among the Costa Rican population regarding the use of medicinal plants during pregnancy?
2. What are the most commonly used medicinal plant species during pregnancy in Costa Rica?
3. To what extent do gender and educational level influence knowledge about medicinal plants?

2. Materials and Methods

A descriptive cross-sectional quantitative study was conducted. Data were collected through a semi-structured interview. The study was conducted between July and September 2023 and targeted Costa Rican residents aged 20 to 49 years across all seven provinces (San José, Alajuela, Cartago, Heredia, Guanacaste, Puntarenas, and Limón). A non-probabilistic convenience

sampling method was used, resulting in a final sample of 144 participants. Interviews were conducted at various bus terminals in San José, strategically selected as central transit points for residents from all provinces, allowing for a geographically diverse representation of the Costa Rican population.

Data Collection Tools and Procedures:

1. The main tool was a semi-structured interview guide, developed and validated through a pilot test with 10 participants (pilot data were not included in the final analysis). The interview guide covered:

- Demographic information (age, gender, province of residence, education level)
- Knowledge of medicinal plants used during pregnancy
- Awareness of risks associated with plant use during pregnancy
- Cultural practices and beliefs regarding plant use

2. Interview Process

- Potential participants were approached at bus terminals.
- The study objectives were explained. Interviews were conducted in Spanish.
- Each interview lasted approximately 5-20 minutes.

3. Technical Procedures and Measurements

- Plant Identification
- Common plant names were recorded as provided by participants.
- Scientific names were later verified using:
 - The Manual de Plantas de Costa Rica (Manual of Costa Rican Plants)
 - The National Herbarium database
 - Consultation with botanical experts when necessary

• Plant Information Categorization

- Parts used (e.g., leaves, roots, flowers)
- Preparation methods (e.g., infusion, decoction)
- Reported uses during pregnancy
- Perceived risks and contraindications

4. Statistical Analysis

• Quantitative Analysis

- Descriptive statistics were calculated using SPSS version 25.0.
- Frequencies and percentages were determined for categorical variables.
- Means and standard deviations were calculated for continuous variables.
- Student's t-tests were employed to compare means between groups.
- ANOVA was used for comparing multiple groups.
- Statistical significance was set at $p < 0.05$.

5. Data Quality Control

- Interview forms were reviewed daily for completeness.
- Double data entry was performed to minimize errors.
- Inconsistencies were resolved by cross-referencing with original forms.

3. Results

Survey Demographics: This study included 144 individuals aged 20 to 50 (52 men and 92 women) from various Costa Rican provinces: 26 from San José, 23 from Alajuela, 24 from Cartago, 21 from Heredia, 14 from Guanacaste, 15 from Puntarenas, and 20 from Limón. Education levels

varied: 5 had incomplete elementary school, 18 had elementary school, 15 had incomplete high school, 29 had completed high school, 33 had started university studies, 12 held a bachelor's degree, 29 held another degree, and 3 with a postgraduate degree.

Plant Usage Insights: Out of 144 participants, 95 provided information on medicinal plant use. Identified 59 species; 26 considered prohibited,

17 recommended throughout pregnancy, and 17 had conflicting reports on usage during this stage.

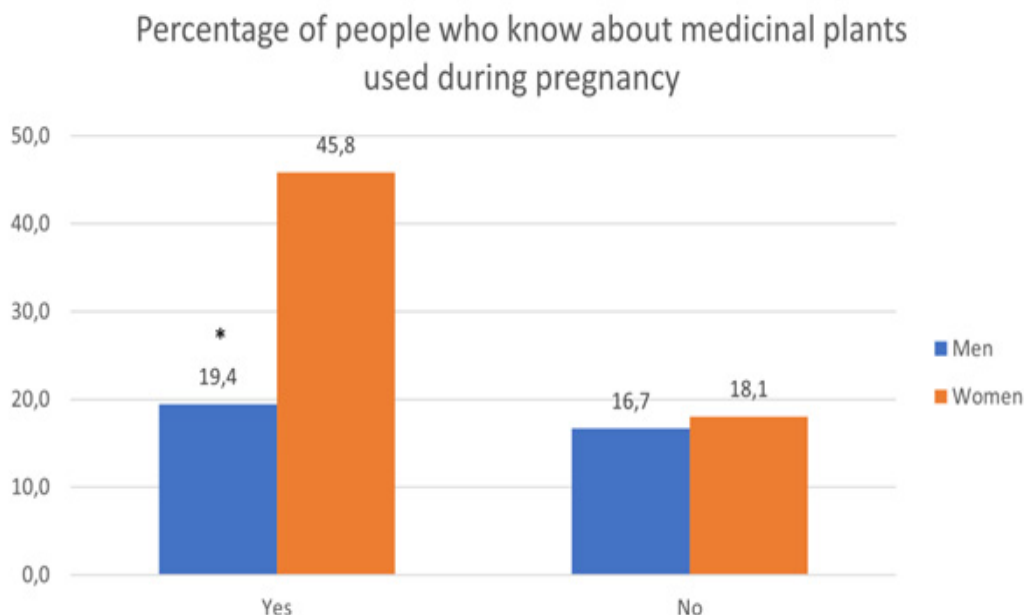


Figure 1: Percentage of people who know about medicinal plants used by pregnant women to treat various health problems, according to gender. * There is a statistically significant difference between genders (t Student = 0.025).
Source: Own elaboration.

Women demonstrate greater awareness of medicinal plants used during pregnancy than men ($t = 0.025$), as shown in figure 1. However, there are no significant differences between genders in the average number of known plant species ($t = 0.097$), awareness of medicinal plants posing risks during pregnancy ($t = 0.543$), understanding of pregnancy-related risks ($t = 0.618$), or knowledge of plant categorization based on pregnancy risk ($t = 0.078$).

The region of residence, whether rural or not, does not yield a statistically significant difference in knowledge about medicinal plants used during pregnancy ($t = 0.087$), the average number of known plant species ($t = 0.487$), or awareness of medicinal plants unsuitable for this condition ($t = 0.084$).

When comparing provinces, there is no significant difference in the respondents' knowledge of medicinal plants used during pregnancy. Additionally, there is no statistical difference

in age groups concerning awareness of the use of medicinal plants in pregnancy (ANOVA = 0.623), the number of known medicinal plants (ANOVA = 0.185), awareness of medicinal plants unsuitable for pregnancy (ANOVA = 0.546), or the perceived risks associated with these plants (ANOVA = 0.958).

Regarding educational levels, there is no significant difference in knowledge about medicinal plants used during pregnancy (ANOVA = 0.259) or the average number of known plants (ANOVA = 0.237). However, there is a statistically significant difference in awareness of medicinal plants unsuitable for this period (ANOVA = 0.042), indicating that individuals with university education possess greater knowledge compared to those with primary or secondary education. Similarly, there is a significant difference in awareness of potential adverse effects from the use of certain medicinal plants (ANOVA = 0.013).

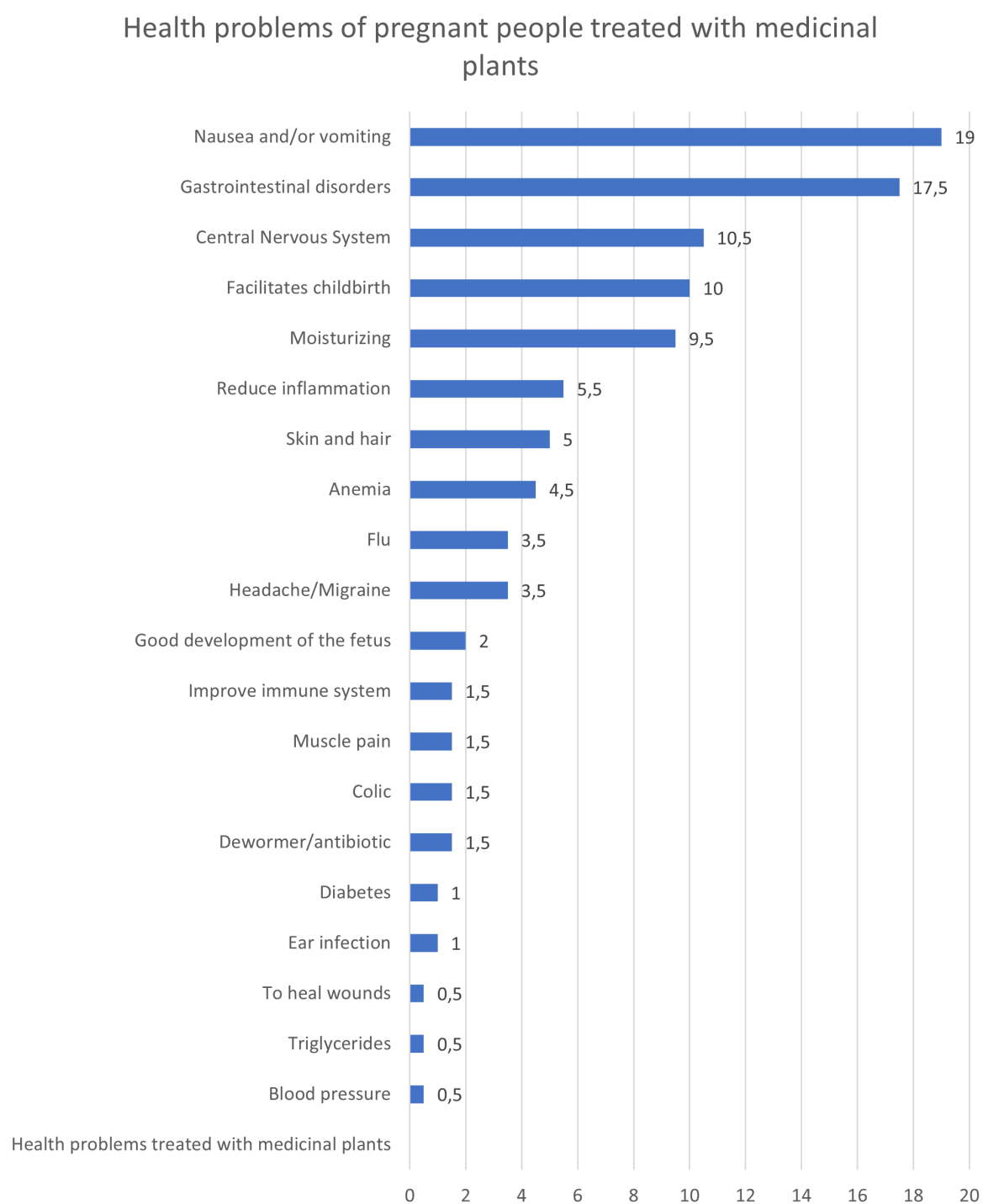


Figure 2: Health problems for which pregnant women use medicinal plants. Note: Gastrointestinal problems include improve digestion, remove acidity, treat stomach pain and treat colitis. Central nervous system includes treating anxiety, nerves, relaxation, sleep aid
Source: Own elaboration.

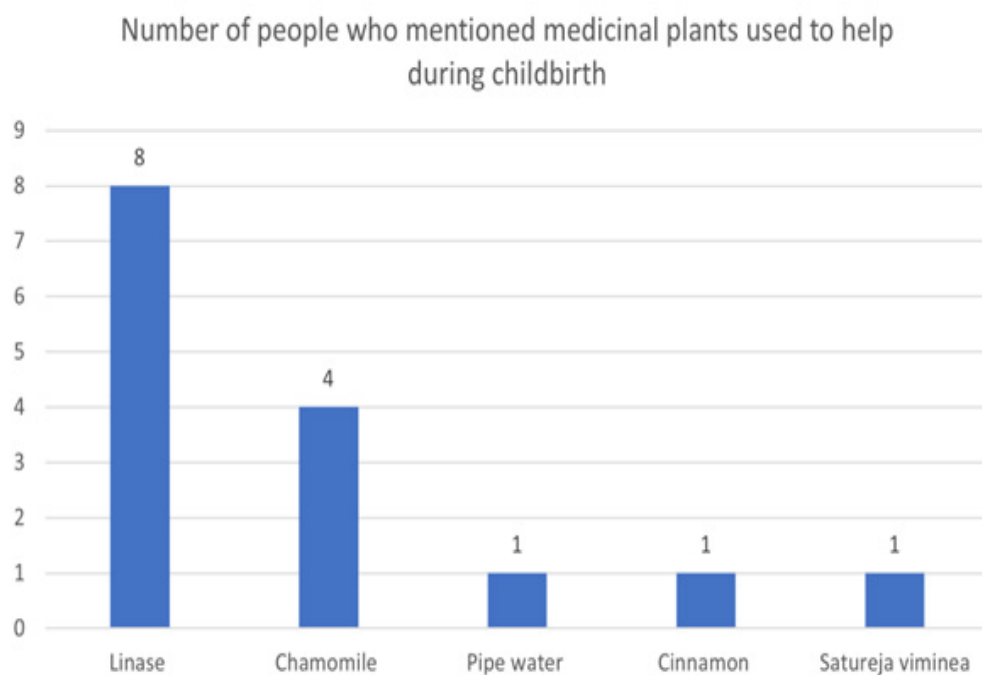


Figure 3: Of the 95 people who provided information on medicinal plants, 13 indicated medicinal plants that help during childbirth.
Source: Own elaboration.

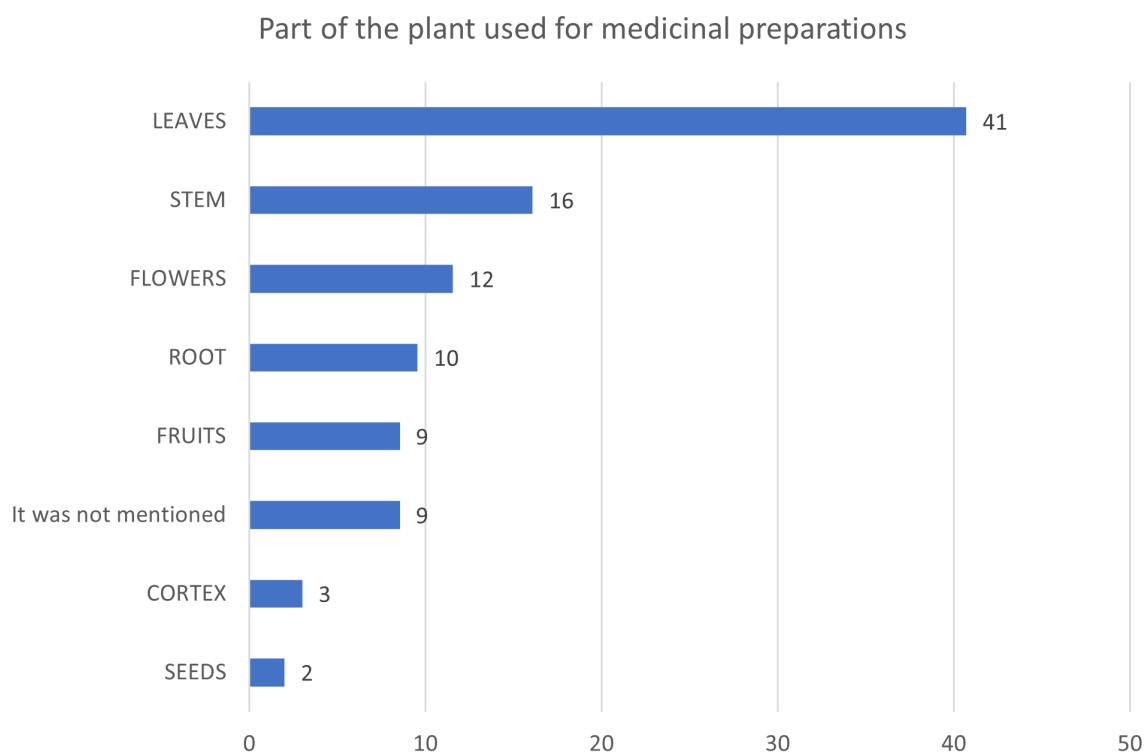


Figure 4: Part of the plant used for the preparation of the treatments
Source: Own elaboration.

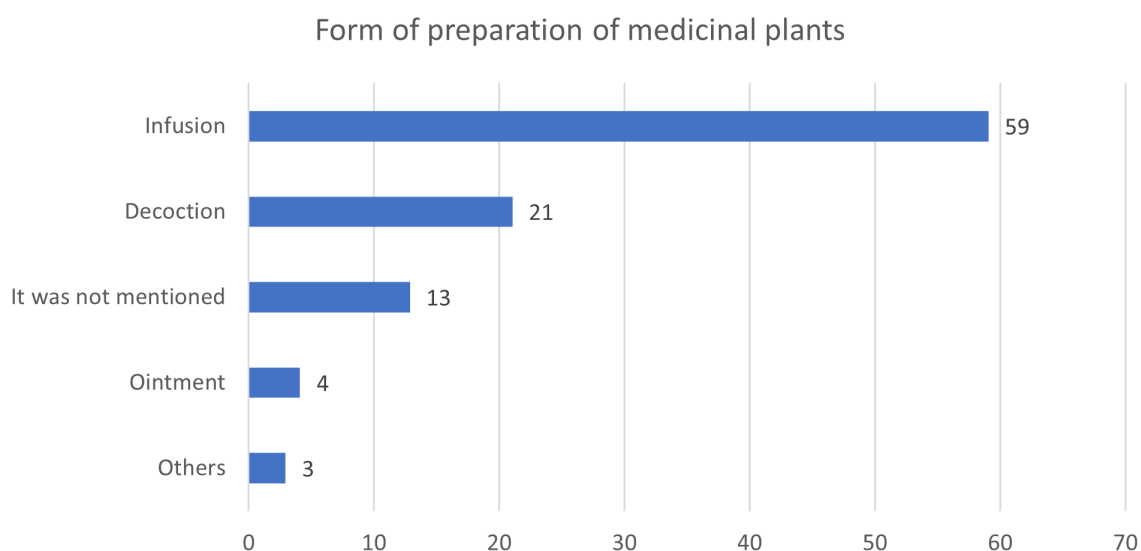


Figure 5: Form of preparation of medicinal plants.
Source: Own elaboration.

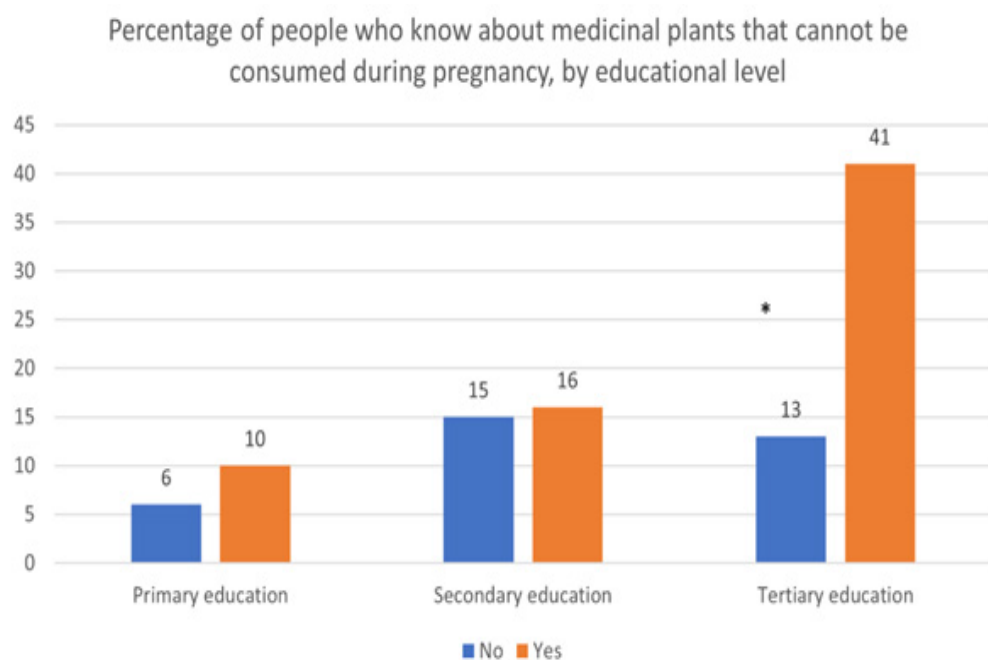


Figure 6: Percentage of people who know about medicinal plants that increase the probability of abortion or fetal malformations, according to level of schooling (people with one or more years of primary school; one or more years of secondary school; one year of university up to postgraduate studies). The difference between groups is statistically significant, $p < 0.05$.
Source: Own elaboration.

Knowledge about the possible risk produced by the use of medicinal plants in pregnancy.

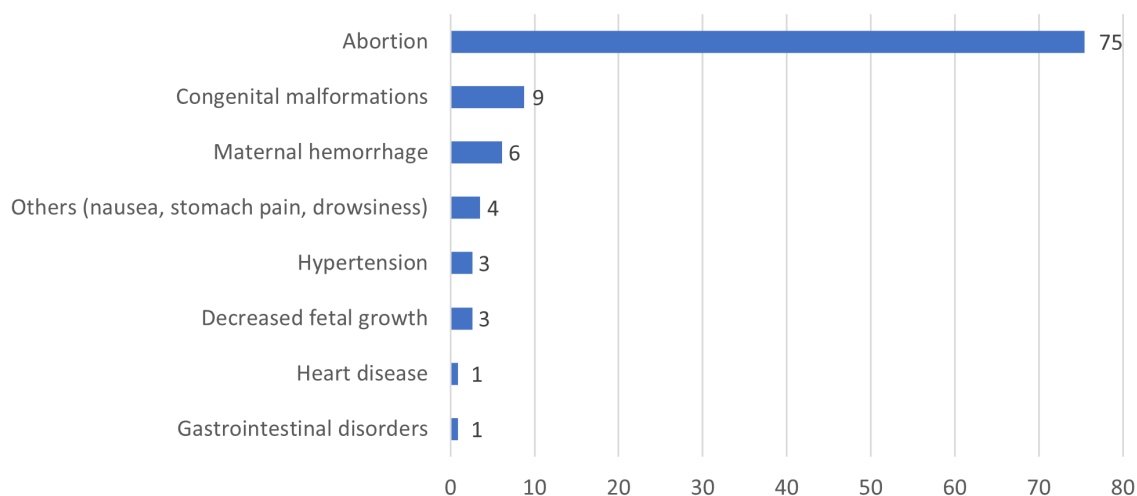


Figure 7: Awareness of potential risk produced by the use of medicinal plants in pregnancy. Note: Of the 144 people interviewed, 85 people mentioned one or more risks of medicinal plant consumption during pregnancy.

Source: Own elaboration.

Table 1: . Plant species mentioned according to their use or restriction during the pregnancy period.

Note: Table modified from Hernández-Salón and León-Chavarría, 2023. *Species not mentioned in the previous study. In quotes the names that only appear in Spanish and are typical of Costa Rica.

Source: Own elaboration.

Common name	Used	Not to be used	Family	Species
Chamomile	49,5	34,7	Asteraceae	<i>Matricaria chamomilla</i>
Rue	0,0	34,7	Rutaceae	<i>Ruta graveolens</i>
“Menta”	16,8	7,4	Lamiaceae	<i>Satureja viminea</i>
Ginger	15,8	3,2	Zingiberaceae	<i>Zingiber officinale</i>
Cinnamon	4,2	12,6	Lauraceae	<i>Cinnamomum verum</i>
Flaxseed	0,0	12,6	Linaceae	<i>Linum usitatissimum</i>
Aloe	6,3	3,2	Liliaceae	<i>Aloe vera</i>
Rosemary	3,2	5,3	Lamiaceae	<i>Salvia rosmarinus</i>
Corn mint	4,2	4,2	Lamiaceae	<i>Mentha arvensis</i>
Linden	6,3	2,1	Acanthaceae	<i>Justicia pectoralis</i>
Thyme	7,4	1,1	Lamiaceae	<i>Thymus vulgaris</i>

Common name	Used	Not to be used	Family	Species
Canabis	0,0	7,4	Cannabaceae	<i>Cannabis sativa</i>
Eucalyptus	0,0	5,3	Myrtaceae	<i>Eucalyptus sp.</i>
“Cuculmeca”	5,3	0,0	Smilacaceae	<i>Smilax dominguensis</i>
Sage	0,0	5,3	Lamiaceae	<i>Salvia officinalis</i>
Anise	0,0	5,3	Apiaceae	<i>Pimpinella anisum</i>
“Hombre grande”	0,0	4,2	Simaroubaceae	<i>Quassia amara</i>
Turmeric	2,1	2,1	Zingiberaceae	<i>Curcuma longa</i>
*Pot marigold	1,1	3,2	Asteraceae	<i>Calendula officinali</i>
Caraño shell	4,2	0,0	Burseraceae	<i>Trattinnickia aspera</i>
Bushy matgrass	2,1	1,1	Verbenaceae	<i>Lippia alba</i>
Garlic	2,1	1,1	Liliaceae	<i>Allium sativum L</i>
*Passiflora	2,1	1,1	Passifloraceae	<i>Passiflora sp</i>
Mexican oregano	1,1	1,1	Lamiaceae	<i>Lippia graveolens</i>
Lemon grass	2,1	0,0	Poaceae	<i>Cymbopogon citratus</i>
Guava	0,0	2,1	Myrtaceae	<i>Psidium guajaba</i>
Lemon	2,1	0,0	Rutaceae	<i>Citrus aurantifolia</i>
“Indio desnudo”	1,1	1,1	Burseraceae	<i>Bursera simaruba</i>
“Gavilana”	1,1	1,1	Asteraceae	<i>Neurolaena lobata</i>
Orange	2,1	0,0	Rutaceae	<i>Citrus × sinensis</i>
Mallow	1,1	1,1	Malvaceae	<i>Malva parviflora</i>
Plantain	0,0	2,1	Plantaginaceae	<i>Plantago sp</i>
Pineapple	0,0	2,1	Bromeliaceae	<i>Ananas comosus</i>
Trumpet tree	0,0	2,1	Cecropiaceae	<i>Cecropia peltata</i>
Coconut	0,0	2,1	Arecaceae	<i>Cocos nucifera</i>
Lavender	2,1	0,0	Lamiaceae	<i>Lavandula angustifolia</i>

Common name	Used	Not to be used	Family	Species
*Parsley	0,0	2,1	Apiaceae	<i>Petroselinum crispum</i>
*Pineapple	0,0	2,1	Bromeliaceae	<i>Ananas comosus</i>
Bitter gourd	0,0	1,1	Cucurbitaceae	<i>Momordica charantia</i>
Dandelion	0,0	1,1	Asteraceae	<i>Taraxacum officinale</i>
Cobblers pegs	0,0	1,1	Asteraceae	<i>Bidens pilosa</i>
Horsetail	0,0	1,1	Equisetaceae	<i>Equisetum giganteum</i>
Spiny coriander	1,1	0,0	Apiaceae	<i>Eryngium foetidum</i>
Nutmeg	0,0	1,1	Myristicaceae	<i>Myristica fragrans</i>
Sensitive Plant	0,0	1,1	Fabaceae	<i>Mimosa pudica</i>
Basil	1,1	0,0	Lamiaceae	<i>Ocimum basilicum</i>
Mountain tobacco	0,0	1,1	Asteraceae	<i>Arnica sp</i>
Lemon balm	1,1	0,0	Lamiaceae	<i>Melissa officinalis</i>
Cat's claw	1,1	0,0	Rubiaceae	<i>Uncaria tomentosa</i>
Valerian	1,1	0,0	Caprifoliaceae	<i>Valeriana officinalis</i>
*Wormwood	0,0	1,1	Asteraceae	<i>Artemisia absinthium</i>
*Borrajé	1,1	0,0	Boraginaceae	<i>Borago officinalis</i>
Orange blossom flower	1,1	0,0	Rutaceae	<i>Citrus aurantifolia</i>
*Chicory	1,1	0,0	Asteraceae	<i>Chicorium intybus</i>
*Chang	1,1	0,0	Lamiaceae	<i>Hyptis suaveolens</i>
*Ginkgo biloba	1,1	0,0	Ginkgoaceae	<i>Ginkgo biloba</i>
*Ginseng	1,1	0,0	Araliaceae	<i>Panax ginseng</i>
*Jasmine	1,1	0,0	Oleaceae	<i>Jasminum officinale</i>
*Licorice	0,0	1,1	Fabaceae	<i>Glycyrrhiza glabra</i>

Note: Of 144 people, 95 gave the name of medicinal plant species that could or could not be used during pregnancy. In quotes the names that only appear in Spanish and are typical of Costa Rica. *Source:* Own elaboration

4. Discussion

The study highlights significant gender differences in knowledge of medicinal plants used during pregnancy, with 71% of women and 52% of men demonstrating awareness (Figure 1). This disparity mirrors global findings in which women generally hold more knowledge of traditional medicinal practices, often due to cultural roles that position them as primary caregivers in family health, particularly during pregnancy (Abdullah & Andrabi, 2021; Mustofa & Rahmawati, 2020). This finding suggests that in Costa Rica, as in other Latin American settings, gender-specific health education could further empower both men and women to make informed decisions on the safe use of medicinal plants during pregnancy.

Health issues such as nausea, gastrointestinal problems, and anxiety were the most commonly treated conditions with medicinal plants, as indicated by respondents (Figure 2). This aligns with the global use of plants like *Matricaria chamomilla* (chamomile) and *Zingiber officinale* (ginger) for their anti-nausea and digestive properties (Dekkers et al., 2020; Balarastaghi et al., 2022). While these plants are traditionally seen as safe, it is essential to emphasize dosage and preparation guidelines. For instance, chamomile, though commonly used, has been associated with increased uterine contractility at high doses, which poses a risk for pregnant women (Kothari & DeGolier, 2022). This underlines the need for health professionals to provide clear information on safe use, especially in rural areas with limited access to formal healthcare.

When analyzing plant use for labor facilitation, respondents identified flaxseed, chamomile, and cinnamon as popular choices (Figure 3). Flaxseed, in particular, was frequently mentioned for its perceived benefits in labor preparation, supported by findings from an Ethiopian hospital where flaxseed consumption correlated with a 72% reduction in labor complications (Nigussie et al., 2023). However, the effects of other plants, like cinnamon, are more complex. While

cinnamon is traditionally used for labor induction in parts of Latin America, some studies in animal models suggest that it may actually inhibit uterine contractions, contrary to its traditional use (Arbati et al., 2021). These contradictions highlight the necessity for further research into the physiological effects of these plants on labor and delivery outcomes in humans.

The study also found considerable variation in the plant parts used and preparation methods among the respondents. Leaves were the most commonly used plant part (40.7%), followed by stems (16.1%) and flowers (11.6%), while infusions (59.1%) and decoctions (21.1%) were the predominant preparation methods (Figures 4 and 5). This trend aligns with findings from studies in Morocco and South America, where infusions and decoctions are the preferred preparation methods for medicinal plants (Kachmar et al., 2021; Horackova et al., 2023). The preference for these methods likely aligns with cultural practices that prioritize gentle extraction techniques perceived as safer. However, preparation methods significantly affect a plant's efficacy and safety profile, suggesting a need for standardization to minimize potential adverse effects.

The awareness of risks associated with medicinal plant use during pregnancy is relatively high, with 59% of respondents indicating knowledge of potential dangers (Figure 6). This awareness was more pronounced among individuals with higher educational attainment, similar to patterns observed in Ethiopia, where education level correlates with safer medicinal plant use practices (Wondemagegn & Seyoum, 2023). This suggests that individuals with access to more formal education might have greater exposure to health information, underscoring the importance of public health campaigns targeted at all educational levels to ensure widespread awareness of safe medicinal plant use during pregnancy.

Among the identified risks, the most concerning were miscarriage and fetal malformations,

reported by 75.4% of participants (Figure 7). These concerns align with established literature on certain medicinal plants that can induce spontaneous abortion or increase uterine contractility (Bernstein et al., 2021). For example, rue (*Ruta graveolens*) and marijuana (*Cannabis sativa*) were frequently mentioned as dangerous, with 34.7% and 7.4% of respondents, respectively, aware of their risks (Table 1). Rue, a commonly used plant in traditional medicine, has been associated with uterine hyperdynamia and related complications, highlighting the need for clear public health messaging. (Campos et al., 2023). Marijuana use during pregnancy is similarly concerning, as prenatal cannabis exposure has been associated with neurodevelopmental issues

and behavioral impairments in children (Evanski et al., 2024).

Finally, the study highlights some misconceptions, particularly the perception that coconut water is abortive (it was found that 4 out of 144 interviewees believed that coconut water is abortive), despite existing evidence suggesting its safety and potential benefits in moderation (Akinsulie et al., 2023). This misconception underscores the need for culturally tailored educational interventions that address local beliefs and provide accurate information on the safe use of commonly used plants. Addressing these knowledge gaps through community health education could mitigate risks and promote safer traditional practices.

5. Conclusions

In Costa Rica, the widespread use of medicinal plants persists as a common alternative for addressing minor health concerns among pregnant women throughout diverse regions. Most participants demonstrated a moderate level of knowledge regarding the risks and benefits of medicinal plants during pregnancy. Primary health issues, such as gastrointestinal ailments and nervous system disorders, are predominantly managed through the application of medicinal plants.

Chamomile (*Matricaria chamomilla*), “menta” (*Satureja viminea*), and ginger (*Zingiber officinale*) are the most commonly employed species for addressing the health problems of pregnant women. Leaves were the preferred plant part, and infusions were the preferred preparation method for medicinal plants used during pregnancy. Despite the widespread use of medicinal plants, certain myths persist in the

Costa Rican population regarding the effects of specific medicinal plants on pregnancy, illustrated by misconceptions surrounding tap water and flaxseed.

Women demonstrated significantly greater knowledge about medicinal plants and their associated risks compared to men, highlighting the traditional role of women as primary caregivers and users of natural medicine in the Costa Rican context.

Individuals with higher educational levels showed greater concern about associated risks, such as abortion and fetal malformations. This finding underscores the importance of formal education in promoting safe practices related to the use of medicinal plants during pregnancy. Additionally, a significant portion of the population is aware of potential risks associated with the use of certain medicinal plants during pregnancy.

6. Recommendations

Implement robust public awareness campaigns to disseminate accurate information on the safe use of medicinal plants during pregnancy.

Provide training for healthcare professionals, including doctors, midwives, and nurses, to ensure they stay informed on the safe use of medicinal plants during pregnancy.

Advocate for expanded research efforts on the impact of medicinal plants during pregnancy, with a particular emphasis on scrutinizing species like *Satureja viminea* on embryonic development.

7. Acknowledgments

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