

Assessment of the knowledge, perception and practice of herbal and alternative medicine use by pregnant women attending antenatal clinics in healthcare institutions in Benin City

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Abstract

Pregnancy and childbirth bring significant physiological changes, often prompting expectant mothers to explore herbal products and complementary and alternative medicines (CAM) to alleviate symptoms and aid the birthing process. This practice, however, raises critical concerns about the safety, efficacy, and compatibility of these alternatives with standard antenatal care. The global rise in CAM use during pregnancy highlights the need for better understanding and regulation, as well as increased knowledge among healthcare providers. A study conducted in Benin City, Edo State, employed a descriptive research design to examine the prevalence, types, reason for use, perceived safety, and sources of information regarding herbal and alternative medicines among pregnant women. A survey of 171 antenatal patients from six healthcare institutions revealed that Ginger 14.8%, Garlic 13.9%, and Scent leaf 12.6% were the most commonly used herbs, particularly for managing common cold, nausea and pain relief. The highest usage occurred during the first trimester with 35.1%. Notably, many women relied on family and friends for information about these remedies, with healthcare professionals rarely consulted. The findings underscore the widespread use of herbal medicines during pregnancy, influenced by cultural beliefs and social factors. This trend is concerning, given the limited safety data on many herbal products during pregnancy. The study emphasizes the need for further research into the safety of these practices. Additionally, healthcare professionals should enhance their knowledge and actively educate pregnant women on safe practices, while community awareness programs are essential to foster informed decision-making regarding herbal medicine use during pregnancy.

Keywords: Pregnancy; Herbal Products; Healthcare Antenatal Patients; Complementary and Alternative Medicine (CAM)

1. Introduction

Pregnancy and childbirth are transformative experiences in a woman's life, marked by profound physiological changes, encompassing not only the development of new life, but also significant changes in her body, her health needs and unique healthcare considerations [1]. Alongside conventional medical treatments, many expectant mothers explore herbal products, alternative medicines, and complementary therapies to manage symptoms, enhance well-being, or support the birthing process[2]. Herbal products and herbal drugs refer to substances derived from plants that are used for their therapeutic properties [3]. These products can come in various forms, including teas, capsules, tablets,

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powders, extracts, and essential oils. Complementary and Alternative Medicines (CAM) refer to a diverse group of medical and healthcare systems, practices, and products that are not typically considered part of conventional Western medicine[4]. CAM practices are used either alongside (complementary) or in place of (alternative) conventional treatments. These practices encompass a wide range of approaches that aim to achieve health and wellness by addressing physical, mental, and spiritual aspects of well-being[5].

The use of herbal products during pregnancy and labor is an area of growing interest and significance, with the increasing preference for natural and holistic health approaches, many pregnant women are turning to herbal remedies and CAM therapies to manage pregnancy-related symptoms and support labor [6]. This trend is driven by various factors, including perceived safety, cultural traditions, and dissatisfaction with conventional medical treatments [7, 8].

The use of these alternative approaches raises critical questions about safety, efficacy, and informed decision-making, particularly concerning their compatibility with standard prenatal care. Pregnancy is a critical period where the health and well-being of both the mother and the fetus must be carefully managed [9]. Herbal medicines, often perceived as “natural” and safe, may carry risks of adverse effects, toxicity, or interactions with conventional medications. Furthermore, the lack of regulation in the production and labeling of herbal products contributes to inconsistencies in their quality and safety [10].

Healthcare providers, including obstetricians, midwives, and nurses, often face challenges in addressing the use of herbal products and CAM among pregnant women due to limited research, lack of formal education, and varying attitudes toward these therapies [11]. Effective communication between pregnant women and healthcare providers is essential to ensure informed decision-making and mitigate potential risks [12].

This study aims to explore the landscape of herbal products, drugs, and complementary or alternative medicines utilized during pregnancy and labor. It seeks to provide comprehensive insights into the accessibility, regulatory framework, safety considerations, and evidence-based practices associated with these interventions. By examining both traditional wisdom and contemporary research, this study aims to empower healthcare providers and expecting mothers with knowledge to make informed choices regarding pregnancy and labor care.

Through an exploration of diverse perspectives, including medical professionals, traditional healers, and expectant mothers themselves, this project aims to foster a holistic understanding of the intersection between conventional and alternative approaches in maternal healthcare. Ultimately, it strives to contribute to a balanced discourse that supports safe, effective, and respectful care practices for pregnant women globally.

The increasing global prevalence of herbal products and complementary or alternative medicines (CAM) during pregnancy and labor, often seen as safer and more natural alternatives to conventional treatments, raises significant concerns about safety, efficacy, and their overall impact on maternal and fetal health[13]. A key issue is the lack of scientific evidence, as many herbal products and CAM therapies lack rigorous scientific validation, leaving the safety and efficacy of numerous remedies used during pregnancy uncertain due to limited high-quality research [13, 14]. Additionally, regulatory gaps present a challenge, with the regulation of herbal products and CAM varying significantly between countries, often resulting in inconsistencies in quality, safety, and labeling; in many areas, these products are classified as dietary supplements and are not subject to the same stringent testing and approval processes as pharmaceutical drugs [15]. Potential health risks are also a concern, as some herbal products and CAM therapies can pose health risks to pregnant women and their developing fetuses, with adverse effects, herb-drug interactions, and contamination with harmful substances being critical issues [16, 17]. Moreover, inadequate knowledge among healthcare providers is problematic, as many lack sufficient knowledge and training on the use of these therapies during pregnancy, leading to inadequate counseling and potential harm to patients [18]. Lastly, cultural and socioeconomic influences heavily affect the use of herbal products and CAM, making it essential to understand these factors to develop appropriate public health strategies and educational interventions [19].

The study aims to determine the prevalence of herbal and alternative medicine consumption among pregnant women in Benin City, focusing on identifying the types most commonly used. It seeks to explore the primary reasons for their use and assess perceptions of safety and efficacy. Additionally, the research investigates the sources of information and recommendations for these practices among pregnant women in the area.

2. Methodology

A descriptive cross-sectional design with a quantitative approach to data collection was employed to collect data to investigate the prevalence, types and reasons for the use of herbal and alternative medicines, perceived safety and

sources of information on use among pregnant women in Benin City, Edo State. The study was carried out among 6 selected healthcare institutions in Benin, Edo state; Edo Specialist Hospital, Central Hospital, University of Benin Teaching Hospital, Oredo Primary health Center, Ugbor Primary Health Center and Ugbekun Primary Health Center. As at the time of carrying out this research, the target population in the six healthcare institutions was estimated to be 300 Antenatal patients. The sample size was gotten using equation 1 Taro Yamane (1967) Formula.

$$n = \frac{N}{(1+Ne)^2} \dots\dots\dots(1)$$

$$n = 171$$

A total of 171 respondents were randomly selected using simple random sampling technique from the selected healthcare institutions. All the subjects who were qualified by inclusion criteria and who consent to participate in the study were interviewed. A self-structured questionnaire was designed by the researchers. To ensure validity, the questionnaire was reviewed by experts in research from Edo State College of Nursing Sciences. Reliability was established through a pilot test administered to ten pregnant women in Obe primary health centre Ikpoba Okha Local Government Area, resulting in a Cronbach's alpha coefficient of 0.72. The researchers administered the instrument to the respondents personally after seeking for permission and approval from health care facility, and a consent form was signed by the respondents. The questionnaires issued were retrieved from the respondent after filling.

2.1. Ethical Consideration

The researchers considered a lot of ethical principles guiding the research, so as to be able to safeguard the interest, right and safety of the respondents.

- Confidentiality: The researchers ensured that all contribution and answers given by the respondent will be strictly handled with care.
- Anonymity: The researchers ensured that the respondents' identities will not be disclosed.
- Ethical Approval: Ethical approval was obtained from the ministry of health Edo state Nigeria.

3. Results

Table 1 Demographic Data – Age

Age Range	Frequency	Percentage (%)
15-25	41	24.0
26-35	56	32.7
36-45	47	27.5
46-55	27	15.8
Total	171	100.0

The table represents the demographic data for age distribution in terms of percentages. The age group 15-25 accounts for 24.0% of the total, while the 26-35 age group makes up the largest portion at 32.7%. The 36-45 age group represents 27.5%, and the 46-55 age group comprises 15.8%. Altogether, these percentages sum up to 100.0% across a total of 171 individuals.

Table 2 Demographic Data – Occupation

Occupation	Frequency	Percentage (%)
Student	52	30.4
Farmer	21	12.3
Housewife	60	35.1
Businesswoman	15	8.8
Civil/Public Servant	18	10.5
Total	171	100

The table illustrates the distribution of occupations among a group of individuals in terms of frequency and percentage. The largest group is Housewife, representing 35.1% of the total, followed by Students at 30.4%. Farmers account for 12.3%, while Civil/Public Servants make up 10.5%. Businesswomen represent the smallest group, comprising 8.8% of the total. The overall total frequency is 171, accounting for 100% of the data.

Table 3 Types of herbs used during pregnancy

Types of herbs used	Frequency	Percent
Ginger	146	14.8
Garlic	137	13.9
Mango	85	8.6
Pawpaw	112	11.4
Moringa	120	12.2
Guava	77	7.8
Scent leaf	124	12.6
Peppermint	61	6.2
Lemon grass	62	6.3
Neem	42	4.3
Others	20	2.0
Total	986	100.0

The table represents the percentage distribution of different types of herbs used. Ginger is the most commonly used herb, accounting for 14.8% of the total, followed by Garlic at 13.9%. Scent leaf and Moringa are also significant, contributing 12.6% and 12.2% respectively. Pawpaw makes up 11.4%, while Mango accounts for 8.6%. Guava represents 7.8%, Peppermint 6.2%, and Lemon grass 6.3%. Neem constitutes 4.3%, and other herbs collectively make up the smallest percentage at 2.0%. The total frequency sums up to 986, representing 100% of the data.

Table 4 Conditions for using herbs

Conditions for using herbs	Frequency	Percent
common cold	46	22.9
Nausea and vomiting	34	19.9
stress and anxiety	23	17.5
pain relief	33	19.3
skin care	17	9.9
Cramps	18	10.5
Total	171	100.0

The table outlines the percentage breakdown of conditions for which herbs are used. The most common condition is the common cold, accounting for 22.9% of cases. Nausea and vomiting follow at 19.9%, closely matched by pain relief at 19.3%. Stress and anxiety make up 17.5%, while cramps account for 10.5%. Skin care represents the smallest percentage at 9.9%. In total, these conditions combine to make up 100% of the reported uses.

Table 5 Frequency of using herbal products

Frequency of using herbs	Frequency	Percent
Daily	65	38.0
Weekly	45	26.3
Occasionally	50	29.2
Rarely	11	6.4
Total	171	100.0

The table describes the frequency of using herbs in percentage terms. 38.0% of individuals use herbs daily, 26.3% use them weekly, 29.2% use them occasionally, and 6.4% use them rarely. The total percentage sums up to 100.0%, representing all respondents.

Table 6 Parts of plant used for marking the herbal product

Plant parts	Frequency	Percent
Leaves	78	45.6
Roots	45	26.3
Flowers	20	11.7
Seeds	15	8.8
Bark	13	7.6
Total	171	100.0

The table represents the percentage distribution of plant parts based on their frequency. Leaves constitute the highest percentage at 45.6%, followed by roots at 26.3%. Flowers account for 11.7%, seeds make up 8.8%, and bark represents 7.6% of the total. The total frequency sums up to 171, resulting in 100% distribution across all plant parts.

Table 7 Trimester for using herbs

Trimester	Frequency	Percent
First	60	35.1
Second	50	29.2
Third	40	23.4
4.00	21	12.3
Total	171	100.0

The table outlines the percentage distribution of frequencies across different trimesters. In the first trimester, 35.1% of the total frequency is observed. The second trimester accounts for the largest share at 29.2%. The third trimester represents 23.4%, while the fourth category contributes 12.3%. Altogether, these percentages sum up to 100.0%, corresponding to the total frequency of 171.

Table 8 Use of acupuncture and chiropractic

Acupuncture and chiropractic	Frequency	Percent
Yes	28	16.4
No	143	83.6
Total	171	100.0

The table shows that 16.4% of the respondents have used acupuncture and chiropractic services, while 83.6% have not. The total number of respondents is 171, accounting for 100%.

Table 9 Prevalence of Herbal and Alternative Medicine Consumption

Statement	Yes	No	Not Sure
Do you believe that herbal and alternative medicine is commonly used by pregnant women in Benin City?	150	15	6
Do you trust the effectiveness of herbal and alternative medicine for managing pregnancy-related symptoms?	120	40	11
Do you feel comfortable discussing the use of herbal and alternative medicine with your healthcare provider during pregnancy?	80	75	16
Do you believe that there is enough scientific evidence to support the use of herbal and alternative medicine during pregnancy?	95	60	16
Are you open to trying herbal and alternative medicine as a complementary approach to conventional prenatal care?	130	30	11
Total	575	220	60

The table provides data on the perceptions and attitudes towards herbal and alternative medicine among pregnant women in Benin City. Here's the breakdown in terms of percentages: "Do you believe that herbal and alternative medicine is commonly used by pregnant women in Benin City" Yes: 85.23%, No: 8.52% and Not Sure: 3.41% while "Do you trust the effectiveness of herbal and alternative medicine for managing pregnancy-related symptoms" Yes: 69.36%, No: 23.12% and Not Sure: 6.36%. while "Do you feel comfortable discussing the use of herbal and alternative medicine with your healthcare provider during pregnancy" Yes: 45.45%, No: 42.61% and Not Sure: 9.09% while "Do you believe that there is enough scientific evidence to support the use of herbal and alternative medicine during pregnancy" Yes: 53.98%, No: 34.09% and Not Sure: 9.09% while "Are you open to trying herbal and alternative medicine as a complementary approach to conventional prenatal care" Yes: 73.86%, No: 17.05% and Not Sure: 6.25% with an overall total of Yes: 70.78% , No: 27.08% and Not Sure: 7.39%. The data suggests a generally positive perception of herbal and alternative medicine among respondents, though there is some hesitation regarding discussing it with healthcare providers and its scientific backing.

Table 10 Reasons for Using Herbal and Alternative Medicines

Statement	Yes	No	Not Sure
I believe herbal and alternative medicines are safer for me and my baby during pregnancy.	140	20	11
I trust the effectiveness of herbal and alternative medicines based on personal or cultural beliefs.	130	30	11
I prefer herbal and alternative medicines because they are more accessible and affordable compared to conventional medicine.	110	50	11
I feel more comfortable using herbal and alternative medicines due to their natural and traditional origins.	125	35	11
I believe herbal and alternative medicines offer a holistic approach to pregnancy wellness that complements conventional medical care.	115	40	16
Total	620	175	60

The table provides a breakdown of responses in percentages regarding beliefs and preferences for herbal and alternative medicines during pregnancy: “believe herbal and alternative medicines are safer for me and my baby during pregnancy” had Yes: 76.5%, No: 10.9% and Not Sure: 6% while “I trust the effectiveness of herbal and alternative medicines based on personal or cultural beliefs” had Yes: 71.8%, No: 16.6% and Not Sure: 6% while “I prefer herbal and alternative medicines because they are more accessible and affordable compared to conventional medicine.” had Yes: 60.4%, No: 27.5% and Not Sure: 6% while “I feel more comfortable using herbal and alternative medicines due to their natural and traditional origins” had Yes: 68.3%, No: 19.1% and Not Sure: 6% while “I believe herbal and alternative medicines offer a holistic approach to pregnancy wellness that complements conventional medical care” had Yes: 63.2%, No: 22% and Not Sure: 8.8%. The majority of respondents (ranging from 60.4% to 76.5%) agree with the positive statements about herbal and alternative medicines, reflecting a strong preference and trust in their safety, effectiveness, accessibility, natural origins, and holistic benefits during pregnancy.

Table 11 Perception of Safety and Efficacy of Herbal and Alternative Medicines Compared to Conventional Prenatal Care

Questions	YES	NO	NOT SURE
Are herbal and alternative medicines a safer option for antenatal care compared to conventional medicine?	65	80	26
Do you believe that herbal and alternative medicines are more effective in treating pregnancy-related conditions than conventional antenatal care?	72	83	16
Do you trust that herbal and alternative medicines have fewer side effects than conventional antenatal care?	60	95	16
Are you open to considering herbal and alternative medicines as a supplement to conventional antenatal care?	115	37	19
Are you hesitant to use herbal and alternative medicines alongside conventional antenatal care?	38	126	7
Total	350	421	84

The table presents survey responses regarding opinions on herbal and alternative medicines for antenatal care, expressed in percentages: “Are herbal and alternative medicines a safer option for antenatal care compared to conventional medicine?” had YES: 34.57%, NO: 42.55% and NOT SURE: 13.83% while “Do you believe that herbal and alternative medicines are more effective in treating pregnancy-related conditions than conventional antenatal care?” had YES: 37.89%, NO: 43.68% and NOT SURE: 8.42% while “Do you trust that herbal and alternative medicines have fewer side effects than conventional antenatal care?” had YES: 31.58%, NO: 50% and NOT SURE: 8.42% while “Are you open to considering herbal and alternative medicines as a supplement to conventional antenatal care?” had YES: 60.21%, NO: 19.37% and NOT SURE: 9.95% while “Are you hesitant to use herbal and alternative medicines alongside conventional antenatal care?” had YES: 19.95%, NO: 66.32% and NOT SURE: 3.68%. The total responses had YES: 350 (41.63%), NO: 421 (50.12%) and NOT SURE: 84 (10%) this indicates a mix of opinions, with a significant portion of respondents expressing openness to considering herbal and alternative medicines as a supplement to conventional care, but also notable caution regarding their safety and effectiveness.

Table 12 Sources of Information and Recommendations for the Use of Herbal and Alternative Medicines among Pregnant Women in Benin City

Questions	YES	NO	NOT SURE
I believe that pregnant women in Benin City primarily rely on traditional midwives and elderly women in their communities for information and recommendations on herbal and alternative medicines.	113	40	18
It is possible that pregnant women seek information and recommendations for the use of herbal and alternative medicines from family and friends who have experience with traditional remedies.	127	30	14
Pregnant women might also turn to online sources and social media for information and recommendations on herbal and alternative medicines.	92	59	20

Pregnant women might seek information and recommendations from modern healthcare providers such as doctors, nurses, or pharmacists about the use of herbal and alternative medicines.	61	94	16
It is possible that pregnant women rely on their own intuition and personal experiences to make decisions about the use of herbal and alternative medicines during pregnancy.	98	59	14
Total	491	282	82

The table provides insights into the percentage distribution of responses regarding the sources pregnant women in Benin City rely on for information and recommendations about herbal and alternative medicines. Here's the breakdown: "I believe that pregnant women in Benin City primarily rely on traditional midwives and elderly women in their communities for information and recommendations on herbal and alternative medicines." Had YES 74.27%, NO 17.54% and NOT SURE 8.19% while "It is possible that pregnant women seek information and recommendations for the use of herbal and alternative medicines from family and friends who have experience with traditional remedies." Had YES 66.08%, NO 23.39% and NOT SURE 10.53% while "Pregnant women might also turn to online sources and social media for information and recommendations on herbal and alternative medicines." Had YES 53.80%, NO 34.50% and NOT SURE 11.70% while "Pregnant women might seek information and recommendations from modern healthcare providers such as doctors, nurses, or pharmacists about the use of herbal and alternative medicines." Had YES 35.67%, NO 54.97% and NOT SURE 9.36% "It is possible that pregnant women rely on their own intuition and personal experiences to make decisions about the use of herbal and alternative medicines during pregnancy." had YES 57.31%, NO 34.50% and NOT SURE 8.19%. Across all questions (855 total responses), 57.43% were "YES," 32.98% were "NO," and 9.59% were "NOT SURE." This indicates that the majority of respondents believe pregnant women rely on various sources for information about herbal and alternative medicines, with traditional and personal sources being the most prominent choices.

4. Discussion of findings

The prevalence rate observed in this study was 85.23%, which aligns with findings reported in several other studies [20, 21, 22, 23, 24, 25]. However, there are notable variations in prevalence rates across different studies globally. For instance, research conducted in Australia and Iran reported prevalence rates of 36% and 30.8%, respectively [25, 26]. Within Africa, a similar study in Western Ethiopia recorded a prevalence rate of 50.4% [27]. Conversely, studies in Kenya and Uganda reported lower prevalence rates of 12% and 20%, respectively [22, 28]. In Nigeria, Ologe et al. [29] observed a prevalence of herbal medicine use among pregnant women to be 12.2%, while studies in Kano and Imo State recorded rates of 25% and 36.3%, respectively. These differences in prevalence rates can likely be attributed to variations in cultural beliefs, ethnic diversity, study population characteristics, access to herbal medicine, and differing research methodologies [25, 29].

The study reveals that Ginger is the most frequently used herb (14.8%), followed by Garlic (13.9%), Scent leaf (12.6%), and Moringa (12.2%). Herbs such as Mango, Pawpaw, Guava, Peppermint, Lemon grass, and Neem are used less often, with the "others" category being the smallest at 2.0%. This contrasts with the findings of Onwusulu et al. [30], which identified Garlic (25.4%), Bitter leaf (22.2%), Agbo Herbal mixture (18.5%), and Moringa (11.1%) as the most commonly used herbs. However, it aligns with a study conducted in Imo State, South-Eastern Nigeria, which also recognized Garlic as the most commonly used herb during pregnancy. This similarity is likely due to comparable vegetation and cultural practices in both regions [25, 29].

Other studies conducted within Nigeria have highlighted Bitter kola, Ginger, and Garlic as commonly used herbal medicines during pregnancy. The variations in findings may be influenced by factors such as herbal availability, cultural behaviors, and local beliefs. For instance, in Kwara State (North-central Nigeria), chewing kola nuts is a common practice believed to alleviate nausea and vomiting during early pregnancy [21, 29, 31].

Research conducted outside Nigeria has consistently identified Ginger as the most commonly used herbal remedy during pregnancy. Herbs are primarily used to address conditions such as the common cold (26.9%), stress and anxiety (19.9%), pain relief (19.3%), nausea and vomiting (17.5%), and cramps (10.5%). These findings are consistent with those of El Hajj [32], which noted that herbal products are most frequently used for common colds, nausea and vomiting, and abdominal pain.

The study highlighted that the maximum use of herbal remedies occurs during the first trimester, likely due to the increased prevalence of pregnancy-related issues during this period. However, many women are unaware that the first

trimester is a critical phase when fetal organ development takes place, requiring heightened precautions to minimize risks of fetal complications. Research indicates that 91.2% of approved medications have unknown risks during pregnancy [33]. The use of herbal products, which often lack clinical trial testing for safety during pregnancy, could pose significant risks to both the mother and fetus [34].

On the other hand, some studies suggest potential benefits of certain herbal remedies. For instance, [16] reported that garlic consumption during pregnancy may reduce the risk of early and late spontaneous preterm delivery. Additionally, peppermint oil inhalation has been noted to alleviate nausea and vomiting, while a meta-analysis found ginger to be both safe and effective for managing pregnancy-related nausea and vomiting.

Despite these findings, further research is necessary to confirm the safety of medicinal plants used during pregnancy. The scientific basis for using these remedies often remains unclear. Studies also revealed that healthcare professionals are rarely a source of information for herbal medicine use (1.0%). In Norway, 80.7% of physicians admitted to having poor knowledge of herbal drugs [35]. This underscores the need for healthcare providers to enhance their understanding of herbal medicine efficacy, potential risks, herb-drug interactions, and appropriate administration during pregnancy. They should also actively screen their patients for herbal medicine use to ensure safe practices[36].

A significant number of respondents in this study reported obtaining information about their use of herbal medications from family and friends. This finding aligns with similar studies, such as those by Sarecka Hujar and Szulc-Musioł [2], which highlight the influence of close social and cultural networks. The reliance on family and friends can be attributed to the fact that these individuals form part of the immediate social environment of pregnant women, shaping their health-related decisions. Dafam et al., [37] also observed that family members and other pregnant women were common sources of information, accounting for 31.3% and 26.7% respectively. This aligns with research by Nergard et al.,[38] who identified family and friends as primary sources of recommendations for herbal medication use. Therefore, it is crucial to raise community awareness about the potential risks associated with the unregulated use of herbal medications during pregnancy. Encouraging professional guidance can help shift perceptions and promote safer practices.

5. Conclusion

In conclusion, this study underscores the high prevalence of herbal medicine use during pregnancy, with notable variations observed across different regions and studies. Factors such as cultural beliefs, ethnic diversity, availability of herbs, and social influences significantly contribute to these differences. Ginger, Garlic, and Scent leaf emerged as the most commonly used herbs, primarily for managing pregnancy-related issues such as nausea, vomiting, and stress. However, the first trimester poses critical risks due to the lack of safety data for many herbal products. This highlights the urgent need for further research to establish the safety and efficacy of these remedies during pregnancy. Additionally, healthcare professionals must enhance their knowledge of herbal medicine and actively engage in educating pregnant women about potential risks and safe practices. Community awareness initiatives are essential to address the reliance on informal sources of information and to promote informed decision-making regarding herbal medicine use during pregnancy.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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Appendix: Questionnaire

Dear respondent,

We are from Edo State College of Nursing Sciences Benin City and conducting this research on a specific topic "Assessment of the incidence of herbal and alternative medicine consumption by pregnant women during the entire duration of their pregnancy". This questionnaire is for research purposes only and all information provided will be kept confidential. I kindly ask for your cooperation in providing vital information that will contribute to our research. The research questions are divided into two sections with instructions to guide you in providing the necessary information.

INSTRUCTIONS

Please carefully read each question and select the response that best applies to you. Thank you for your participation.

SECTION A

DEMOGRAPHIC DATA

- SEX: Female
- AGE: (a) 15-25___ (b) 26-35___ (c) 36-45___ (d) 46-55___ (e) 56-65___.
- OCCUPATION: (A) Student___ (B) Farmer___ (C) House wife___ (D) Businesswoman___ (E) Civil/public servant___ (F) Others___
- EDUCATIONAL LEVEL: (A) PSLC___ (B) SSCE___ (C) NCE/ND___ (D) RN/RM___ (E) BSC/HND___ (F) MSC___ (G)___ PHD
- RELIGION: Christian___ Muslim___ Traditionalist___ Others___

SECTION B

What types of herbal and alternative medicines are most commonly used by pregnant women in Benin City?

- Which of the following herb(s) have you used or are using? Ginger___ Garlic___ Mango___ Pawpaw___ Moringa___ Guava___ Scent leaf___ Peppermint___ Lemon grass___ Neem (Dongoyaro)___
- Others, please specify _____
- What condition(s) have you used or are using the herbal medicine for? _____
- How often do you take the herbal medicines? _____
- Do you know the part of the plant used for the preparation of the herbal medicines? Please specify _____
- In what trimester did you use or are you using the herbal medicine?
- First___ ii. Second ___iii. Third ___vi. None ___
- Have you used alternative therapies such as acupuncture and chiropractic (robbing) care during pregnancy? Yes,___ No___
-

What is the prevalence of herbal and alternative medicine consumption among pregnant women in Benin City?		YES	NO	NOTSURE
	Do you believe that herbal and alternative medicine is commonly used by pregnant women in Benin City?			
	Do you trust the effectiveness of herbal and alternative medicine for managing pregnancy-related symptoms?			
	Do you feel comfortable discussing the use of herbal and alternative medicine with your healthcare provider during pregnancy?			
	Do you believe that there is enough scientific evidence to support the use of herbal and alternative medicine during pregnancy?			
	Are you open to trying herbal and alternative medicine as a complementary approach to conventional prenatal care?			

What are the primary reasons pregnant women in Benin City choose to use herbal and alternative medicines?		YES	NO	NOTSURE
	I believe herbal and alternative medicines are safer for me and my baby during pregnancy.			
	I trust the effectiveness of herbal and alternative medicines based on personal or cultural beliefs.			
	I prefer herbal and alternative medicines because they are more accessible and affordable compared to conventional medicine.			
	I feel more comfortable using herbal and alternative medicines due to their natural and traditional origins			
	I believe herbal and alternative medicines offer a holistic approach to pregnancy wellness that complements conventional medical care.			

How do pregnant women in Benin City perceive the safety and efficacy of herbal and alternative medicines compared to conventional prenatal care?		YES	NO	NOTSURE
	Are herbal and alternative medicines a safer option for prenatal care compared to conventional medicine?			
	Do you believe that herbal and alternative medicines are more effective in treating pregnancy-related conditions than conventional prenatal care?			
	Do you trust that herbal and alternative medicines have fewer side effects than conventional prenatal care?			
	Are open to considering herbal and alternative medicines as a supplement to conventional prenatal care?			
	Are you hesitant to use herbal and alternative medicines alongside conventional prenatal care?			

What are the sources of information and recommendations for the use of herbal and alternative medicines among pregnant women in Benin City?		YES	NO	NOTSURE
	I believe that pregnant women in Benin City primarily rely on traditional midwives and elderly women in their communities for information and recommendations on herbal and alternative medicines.			
	It is possible that pregnant women seek information and recommendations for the use of herbal and alternative medicines from family and friends who have experience with traditional remedies.			
	Pregnant women might also turn to online sources and social media for information and recommendations on herbal and alternative medicines.			
	Pregnant women might seek information and recommendations from modern healthcare providers such as doctors, nurses, or pharmacists about the use of herbal and alternative medicines.			
	It is possible that pregnant women rely on their own intuition and personal experiences to make decisions about the use of herbal and alternative medicines during pregnancy.			