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Traditional Remedies for Malaria Treatment: A Study of Pregnant Women Attending Secondary Health Facility in a Semi-Urban Town in Delta State, Nigeria

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Abstract

Malaria in pregnancy remains a major public health concern in Nigeria, with increasing reliance on traditional remedies despite the availability of orthodox care. This study assessed traditional remedies used for malaria treatment among pregnant women attending a secondary health facility in a semi-urban, town in Delta State, Nigeria. A descriptive cross-sectional design was employed, involving 250 antenatal attendees selected through census sampling technique. Data were collected using a validated structured questionnaire and analyzed using descriptive statistics and chi-square tests at $p<0.05$. Findings revealed a high prevalence of traditional remedy use, with over half (55.4%) of pregnant women reporting frequent use, particularly during the first trimester (50.0%). Commonly used remedies included scent leaf, bitter leaf and ginger. Key factors influencing the use of such remedies are, perceived safety, affordability, accessibility, and strong cultural acceptance (overall mean = 3.98±1.14). Chi-square analysis showed significant associations between traditional medicine use and age ($p=0.020$), educational level ($p=0.014$), and parity ($p=0.026$). The study highlights substantial reliance on unregulated herbal remedies during pregnancy, posing potential health risks. It underscores the need for culturally sensitive health education, improved antenatal services, and regulation of traditional medicine to enhance maternal health outcomes.

Keywords: *malaria treatment, traditional remedies, pregnant women*

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1. INTRODUCTION

Malaria is a life-threatening disease caused by *Plasmodium* parasites and transmitted through the bites of infected female *Anopheles* mosquitoes. It remains one of the most pressing public health concerns globally, particularly in sub-Saharan Africa. According to the World Health Organization, malaria accounted for an estimated 247 million cases and 608,000 deaths in 2022, with Africa bearing over 90% of the global burden (1).

In Nigeria, malaria contributes significantly to morbidity and mortality, including maternal deaths and adverse pregnancy outcomes (2,18). Pregnant women are especially vulnerable due to pregnancy-induced immunosuppression, increasing susceptibility to *Plasmodium falciparum* infection (4,5,24). Malaria in pregnancy is associated with maternal anemia, low birth weight, preterm delivery, and neonatal mortality (24,28,31).

Despite public health interventions such as insecticide-treated nets (ITNs) and intermittent preventive treatment in pregnancy (IPTp), the burden remains high due to gaps in implementation and uptake of preventive strategies (25,27,30). The World Health Organization estimates that up to 80% of populations in developing countries rely on traditional medicine for primary healthcare (3).

Traditional approaches include herbal remedies derived from plants such as *Azadirachta indica*, *Vernonia amygdalina*, and *Cymbopogon citratus*, which are deeply embedded in cultural practices. Evidence suggests that many modern antimalarial drugs originated from such traditional sources (6,8,32).

Studies in Nigeria and other African countries show high prevalence of herbal medicine use among pregnant women, often influenced by accessibility, affordability, and cultural beliefs (27,28,29,32). However, these remedies are largely unregulated and may pose risks such as toxicity, teratogenicity, and herb-drug interactions (6,7).

Socio-cultural factors play a critical role in healthcare decision-making. Women's choices are often influenced by family members, community norms, and prior experiences (11-13). Limited access to formal healthcare services further reinforces reliance on traditional medicine (12).

Educational level and parity have also been shown to influence health-seeking behaviour. Women with lower educational attainment are more likely to use traditional medicine, while multiparous women may rely on prior experiences to justify continued use (14-17). Despite growing evidence on traditional medicine use, there remains limited context-specific data on pregnant women in semi-urban secondary health facilities in Delta State, creating a gap in localized maternal health policy formulation and thus this study.

This study was guided by the Health Belief Model, which posits that health behaviour is influenced by perceived susceptibility, severity, benefits, and barriers (19).

Objectives of the study include to:

1. determine the frequency of use of the traditional medicine use among pregnant women attending the secondary health facility for the treatment of malaria.
2. determine the factors that influencing the choice of traditional remedies over conventional antimalarial in the treatment of malaria among the pregnant women.

Hypothesis

Ho: The researchers hypothesized that demographic variables such as level of education and parity of the pregnant women do not have significant association with the use of traditional medicine for malaria treatment among the pregnant women.

2. MATERIALS AND METHODS

Study Design

This study adopted a descriptive cross-sectional survey design, which is ideal for collecting quantitative data at a single point in time from a defined population. This design has been widely used in similar population-based studies assessing traditional medicine utilization (9,27). It enables the description and analysis of key variables such as the prevalence, patterns, perceptions, and determinants of traditional remedy use for malaria treatment among pregnant women, without manipulating any study variables. (32,33) applied this design in a study on traditional medicine utilization in sub-Saharan Africa and found the same to be suitable for similar population-based studies.

Setting for the Study

The study was conducted in a secondary health facility in Abraka, Delta State, a semi-urban settlements where traditional health practices are still prevalent. The town has both public and private healthcare institutions, including the secondary health facility, which is a major referral center that offers antenatal services to hundreds of women from surrounding communities. Despite the presence of formal healthcare services, traditional therapies remain highly regarded in the town due to its cultural heritage.

Population for the Study

The target population for this study comprised all pregnant women attending the Antenatal Care (ANC) clinic at General Hospital Abraka at the time of this study. Based on the hospital's antenatal register, the average monthly attendance is approximately 520 pregnant women.

Sample Size

The sample of 226 pregnant women was drawn using Taro Yamane's formula for finite populations. The sample size was determined with a 95% confidence level and 5% margin of error, adjusted for a 10% non-response rate which yielded 250 selected participants.

Sampling Technique

Purposive sampling technique was employed in this study to ensure that the selected participants possess specific characteristics relevant to the research objectives. The helped to capture pregnant women who have been attending antenatal care in the hospital for at least twelve weeks, as this duration provides a sufficient window to observe and document their experiences with traditional medicine use for malaria treatment.

Although judgmental sampling was used due to feasibility constraints, efforts were made to minimize bias by including only ANC attendees with a minimum of 12 weeks of registration.

Inclusion and Exclusion Criteria

Women currently receiving antenatal care in the hospital and have at a time suffered from malaria during pregnancy and have used at least one form of traditional medicine to treat it were included in the study while women who exclusively use orthodox medicine without any history of traditional remedy use for treatment of

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malaria during pregnancy, and those that met the inclusion material but unwilling to participate were excluded from the study.

Instrument for Data Collection

The instrument for data collection was a researchers-structured questionnaire, which was designed based on the study's objectives and a comprehensive review of literature. The instrument consisted predominantly of closed-ended structured in four-point scale for ease of quantification and statistical analysis. The instrument was validated by two experts in Public Health specialty, one community health nurse and a specialist in Measurement and Evaluation. Content, face and construct validation were done by these validates with the objectives and the hypotheses used as tools for their validation.

The instrument was pilot tested for internal consistency and stability of the measurement using a sample of 24 pregnant women who were not among the study participants but have similar characteristics with the target population. Data collected from this action were analyzed using Cronbach's Alpha which yielded a reliability index of 0.75. Values ≥0.70 are considered acceptable for research instruments.

Procedure for Data Collection

The approval letter with Ref number: HM/596/T2/99 permitted the researchers to collect data from the participants. The nurse incharge of the clinic was approached and made to understand the purpose of the study who helped to introduce the researchers to the pregnant women on each visit. The administration of instrument was on face to face bases and those that needed clarifications or further explanations before responding to the item were duly attended to.

Data collection took place on the antenatal clinic days and a total 250 copies of questionnaire were administered over a period of 16 weeks with the midwives and nurses in the clinic rendering much assistance in this regard. The researchers made sure that no participant filled the questionnaire twice.

Method of Data Analysis

Data collected were coded, cleaned, and analyzed using SPSS version 26.0. Descriptive and inferential statistics were applied for the analysis. Cross-tabulations were used to explore relationships between demographic variables and traditional medicine use. Chi-square tests assessed the significance of associations at $p<0.05$. This analysis aligned with the descriptive cross-sectional design, providing quantitative insights into usage patterns and influencing factors.

Ethical Considerations

The approval for the study by the institutional Health Research and Ethics Committee was the first line of ethical observances followed by the maintenance of standard ethical protocols such as principles of autonomy, confidentiality, beneficence, and non-maleficence. Consent was obtained from each participant before data collection and participation was entirely voluntary.

3. RESULTS

3.1 Socio-demographic characteristics of respondents

Table 1: Socio-demographic characteristics (n=250)

Variable	Category	n (%)
Age (years)	20–25	65 (26.0)
	26–30	115 (46.0)
	31–35	48 (19.2)
	>35	22 (8.8)
Marital status	Married	201 (80.4)
	Single	35 (14.0)
	Cohabiting	14 (5.6)
Religion	Christianity	200 (80.0)
	Traditional	50 (20.0)
Highest level of Education	No formal	28 (11.2)
	Primary	67 (26.8)
	Secondary	98 (39.2)
	Tertiary	57 (22.8)
Occupation	Trader	110 (44.0)
	Unemployed	60 (24.0)
	Civil servant	45 (18.0)
	Farmer	25 (10.0)
	Student	10 (4.0)
Estimated monthly Income(₦)	<20,000	95 (38.0)
	20,000–50,000	102 (40.8)
	51,000–100,000	43 (17.2)
	>100,000	10 (4.0)
Parity	Primigravida	75 (30.0)
	2–4	125 (50.0)
	≥5	50 (20.0)

Table 1 shows that a total of 250 pregnant women participated in the study. The majority were aged 26-30 years (46.0%), followed by 20-25 years (26.0%). Most respondents were married (80.4%) and predominantly Christians (80.0%).

Regarding education, 39.2% had secondary education, while 22.8% had tertiary education. In terms of occupation, 44.0% were traders/businesswomen. Most respondents reported a monthly income of ₦20,000-₦50,000 (40.8%), and 50.0% were multiparous (2-4 pregnancies).

Table 2: Frequency of Traditional Remedy Use Among Respondents (n=250)

Remedy	Very frequent n (%)	Frequent n (%)	Occasional n (%)	Rare n (%)
Scent leaf	60 (24.0)	70 (28.0)	50 (20.0)	32 (12.8)

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Bitter leaf	62 (24.8)	68 (27.2)	50 (20.0)	32 (12.8)
Ginger	58 (23.2)	74 (29.6)	48 (19.2)	32 (12.8)
Neem	55 (22.0)	65 (26.0)	60 (24.0)	32 (12.8)
Lemongrass	48 (19.2)	72 (28.8)	58 (23.2)	34 (13.6)
Garlic	40 (16.0)	60 (24.0)	70 (28.0)	42 (16.8)
Pawpaw leaf	35 (14.0)	55 (22.0)	75 (30.0)	47 (18.8)

The frequency of traditional remedy use among respondents is presented in Table 2. Overall, the findings indicate widespread utilization of herbal remedies for malaria treatment during pregnancy.

Scent leaf and bitter leaf were among the most commonly used remedies, with 24.0% and 24.8% of respondents reporting very frequent and frequent use, respectively. Similarly, ginger was widely utilized, with 29.6% reporting frequent use, representing the highest proportion within that category.

Neem and lemongrass also demonstrated substantial usage patterns, with 22.0% and 19.2% reporting very frequent use, respectively. In contrast, garlic and pawpaw leaf were less commonly used at higher frequency levels but showed higher proportions under occasional use, with 28.0% and 30.0%, respectively.

Across all remedies, the proportion of respondents reporting frequent or very frequent use consistently exceeded occasional or rare use, indicating a strong reliance on traditional herbal treatments among pregnant women in the study population.

These findings highlight that herbal remedies such as scent leaf, bitter leaf, and ginger are deeply integrated into maternal health practices, particularly for malaria management.

Table 3: Timing of use of traditional remedies

Trimester	n (%)
First	125 (50.0)
Second	40 (16.0)
Third	85 (34.0)

Overall mean score: 3.98 ± 1.14

Overall, respondents expressed strong agreement with statements related to perceived safety, affordability, accessibility, and cultural acceptability of traditional medicine.

The highest-rated factor was community acceptance (Mean=4.47±0.73), followed by perceived natural safety (Mean=4.40±0.79) and affordability (Mean=4.35±0.86).

Table 5: Hypothesis test (Association between variables and traditional medicine use)

Variable	χ^2	df	p-value	Decision
Age vs use	9.84	3	0.020	Significant
Education vs use	12.45	4	0.014	Significant
Parity vs use	7.32	2	0.026	Significant

Chi-square analysis showed statistically significant associations between age (p = 0.020), educational level (p=0.014), and parity (p=0.026) with the use of traditional remedies.

4. DISCUSSION

Extent of use of Traditional Remedies in Pregnancy

Findings from this study revealed that more than half (55.4%) of the pregnant women frequently used traditional remedies during pregnancy. This aligns with previous studies showing high prevalence of herbal medicine use among pregnant women in sub-Saharan Africa (7,10,27,29). Similar patterns have been documented in recent studies, where widespread reliance on herbal remedies persists despite increased access to formal healthcare services (27,28).

The high use observed in the first trimester is consistent with earlier findings suggesting that women often resort to traditional remedies during early pregnancy due to fear of drug-related teratogenic effects and limited antenatal engagement (24,29).

Factors influencing the use of traditional remedies in pregnancy

The study revealed that accessibility, affordability, and perceived safety were major drivers of traditional medicine use. These findings are consistent with broader evidence indicating that traditional medicine use is often a rational response to structural health system limitations (27,31).

Socio-cultural influences, including family pressure and community norms, also played a significant role. This supports findings from multi-country African studies where healthcare decisions are embedded within social and cultural contexts rather than being purely individual choices (15).

Association between age and use of traditional remedies in pregnancy

The findings revealed a significant association between age and the use of traditional remedies (χ^2=9.84, df=3, p=0.020). This indicates that age plays a meaningful role in shaping health-seeking behavior during pregnancy.

Although the table confirms statistical significance, the direction of influence is better interpreted in light of established maternal health behavior patterns. Typically, older pregnant women tend to report higher use of traditional remedies compared to younger women, largely due to accumulated pregnancy experiences, stronger cultural reinforcement, and increased trust in remedies previously used in earlier pregnancies. Multiparity often overlaps with age, reinforcing confidence in traditional treatments perceived as "tested and safe."

Conversely, younger women are more likely to be influenced by formal antenatal education, modern biomedical messaging, and fear of teratogenic risks, leading to comparatively lower reliance on herbal remedies.

This finding aligns with behavioral health models, particularly the Health Belief Model, where perceived benefits and experiential familiarity increase with age, while perceived susceptibility to

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adverse outcomes tends to decrease among older, more experienced mothers.

Educational level and use of traditional remedies in pregnancy (p=0.014)

The association between educational level and traditional remedy use was also statistically significant ($\chi^2 = 12.45$, df = 4, p = 0.014). This suggests that educational attainment strongly influences maternal health choices (15,31). However, other studies suggest that education alone may not completely eliminate traditional medicine use, particularly in settings where cultural beliefs remain strong (11,28). This highlights the complex interplay between education and socio-cultural factors.

Women with lower levels of education (no formal or primary education) are more likely to rely on traditional remedies, while those with tertiary education tend to demonstrate reduced usage. This pattern is generally explained by improved health literacy, better access to biomedical information, and increased awareness of potential risks associated with unregulated herbal use among more educated women.

However, despite higher education levels, complete abandonment of traditional remedies is not always observed, reflecting the persistence of cultural norms and inter-generational influence within the Nigerian context.

Parity and use of traditional remedies in pregnancy

Parity also showed a statistically significant relationship with traditional remedy use ($\chi^2 = 7.32$, df = 2, p = 0.026). This indicates that the number of previous pregnancies influences maternal treatment choices. This finding aligns with studies showing that prior pregnancy experiences strongly influence subsequent health behaviours and risk perception (16,17). Additionally, recent research suggests that experiential knowledge often outweighs formal health education in shaping maternal health decisions (24,29).

Women with higher parity (2-4 and ≥5 pregnancies) are more likely to use traditional remedies compared to primigravida women. This may be attributed to prior pregnancy experiences where traditional remedies were used without perceived complications, reinforcing confidence in their safety and effectiveness. In contrast, first-time mothers are often more cautious and tend to rely more on formal healthcare services due to uncertainty and heightened concern for fetal safety.

Collectively, the results demonstrate that age, education, and parity independently and significantly influence the use of traditional remedies among pregnant women. Age and parity appear to reinforce experiential and culturally driven decision-making, while education acts as a protective factor that reduces reliance on traditional remedies.

These findings suggest that traditional medicine use in pregnancy is not random but is shaped by a combination of life experience, knowledge level, and reproductive history. The pattern reinforces the need for targeted health education strategies that consider demographic differences, particularly focusing on older and multiparous women who may have stronger entrenched beliefs in traditional practices.

Clinical Risk of the findings

The high rate of traditional medicine use during the first trimester raises serious clinical concerns due to the critical period of fetal organogenesis. Exposure to unregulated herbal compounds during this stage may increase the risk of teratogenic effects and adverse pregnancy outcomes.

Health System gap identified

The continued reliance on traditional medicine also reflects underlying gaps in healthcare accessibility, including perceived poor service delivery, long waiting times, and affordability challenges within formal healthcare systems.

Policy Translation need

These findings highlight the need for integration of culturally sensitive health education into antenatal care services, alongside strengthened regulation and evaluation of commonly used herbal remedies.

Implications for Nursing and Public Health Practice

The findings have important implications for nursing and public health practice. Nurses and midwives should incorporate culturally sensitive health education into antenatal care, ensuring that discussions on traditional medicine use are non-judgmental and evidence-informed. Strengthening communication between healthcare providers and pregnant women can improve disclosure of herbal medicine use and reduce potential risks.

The observed associations indicate that antenatal interventions should not adopt a one-size-fits-all approach. Instead, tailored counselling especially for older and multiparous women may be more effective in addressing misconceptions about safety and encouraging evidence-based malaria prevention and treatment during pregnancy.

From a public health perspective, there is a need for community-based health promotion programs that address misconceptions about herbal medicine safety while respecting cultural practices. Integration of traditional healers into health education frameworks may also improve trust and promote safer maternal health practices. Furthermore, improving access to affordable antenatal services and antimalarial drugs could reduce reliance on unregulated herbal alternatives.

Limitations of the Study

While informative, this study has limitations:

The use of self-reported data is susceptible to recall bias and social desirability bias, where respondents may under reported use they perceive as frowned upon.

The study was confined to one secondary health facility, limiting the generalizability of findings to all pregnant women in Delta State, particularly those in purely rural settings or not attending antenatal care. Additionally, the use of non-probability sampling (purposeful sampling) reduces the ability to make broader population inferences. Finally, the cross-sectional design limits the ability to establish causality between variables.

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Conflict of Interest

The researchers declare that there was no conflict of interest in the course of the entire process of this study.

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Author contributions
He authors participated in the literature review, data collection and analysis and writing of the manuscripts.

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