

Prevalence, Patterns, and Factors associated with Herbal Medicine Use During Pregnancy and Lactation in the Teso Region, Eastern Uganda

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Abstract

Background

Herbal medicine use during pregnancy and lactation is common in sub-Saharan Africa despite concerns regarding the safety and efficacy of many medicinal plants. Evidence from Eastern Uganda remains limited. This study determined the prevalence, patterns, and factors associated with herbal medicine use among pregnant and lactating women in Eastern Uganda.

Methods

We conducted a facility-based cross-sectional study among pregnant and lactating women attending antenatal and postnatal care services at five health facilities in the Teso sub-region of Eastern Uganda between February 1 and 28, 2026. Participants were selected using systematic random sampling. Data were collected using interviewer-administered questionnaires. Factors associated with herbal medicine use were assessed using mixed-effects modified Poisson regression with robust standard errors. Associations are presented as adjusted prevalence ratios (aPRs) with 95% confidence intervals (CIs).

Results

A total of 671 women participated in the study. The prevalence of herbal medicine use during pregnancy or within six months postpartum was 27.0% (95% CI: 23.7–30.5). Among users, *Zanthoxylum chalybeum* was the most commonly reported herbal medicine (34.8%), although 43.1% could not identify the specific product used. Most herbal medicines were obtained from family members or friends (51.4%). Concurrent use with conventional medicines was reported by 28.2% of users, while only 9.4% disclosed herbal medicine use to health workers. Herbal medicine use was associated with alcohol use (aPR = 1.56, 95% CI: 1.13–2.15), previous pregnancy-related complications (aPR = 1.35, 95% CI: 1.13–1.60), barriers to healthcare access (aPR = 1.33, 95% CI: 1.09–1.64), and perceived effectiveness of herbal medicine (aPR = 1.91, 95% CI: 1.20–3.05).

Conclusions

Herbal medicine use is common among pregnant and lactating women in Eastern Uganda. Low disclosure to health workers and concurrent use with conventional medicines raise safety concerns. Routine screening and counseling on herbal medicine use should be integrated into maternal healthcare services.

Introduction

Herbal medicine use during pregnancy and lactation is a longstanding practice in many low- and middle-income countries, particularly in sub-Saharan Africa, where traditional health systems remain deeply embedded in community life. Across the region, reported prevalence ranges from 6.5% to 79.9% (1–8). In Uganda, studies indicate that 20% to 79% of pregnant and lactating women use herbal remedies. (9, 10). These remedies are commonly used to treat pregnancy-related conditions such as nausea and vomiting, urinary tract infections, gastrointestinal disorders, pain, edema, anemia, and respiratory infections, as well as for prevention of miscarriage, reduction of anxiety, improved fetal outcomes, facilitation of labor, and enhancement of lactation (11, 12).

Despite this widespread use, concerns persist regarding safety, efficacy, and standardization. Many medicinal plants used in pregnancy and lactation have not undergone rigorous scientific evaluation, and their pharmacological properties and toxicity profiles remain poorly understood (13–15). The use of unstudied herbal agents poses particular risks during pregnancy and lactation, where potential adverse effects may impact both the mother and fetus, leading to complications in fetal development and long-term health challenges for the infant (16–18).

In Uganda, and particularly in Eastern regions where reliance on traditional medicine is high (19–21), there is limited empirical evidence on the prevalence, specific types of herbal medicines used, patterns of use, and factors associated with herbal medicine use among pregnant and lactating mothers. This lack of data limits the ability of healthcare providers to deliver evidence-based counseling and constrains policymakers in designing appropriate regulatory or integration frameworks for herbal medicine use in maternal health services.

Given this evidence gap and the potential risks associated with unsupervised herbal medicine use during pregnancy and lactation, there is a need for context-specific data to inform clinical practice and policy. This study aimed to determine the prevalence, patterns, and factors associated with herbal medicine use among pregnant and lactating women in Eastern Uganda.

Methods

Study design and setting

This was a facility-based cross-sectional study conducted at five Community-Based Medical Education and Research Services (COBMERS) training health facilities affiliated with Soroti University in the Teso sub-region of Eastern Uganda. The study sites included Katakwi General Hospital (GH), Atutur GH, Amuria GH, Serere Health Center IV (HC IV), and Princess Diana HC IV.

These facilities serve a combined catchment population of approximately 1.3 million people across Katakwi, Kumi, Amuria, Serere, and Soroti districts. The population is predominantly of Iteso ethnicity, with Christianity as the main religion alongside the use of traditional health practices. The Teso sub-region is largely rural, with livelihoods primarily based on subsistence agriculture and livestock keeping.

These socio-economic and cultural factors may influence maternal health-seeking behavior, including the use of herbal medicines.

The selected facilities provide free antenatal, delivery, and postnatal services, and serve as key referral points within their respective districts. On average, each facility attends to approximately 100 pregnant or lactating women per day seeking maternal health services.

Study population and eligibility criteria

The study population comprised pregnant and lactating women attending maternal health services at Katakwi GH, Atutur GH, Amuria GH, Serere HC IV, and Princess Diana HC IV between 1st February and 28th February 2026.

Eligible participants were women who were either currently pregnant or within six months postpartum and attending antenatal care (ANC) or postnatal care (PNC) services at the selected health facilities during the study period. Only women who provided written informed consent were enrolled.

Women who were critically ill at the time of data collection or unable to provide informed consent were excluded from the study.

Sample size estimation and sampling

The sample size was calculated using the Kish and Leslie formula for single proportions: $N = [(Z_{\alpha/2})^2 p (1-p)] / d^2$, where N is the required sample size; $Z_{\alpha/2}$ is the standard normal deviate at a 95% confidence level (1.96); p is the estimated prevalence of herbal medicine use of 79% (10); and d is the desired precision (5%).

The calculated sample size was adjusted for clustering at the health facility level using a design effect of 2 and further inflated by 10% to account for potential non-response, resulting in a minimum required sample size of 562 participants. Ultimately, 671 pregnant and lactating women were enrolled, exceeding the minimum sample size and thereby increasing the precision of the study estimates.

Participants were selected using systematic random sampling at each study site. Based on facility records, approximately 2,000 pregnant or lactating women were expected to attend antenatal and postnatal services across the five facilities during the four-week study period. A sampling interval (k) of 4 was calculated by dividing the estimated population size by the required sample size.

At each facility, the first participant was selected randomly from the first four eligible attendees at the start of each clinic day. Thereafter, every fourth eligible woman was approached for participation. Recruitment continued daily across all facilities until the target sample size was achieved. If a selected

individual did not meet eligibility criteria, declined participation, or was unavailable, the next eligible individual was recruited to maintain the sampling interval.

Study variables

The dependent variable was herbal medicine use during pregnancy or within six months postpartum. The independent variables included socio-demographic, obstetric, clinical, and health system-related factors. Socio-demographic variables comprised age, religion, education level, marital status, monthly household income, occupation, and history of alcohol use. Obstetric, clinical variables, and health system-related variables included parity, history of previous abortion, presence of chronic medical conditions, history of pregnancy-related complications in the previous pregnancies, self-reported barriers to accessing formal healthcare, receipt of counseling from a health worker regarding herbal medicine use, and participants' perceptions of herbal medicine safety and effectiveness.

Operational definitions

Herbal medicine use was defined as self-reported use of any plant-based preparation or locally available traditional remedy during the current pregnancy or within six months postpartum, including oral consumption, inhalation, topical application, or other routes of administration for the prevention, treatment, or management of health conditions, and was measured as a binary variable (yes/no). Place of residence was classified according to national administrative categories as urban (city, municipality, or town council), peri-urban (areas at the outskirts of urban centers), or rural (areas outside urban boundaries). Parity was defined as the number of previous pregnancies carried to a viable gestational age (≥ 24 weeks), regardless of outcome, and was analyzed in categories (0, 1, ≥ 2 births). History of pregnancy-related complication was defined as a participant's self-reported experience of at least one complication during any previous pregnancy, childbirth, or postpartum period, such as hypertensive disorders of pregnancy, antepartum or postpartum haemorrhage, gestational diabetes, preterm birth, obstructed or prolonged labour, or other clinically significant pregnancy-related complications. Decoction was defined as a herbal preparation produced by boiling plant materials, such as roots, bark, or leaves, in water to extract their constituents. Infusion was defined as a herbal preparation produced by soaking plant material in hot or cold water without boiling to extract its constituents.

Data collection procedures

Data were collected using a structured interviewer-administered questionnaire. The tool was developed in English, translated into the local Ateso language, and back-translated into English to ensure semantic and conceptual equivalence. Pretesting was conducted among 10 pregnant and lactating women at Soroti Regional Referral Hospital to assess clarity, relevance, and comprehension, and necessary revisions were made.

Data collection was conducted by trained nurses and midwives who were fluent in both English and Ateso and were not involved in patient care at the study sites. They received training on the study objectives, ethical conduct of research, confidentiality, and standardized interviewing techniques to minimize interviewer bias. Inter-observer consistency was maintained through joint review of initial interviews and daily supervisory checks of completed questionnaires.

Eligible participants were approached according to the systematic sampling procedure, and written informed consent was obtained before enrollment. Interviews were conducted in private settings to ensure confidentiality. Participants were assured that their responses would remain anonymous and would not affect their access to healthcare services, in order to minimize social desirability bias.

Data collected included information on herbal medicine use, socio-demographic characteristics, obstetric and clinical history, and health system-related factors.

Data quality control and assurance

The questionnaire was pretested among 10 participants at Soroti Regional Referral Hospital, and necessary revisions were made to improve clarity and relevance. Data collection was conducted by trained research assistants who were qualified nurses and midwives not affiliated with the study facilities. They underwent three days of training on study procedures, ethical conduct, informed consent, and standardized interviewing techniques.

During data collection, the principal investigator and co-investigators conducted routine supervision to ensure adherence to study protocols. Completed questionnaires were reviewed daily for completeness, consistency, and accuracy. Data were double-entered into EpiData version 4.6 to minimize entry errors, and discrepancies were resolved through comparison with the original questionnaires.

Data analysis

Data were entered into EpiData version 4.6 and exported to Stata version 17 for analysis. Continuous variables were summarized using the median and interquartile range (IQR), while categorical variables were summarized as frequencies and percentages. The prevalence of herbal medicine use during pregnancy or within six months postpartum was calculated and reported as a percentage with corresponding 95% confidence interval (CI).

Factors associated with herbal medicine use were determined using a mixed-effects modified Poisson regression model with robust standard errors. This approach was selected to account for clustering at the health facility level and to provide valid estimates for a common binary outcome.

Multicollinearity among independent variables was assessed using the variance inflation factor (VIF), with $VIF > 10$ indicating high multicollinearity. Interaction terms were specified a priori based on plausible

biological or behavioral relationships between variables and assessed using two-way interaction terms and the Chunk test.

Associations are reported as prevalence ratios (PRs) with 95% confidence intervals (CIs) and p-values, which are presented consistently in all tables. Variables with $p < 0.20$ in bivariate analysis were considered for inclusion in the multivariable model. Stepwise backward elimination ($\alpha = 0.05$) guided model selection, but all removed variables were assessed for confounding, defined as a $\geq 10\%$ change between crude (cPR) and adjusted PR (aPR) for any significant variable. Variables identified as confounders were retained in the final model.

Model diagnostics included examining goodness-of-fit using Pearson residuals and deviance residuals to identify poorly fitted observations, and assessment of influential observations using Cook's distance.

Results

Socio-demographic and behavioral characteristics of participants

A total of 671 pregnant and lactating women were included in the analysis across the five study sites. The median age was 25 years (IQR: 21–30). The majority of participants were married or cohabiting (85.3%) and of Iteso ethnicity (90.2%). Most respondents had attained primary-level education (53.8%) and were engaged in subsistence farming (42.0%). Rural residence was reported by 58.7% of participants, and 68.1% reported a monthly household income below UGX 100,000. Alcohol consumption was reported by 27.3% of respondents (Table 1).

Table 1
Socio-demographic and behavioral characteristics of study participants by study site.

Variable	Category	Frequency (n)	Percentage (%)
Health facility	Katakwi GH	142	21.1
	Atutur GH	148	22.1
	Amuria GH	129	19.2
	Serere HC IV	99	14.8
	Princess HC IV	153	22.8
Age (years)	Median (IQR)	25 (21–30)	
Marital status	Married/ cohabiting	572	85.3
	Not married	99	14.8
Religion	Catholic	298	44.4
	Anglican	258	38.4
	Pentecostal	95	14.2
	Muslim	15	2.2
	Others	5	0.8
Ethnicity	Iteso	605	90.2
	Kumam	26	3.9
	Others	40	5.9
Education status	None	53	7.9
	Primary	361	53.8
	Secondary	175	26.1
	Tertiary	82	12.2
Occupation	Formal employment	46	6.9
	Informal employment	143	21.3
	Farming	282	42.0
	Unemployed	189	28.2
	Student	11	1.6
Residence	Urban	104	15.5
	Peri-urban	173	25.8

Variable	Category	Frequency (n)	Percentage (%)
	Rural	394	58.7
Household Income	<UGX 100,000	457	68.1
	UGX 100,000-<300,000	167	24.9
	UGX 300,000-<500,000	24	3.6
	≥UGX 500,000	23	3.4
History of alcohol use	No	488	72.7
	Yes	183	27.3

Obstetric, clinical, and health system-related characteristics

More than half of the participants were pregnant at the time of the study (57.2%), while 42.8% were lactating mothers. Most respondents were multiparous (59.8%). A minority reported having chronic medical conditions (3.6%). Approximately 19.1% reported a history of abortion, while 10.3% reported a history of pregnancy-related complications.

Barriers to accessing formal healthcare were reported by 35.9% of participants. Only 23.4% reported receiving counseling from health workers regarding herbal medicine use. The majority perceived herbal medicines as unsafe (68.9%) and ineffective (73.5%) (Table 2).

Table 2
Obstetric, clinical, and health system-related characteristics of participants by study site

Variable	Category	Frequency (n)	Percentage (%)
Current status	Pregnant	384	57.2
	Lactating	287	42.8
Parity	Nulliparous (none)	84	12.5
	Primiparous (single)	186	27.7
	Multiparous (≥ 2)	401	59.8
History of abortion	No	543	80.9
	Yes	128	19.1
Presence of chronic disease	No	647	96.4
	Yes	24	3.6
History of pregnancy complication	No	602	89.7
	Yes	69	10.3
Barriers to healthcare access ^a	No	430	64.1
	Yes	241	35.9
Counseling from health worker	No	514	76.6
	Yes	157	23.4
Perceived safety of herbal medicine	Safe	209	31.2
	Not safe	462	68.8
Perceived effectiveness of herbal medicine	Effective	178	26.5
	Not effective	493	73.5
^a Barriers to healthcare access include long distance to facility, financial constraints, unavailability of medicine, unfriendly health workers, huge volume of patients at the facility			

Prevalence and patterns of herbal medicine use

Of the 671 study participants, 181 reported using herbal medicine during pregnancy or within six months postpartum, corresponding to a prevalence of 27.0% (95% CI: 23.7–30.5). The prevalence varied across study sites, with the highest observed at Katakwi GH (43.0%), followed by Amuria General GH (30.2%), Atutur GH (23.0%), Princess Diana HC IV (19.0%), and the lowest at Serere HC IV (18.2%).

Among the participants who reported herbal medicine use, *Zanthoxylum chalybeum* was the most commonly reported herbal medicine (34.8%). However, a substantial proportion of participants (43.1%)

were unable to identify the specific herbal medicine used. Other commonly reported herbal medicines included *Nauclea latifolia* (4.4%) and *Vepris nobilis* (3.9%).

Among herbal medicine users (n = 181), the most commonly reported frequency of use was occasional (40.8%), followed by rare use (24.9%) and daily use (22.7%). Herbal medicine use was most frequently reported during the second trimester (29.8%) and first trimester (28.7%).

The most commonly reported indication for herbal medicine use was urinary tract infections (45.3%), followed by pain relief (22.6%) and skin conditions (14.9%). The majority of herbal medicines were obtained from family members or friends (51.4%) and were primarily prepared as infusions (40.9%) or decoctions (24.9%). Oral administration was the predominant route (97.2%). Concurrent use of herbal and conventional medicines was reported by 28.2% of users, while only 9.4% disclosed herbal medicine use to health workers (Table 3).

Table 3
Patterns of herbal medicine use among participants.

Variable	Category	Frequency (n)	Percentage (%)
Herbal medicine name	<i>Zanthoxylum chalybeum</i>	63	34.8
	<i>Nauclea latifolia</i>	8	4.4
	<i>Vepris nobilis</i>	7	3.9
	Others ^a	25	13.8
	Unknown	78	43.1
Frequency of use	Daily (30 times/ month)	41	22.7
	Weekly (4 times/month)	21	11.6
	Occasionally (1–3 times/month)	74	40.8
	Rarely (1 or 2 times during entire pregnancy or lactation)	45	24.9
Timing of use	First trimester	52	28.7
	Second trimester	54	29.8
	Third trimester	20	11.1
	Postpartum	29	16.0
	Entire pregnancy	5	2.8
	Pregnancy & postpartum	3	1.7
	Others	18	9.9
Main reason for use	Pain relief	41	22.6
	Urinary tract infection	82	45.3
	Gastrointestinal issues	5	2.8
	Labor facilitation	7	3.9
	Improve fetal outcomes	8	4.4
	Skin rash	27	14.9
	Others	11	6.1
^a Others include <i>Carissa edulis</i> , <i>Mondia whitei</i> , <i>Pseudocedrela koschyi</i> , <i>Kigelia africana</i> , <i>Eucalyptus</i> , <i>Vernonia grantii</i> , <i>Ocimum basilicum</i> , <i>Psidium guajava</i> , <i>Erythrina abyssinica</i> , <i>Urtica dioica</i> , <i>Momordica foetida</i> , and <i>Balanites aegyptiaca</i>			

Variable	Category	Frequency (n)	Percentage (%)
Main source of herbal medicine	Market	22	12.2
	Vendor	16	8.8
	Family/ friend	93	51.4
	Tradition healer	33	18.2
	Own-garden/ self-prepared	17	9.4
Herbal medicine preparation	Decoction	45	24.9
	Infusion	74	40.9
	Powder	45	24.8
	Paste	5	2.8
	Juice/ extract	10	5.5
	Smoke/ vapor/ inhalation	2	1.1
Route of administration	Oral	176	97.2
Influencer of Herbal medicine use	Topical	3	1.7
	Inhalation	2	1.1
Concurrent use with conventional medicine	Yes	51	28.2
	No	130	71.8
Disclosure of herbal medicine use to health worker	Yes	17	9.4
	No	164	90.6
^a Others include <i>Carissa edulis</i> , <i>Mondia whitei</i> , <i>Pseudocedrela koschyi</i> , <i>Kigelia africana</i> , <i>Eucalyptus</i> , <i>Vernonia grantii</i> , <i>Ocimum basilicum</i> , <i>Psidium guajava</i> , <i>Erythrina abyssinica</i> , <i>Urtica dioica</i> , <i>Momordica foetida</i> , and <i>Balanites aegyptiaca</i>			

Bivariate analysis of factors associated with herbal medicine use.

At bivariate analysis, factors with a p-value < 0.20 included: age, history of alcohol use, parity, history of abortion, previous pregnancy-related complications, barriers to accessing healthcare, and perceptions of herbal medicine safety and effectiveness (Table 4).

Table 4
Bivariate analysis of factors associated with herbal medicine use.

Variable	Category	cPR (95% CI)	p-value
Age (years)		1.02 (1.00-1.04)	0.096 ^a
Marital status	Married/ cohabiting	Reference	Reference
	Not married	0.94 (0.67–1.32)	0.737
Education status	None	Reference	Reference
	Primary	1.16 (0.64–2.14)	0.621
	Secondary	1.23 (0.51–2.93)	0.643
	Tertiary	1.17 (0.50–2.75)	0.772
Residence	Urban	Reference	Reference
	Peri-urban	1.30 (0.81–2.09)	0.274
	Rural	1.20 (0.78–1.84)	0.414
Household income	<UGX 100,000	Reference	Reference
	UGX 100,000- <300,000	1.07 (0.73–1.58)	0.725
	UGX 300,000- <500,000	1.34 (0.68–2.65)	0.403
	>UGX 500,000	1.20 (0.70–2.05)	0.517
History of alcohol use	No	Reference	Reference
	Yes	1.59 (1.22–2.06)	< 0.001 ^a
Parity	Nulliparous	Reference	Reference
	Primiparous	1.35 (0.75–2.43)	0.317
	Multiparous	1.60 (1.03–2.47)	0.005 ^a
^a p-value < 0.2			

Variable	Category	cPR (95% CI)	p-value
History of abortion	No	Reference	Reference
	Yes	1.42 (1.12–1.78)	0.003 ^a
Presence of chronic disease	No	Reference	Reference
	Yes	1.24 (0.85–1.82)	0.266
Previous of pregnancy-related complication	No	Reference	Reference
	Yes	1.46 (1.15–1.87)	0.002 ^a
Barriers to healthcare access	No	Reference	Reference
	Yes	1.45 (1.10–1.92)	0.009 ^a
Perceived safety of herbal medicine	Not	Reference	Reference
	Safe	2.12 (1.38–3.26)	0.001 ^a
Perceived effectiveness of herbal medicine	Not Effective	Reference	Reference
	Effective	2.35 (1.59–3.49)	< 0.001 ^a
^a p-value < 0.2			

Multivariable analysis of factors associated with herbal medicine use.

Factors significantly associated with herbal medicine use included history of alcohol use (aPR = 1.56, 95% CI: 1.13–2.15, p = 0.007), history of pregnancy-related complication (aPR = 1.35, 95% CI: 1.13–1.60, p = 0.001), presence of barriers to healthcare access (aPR = 1.33, 95% CI: 1.09–1.64, p = 0.006), and perceived effectiveness of herbal medicine use (aPR = 1.91, 95% CI: 1.20–3.05, p = 0.006). Perceived safety of herbal medicine was retained in the model as a potential confounder of the relationship between perceived effectiveness and herbal medicine use, although it was not statistically significant (Table 5).

Table 5
Multivariable analysis of factors associated with herbal medicine use.

Variable	Category	aPR (95% CI)	p-value
History of alcohol use	No	Reference	Reference
	Yes	1.56 (1.13–2.15)	0.007 ^a
History of pregnancy-related complication	No	Reference	Reference
	Yes	1.35 (1.13–1.60)	0.001 ^a
Barriers to healthcare access	No	Reference	Reference
	Yes	1.33 (1.09–1.64)	0.006 ^a
Perceived effectiveness of herbal medicine	Not Effective	Reference	Reference
	Effective	1.91 (1.20–3.05)	0.006 ^a
Perceived safety of herbal medicine	Not Safe	Reference	Reference
	Safe	1.63 (0.85–3.11)	0.140
^a p-value < 0.05			

Discussion

Herbal medicine use was common, with about one in four women reporting use during pregnancy or within six months postpartum. Although not extreme compared to some regional estimates, this level remains clinically important given the vulnerability of pregnant and lactating women and the potential for maternal and fetal harm. The observed prevalence aligns with several studies in sub-Saharan Africa (2, 9, 22), but is lower than reports from other settings where use exceeds 50%^{5–13}. Differences likely reflect variation in study populations, definitions of herbal medicine, and measurement approaches.

The predominance of *Zanthoxylum chalybeum* use likely reflects its widespread traditional application in the study setting, particularly for infections(23–26) and pain-related symptoms(27). A large proportion of participants could not identify the specific herbal products used. This is plausibly linked to procurement from informal sources where products are unlabeled and not standardized. This raises safety concerns, including dosing uncertainty, contamination risk, and potential herb–drug interactions among women concurrently using conventional medicines.

Most herbal medicines were obtained from informal networks such as family and friends, and disclosure to health workers was low. Similar patterns have been reported in Ethiopia(18, 28, 29) and Kenya(30). Non-disclosure has important clinical implications, as it limits the ability of healthcare providers to identify potential risks, including interactions between herbal and conventional medicines. This concern

is reinforced by the finding that a substantial proportion of women reported concurrent use. The low level of counseling reported in this study suggests missed opportunities within the healthcare system to address herbal medicine use in a structured and supportive manner.

Women with a history of pregnancy-related complications were more likely to use herbal medicine compared to those without such a history, consistent with findings from a study conducted in Ethiopia (31). This may reflect a response to prior adverse experiences, where women seek additional or alternative therapies in subsequent pregnancies. Previous complications may increase perceived vulnerability, prompting the use of multiple approaches in an effort to improve outcomes. However, due to the cross-sectional design, temporal relationships cannot be established. It is also possible that underlying factors, such as differences in health-seeking behavior or baseline risk profiles, contribute to both the occurrence of complications and the use of herbal medicine. Therefore, residual confounding and reverse relationships cannot be excluded.

Women who reported barriers to accessing formal healthcare were more likely to use herbal medicine compared to those who did not report such barriers. This finding is consistent with studies conducted in sub-Saharan Africa (32, 33). A plausible explanation is that structural barriers, such as cost, distance, or long waiting times, may limit access to formal services and drive reliance on more accessible and culturally familiar alternatives, including herbal medicine.

Herbal medicine use was more common among women who reported ever consuming alcohol compared to those who had never consumed alcohol, consistent with findings from studies conducted in Turkey(34) and Norway (35). Given the cross-sectional design, this association is unlikely to represent a direct causal relationship. Instead, it may reflect clustering of health-related behaviors, where individuals engaging in one behavior are more likely to engage in others due to shared underlying determinants such as social norms, risk perception, or health beliefs. This underscores the need to interpret such associations within a broader behavioral and social context.

Perceived effectiveness of herbal medicine was strongly associated with its use. Women who believed that herbal medicines are effective were more likely to use them. This finding is consistent with findings from other studies (9, 36–39) and established health behavior theories (40–42), which identify perceived benefit as a key driver of health-related decision-making. In contrast, perceived safety was not statistically significant in the adjusted analysis but was retained as a potential confounder. This suggests that perceptions of safety and effectiveness are interrelated and may jointly influence herbal medicine use.

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design does not allow for establishing temporal relationships between exposures and herbal medicine use, and the observed associations may reflect reverse causation or shared underlying determinants rather than true causal effects. Second, herbal medicine use and related variables were self-reported, introducing the possibility of recall and social desirability bias, which may have led to underestimation of prevalence and attenuation of associations. Third, although multiple relevant

variables were included in the analysis, residual confounding from unmeasured factors, such as cultural beliefs and partner influence, cannot be excluded. Finally, the facility-based sampling approach limits generalizability, as women who do not attend antenatal or postnatal care services may have different patterns of herbal medicine use.

The findings suggest several actions for practice, policy, and research. Routine screening for herbal medicine use should be incorporated into antenatal and postnatal care using respectful, culturally sensitive, and non-judgmental communication approaches that encourage disclosure. Healthcare workers should receive training on discussing herbal medicine use and recognising potential herb–drug interactions during pregnancy.

At the policy level, integrating guidance on herbal medicine use into national maternal health guidelines and strengthening community health education may help address misconceptions about safety and effectiveness. Efforts to reduce structural barriers to healthcare access, such as cost and distance, may also reduce reliance on informal therapies. Future research should include prospective cohort studies to establish temporal relationships, pharmacological and toxicological evaluation of commonly used medicinal plants, and implementation studies examining effective strategies for integrating discussions of herbal medicine use into routine maternal healthcare.

Conclusion

In conclusion, herbal medicine use among pregnant and lactating women in Eastern Uganda is common and influenced by healthcare access barriers, prior pregnancy-related complications, alcohol use, and perceived effectiveness. The low level of disclosure and the occurrence of concurrent use with conventional medicines raise important safety concerns. Integrating routine screening and counseling into maternal healthcare services, alongside addressing access barriers and community perceptions, is necessary to improve maternal and child health outcomes.

Abbreviations

aPR, adjusted prevalence ratio; CI, confidence interval; COBMERS, community-based medical education and research services; cPR, crude prevalence ratio; HC, health center; IQR, interquartile range

Declarations

Ethics approval and informed consent

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Mbale Regional Referral Hospital Research Ethics Committee (MRRH-2025-591). Administrative permission to conduct the study at the five selected health facilities was

obtained from the respective District Health Offices and facility administrations. Written informed consent was obtained from all participants before enrollment. Participants were informed that participation was voluntary and that they could decline to participate or withdraw from the study at any time without affecting the healthcare services they received. Privacy was maintained by conducting interviews in private settings, and confidentiality was protected by assigning unique study identifiers and excluding personally identifiable information from the study database. All study data were securely stored and accessible only to authorized study personnel.

Consent for publication

Not applicable.

Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon request.

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Competing interests

The authors declare that they have no potential competing interests in this work.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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