

# Factors Associated With Herbal Medicine Use in Pregnancy Among Postnatal Mothers in Mbarara Regional Referral Hospital in Western Uganda

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## Research Article

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# Abstract

## *Background*

There is widespread use of herbal medicines among populations in sub-Saharan Africa. However, pregnant women should be conscious about medication taken during pregnancy including herbal medicines because their safety profiles are not known and some of them might affect the mother, fetus and pregnancy outcomes. Knowledge about use and safety of herbs in pregnant women is limited. This study aimed to assess the extent of use and the factors associated with use of herbal medicine in pregnancy.

## *Methods*

A cross-sectional study involving 385 women 6 weeks post-partum and below, receiving post-natal services at Mbarara Regional Referral Hospital in Western Uganda was conducted during May to August 2016. Simple random sampling was used to select participants. A structured pretested questionnaire was administered after written informed consent. Data was analyzed using logistic regression (STATA- 14).

## *Results*

Of 385 respondents, 70.4% reported to have used herbal medicine during their most recent pregnancy. Associated factors were perception that herbal medicines are safe (aOR 9.8, 95% CI (4.2-23.0)), perception that herbal medicines are important (aOR 12.4, 95% CI (5.2-29.5)), staying more than 10KM from the health facility (aOR 3.1, 95%CI (1.4-6.9)), being a first time mother (aOR 2.6, 95%CI (1.1-6.2)) and dissatisfaction with ANC services at health facility (aOR 2.6, 95%CI (1.1-6.3))

## *Conclusion*

Herbal medicine use in pregnancy is common in the study area. Community Sensitization drives about the dangers of herbal medicine use in pregnancy is recommended. Healthcare workers should routinely screen for herbal medicine use during antenatal care visits and labor.

# Background

The use of traditional and complementary medicine has expanded globally and become increasingly popular(1). Herbal medicine is an integral part of traditional medicine in Uganda and other Low and middle income countries. Herbal medicines are defined as plant-derived materials and preparations perceived to have therapeutic benefits, containing raw or processed ingredients from one or more plants (2, 3). It is estimated that 80% of the rural population in developing countries depends on traditional medicine for their health needs, and this includes pregnant women(4). Pregnant women should be concerned about all medication taken during pregnancy including herbal medicines(5), because some of them might affect the mother, fetus leading to poor pregnancy outcomes. Most pregnant women believe that herbal medicines are 'natural' and 'safe' compared to conventional medicines(1). Moreover they are

not subject to the same formal and strict regulation as conventional medicines in many countries(6, 7). World Health Organization (WHO) estimates that about 7–55% of pregnant women use herbal remedies during the course of pregnancy depending on the region and ethnicity (8). Additionally, a systematic review of publications in the Middle East reported a prevalence of herbal medicine use amongst pregnant women to be 22.3–82.3%(9).

In Africa, more pregnant women use herbal remedies to treat pregnancy related problems due to cost-effectiveness of therapy and easy access of these products(1), regardless of the inadequate knowledge and evidence about their safety. Herbal medicine use during pregnancy, labor or the postpartum period occurs at rates ranging from 30–70% in a healthcare setting in urban areas of sub-Saharan Africa(10–12).

In Uganda, the prevalence of herbal medicine use during pregnancy and delivery is reported to be > 80% in Western Uganda (13) and 20% in Northern Uganda(14). Reports from the Health Management Information Systems (HMIS) in Uganda, indicate that in the year 2012/13, the still birth rate was 2.8%, (15), and taking herbal medicines was cited as one of contributing factors. Moreover, Nelson et al (2016) detailed how maternal death in western Uganda occurred secondary to a posterior uterine rupture, associated with the herbs taken during labor (16). A study done at Mbarara regional referral hospital in 2013 found that 35% of the women who had uterine rupture had actually taken herbal preparations during labor process, and were 15 times more likely to get it than those who did not(17). It is also documented that pregnant mothers don't usually disclose use of these herbs to their attending health care workers (9, 11, 18).

Despite the consequences of using herbal medicines, data on the magnitude and factors associated with herbal medicine use in pregnancy, are still limited. We determine the extent of use and factors associated with herbal medicine use in pregnancy among post-natal mothers in Mbarara Regional Referral Hospital, Uganda.

## **Methods**

### **Study design and setting**

We conducted a cross-sectional study at Mbarara Regional Referral Hospital, which is an urban public teaching hospital, with a 600-bed capacity, offering general and specialized health services. It is located in Mbarara city 271KM from Kampala the capital city, serves a population of approximately 4 million people and is a referral Centre for nine districts, in South Western Uganda.

### **Study population, inclusion and exclusion criteria**

Women attending a post-natal clinic at Mbarara Regional Referral Hospital, who were at most six weeks post-partum, and consented to participate in the study, were enrolled between May and August 2016.

Women who were critically ill, or had major complications that precluded study participation were excluded.

## **Study sampling and data collection**

We used simple random sampling to enroll 385 women who were attending the postnatal clinic. A structured pretested interviewer administered questionnaire was used to collect data, after obtaining informed consent.

## **Study variables**

Dependent variable was herbal medicine use during the most recent pregnancy, and was collected as a binary variable.

Independent variables were categorized under social demographic, socio-behavioral and health system factors.

Socio-demographic factors included age, religion, occupation, marital status, level of education and parity. They were all analyzed as categorical variables.

Socio-behavioral factors included; knowledge about herbal medicine, perception that herbal medicine is important and perception that herbal medicine is safe; were analyzed as binary variables. Participants answered yes or no to having knowledge about herbal medicine.

Health system factors included; ANC (Antenatal care) attendance and satisfaction with ANC services, both analyzed as binary variables, while distance of participant's home from health facility and number of ANC visits were analyzed as categorical variables.

## **Data analysis**

Data was analyzed in STATA version 14 (Texas, USA), and results presented in tables and figures. Prevalence was calculated as a proportion of enrolled women who used herbal medicines during the most recent pregnancy.

Data was analyzed at three levels. At univariate analysis, categorical/binary variables were presented as proportions. While at unadjusted analysis, the chi square test was used to determine the association between independent variables and the dependent variable. The significant factors ( $P$ -value  $< 0.05$ ) at unadjusted were run in multivariate logistic regression. Adjusted odds ratios (aOR), 95% confidence intervals (CI) and  $P$  values are presented in tables. A  $P$ -value  $< 0.05$  was considered statistically significant.

## **Results**

### **Participant characteristics**

A total of 385 participants were enrolled in the study, of these 132 (34.3%) were aged 21–25 years; 154 (40.0%) were of Anglican faith and 159 (41.3%) were unemployed. Majority of the participants were married 315 (81.8 %) and 139 (36.1%) had secondary education. Majority of participants had had more than one pregnancy 275 (71.4%). Most of the participants admitted having knowledge about herbal medicine 350 (90.9%), of these 70.9% perceived herbal medicines as safe and 71.7% perceived them as important.. One hundred forty nine (38.7%) participants stayed more than 10 kilometers (KM) away from the health facility. Most of them had attended Antenatal care 360 (93.5%) at least once during the recent pregnancy, of whom 107 (29.7%) were not satisfied with the services received at health facility. (Table 1)

Table 1  
Descriptive characteristics of study participants.

<b>Socio-Demographics</b>	<b>Frequency (n = 385)</b>	<b>Percentage (%)</b>
<b>Age</b>		
15–20	72	18.7
21–25	132	34.3
26–30	122	31.7
> 30	59	15.3
<b>Religion</b>		
Catholic	119	30.9
Moslem	93	24.2
Anglican	154	40.0
Others	19	4.9
<b>Occupation</b>		
Unemployed	159	41.3
Self-employed	139	36.1
Formal employment	87	22.6
<b>Marital status</b>		
Single	70	18.2
Married	315	81.8
<b>Education</b>		
None	48	12.5
Primary	97	25.2
Secondary	139	36.1
Post-secondary	101	26.2
<b>Parity</b>		
1	110	28.6
> 1	275	71.4

\*the n = 350 which corresponds with number of participants who admitted to have knowledge about herbal medicine.

<b>Socio-Demographics</b>	<b>Frequency (n = 385)</b>	<b>Percentage (%)</b>
<b>Used Herbal Medicine</b>		
Yes	271	70.4
No	114	29.6
<b>Disclosed herbal medicine use to Healthcare worker</b>		
Yes	31	11.4
No	240	88.6
<b>Socio-behavioural factors</b>		
<b>Knowledge about herbal medicine</b>		
Yes	350	90.9
No	35	9.1
<b>Perception that Herbal medicines are important</b>		
Yes	251*	71.7
No	99*	28.3
<b>Perception that herbal medicines are safe</b>		
Yes	248*	70.9
No	102*	29.1
<b>Health system factors</b>		
<b>Distance of participant's home from the health facility</b>		
</=10KM	236	61.3
> 10KM	149	38.7
<b>Attended ANC at least once</b>		
Yes	360	93.5
No	25	6.5
<b>Number of ANC visits</b>		
< 4	220	61.1
>/=4	140 <sup>\$</sup>	38.9

\*the n = 350 which corresponds with number of participants who admitted to have knowledge about herbal medicine.

Socio-Demographics	Frequency (n = 385)	Percentage (%)
<b>Satisfaction with ANC services</b>		
Yes	253 <sup>§</sup>	70.3
No	107 <sup>§</sup>	29.7
*the n = 350 which corresponds with number of participants who admitted to have knowledge about herbal medicine.		

<sup>§</sup>n = 360, which corresponds with number of participants who attended Antenatal Care (ANC)

## Prevalence of herbal medicine use in pregnancy

The prevalence of herbal medicine use in pregnancy was 70.4% (271) (See Table 1). Of 271 who used herbal medicine in pregnancy, 43.5% used them during the first trimester, while 76.4% used them during labor (Fig. 1). Most of the participants 240 (88.6%) reported that they did not disclose herbal medicine use to their attending HealthCare Worker.

## Adjusted logistic regression model for herbal medicine use in pregnancy

At the adjusted analysis, the perception that herbal medicines are safe (aOR 9.8, 95% CI (4.2–23.0), perception that herbal medicines are important (aOR 12.4, 95% CI (5.2–29.5), staying more than 10KM from the health facility (aOR 3.1, 95%CI (1.4–6.9), being a first time mother (aOR 2.6, 95%CI (1.1–6.2) and dissatisfaction with ANC services at health facility (aOR 2.6, 95%CI (1.1–6.3), were associated with herbal medicine use in pregnancy as shown in Table 2

Table 2

Adjusted and Unadjusted logistic regression of the factors associated with herbal medicine (HM) use in pregnancy

Variable	Used HM (n = 271) (Col %)	No HM Use (n = 114) (Col %)	Unadjusted analysis		Adjusted analysis	
			COR 95% (CI)	P value	aOR 95% (CI)	P value
<b>Social Demographics Factors</b>						
<b>Age</b>						
15–20	46(17)	26(22.8)				
21–25	91(33.6)	41(36)	1.3(0.7–2.3)	0.46		
26–30	93(34.4)	29(25.4)	1.8(1.0–3.4)	0.07		
> 30	41(15)	18(15.8)	1.3(0.6–2.7)	0.50		
<b>Religion</b>						
Catholic	91(33.6)	28(24.6)	2.4(0.9–6.5)	0.93		
Moslem	63(23.3)	30(26.3)	1.5(0.6–4.2)	0.41		
Anglican	106(39.1)	48(42.1)	1.6(0.6–4.3)	0.34		
Others	11(4.1)	8(7.0)				
<b>Occupation</b>						

\*n = 267 which corresponds with number of participants who admitted to have knowledge about herbal medicine and used herbal medicine.

\*\*n = 83 which corresponds with number of participants who admitted to have knowledge about herbal medicine and didn't use herbal medicine.

§ n = 248 which corresponds with number of participants who attended Antenatal Care (ANC) and used herbal medicine.

§§n = 112 which corresponds with number of participants who attended Antenatal Care (ANC) and didn't use herbal medicine.

OR-Odds Ratios CI- 95% Confidence interval ANC-Antenatal care

Variable	Used HM (n = 271) (Col %)	No HM Use (n = 114) (Col %)	Unadjusted analysis		Adjusted analysis	
Unemployed	122(45)	37(32.5)	2.2(1.3–3.9)	0.01	0.7(0.2–2.4)	0.59
self-employed	97(35.8)	42(36.8)	1.6(0.9–2.7)	0.12	0.4(0.1–1.0)	0.06
formal employment	52(19.2)	35(30.7)				
<b>Marital status</b>						
Single	48(17.7)	22(19.3)				
Married	223(82.3)	92(80.7)	1.1(0.6–2.0)	0.71		
<b>Education</b>						
None	33(12.2)	15(13.2)	1.6(0.8–3.4)	0.19	0.5(0.1–2.2)	0.4
Primary	81(29.9)	16(14.0)	3.8(1.9–7.3)	<0.01	2.2(0.7–6.9)	0.19
Secondary	99(36.5)	40(35.1)	1.8(1.1–3.2)	0.03	2.2(0.8–5.6)	0.11
Post-secondary	58(21.4)	43(37.7)				
<b>Parity</b>						
1	59(21.8)	51(44.7)	0.3(0.2–0.6)	< 0.01	2.6(1.1–6.2)	0.04
> 1	212(78.2)	63(55.3)				
<b>Socio-behavioural factors</b>						
<b>knowledge about herbal medicine</b>						
*n = 267 which corresponds with number of participants who admitted to have knowledge about herbal medicine and used herbal medicine.						
**n = 83 which corresponds with number of participants who admitted to have knowledge about herbal medicine and didn't use herbal medicine.						
§ n = 248 which corresponds with number of participants who attended Antenatal Care (ANC) and used herbal medicine.						
§§n = 112 which corresponds with number of participants who attended Antenatal Care (ANC) and didn't use herbal medicine.						
OR-Odds Ratios CI- 95% Confidence interval ANC-Antenatal care						

Variable	Used HM (n = 271) (Col %)	No HM Use (n = 114) (Col %)	Unadjusted analysis	Adjusted analysis		
Yes	267(98.5)	83(72.8)	24.9(8.6–33.6)	<0.01		
No	4(1.5)	31(27.2)				
<b>Perception that Herbal medicines are important</b>						
Yes	230(86.1)*	21(25.3)**	18.4(10.0–33.6)	< 0.01	12.4(5.2–29.5)	< 0.01
No	37(13.9)*	62(74.7)**				
<b>Perception that herbal medicines are safe</b>						
Yes	228(85.4)*	20(24.1)**	18.4(10.0–33.8)	< 0.01	9.8(4.2–23.0)	< 0.01
No	39(14.6)*	63(75.9)**				
<b>Health system factors</b>						
<b>Distance of participant's home from the health facility</b>						
</=10KM	157(57.9)	79(69.3)				
> 10KM	114(42.1)	35(30.7)	1.6(1.0–2.6)	0.04	3.1(1.4–6.9)	0.01
<b>Attended ANC at least once</b>						
Yes	248(91.5)	112(98.3)				
No	23(8.5)	2(1.7)	5.2(1.2–22.4)	0.03		
*n = 267 which corresponds with number of participants who admitted to have knowledge about herbal medicine and used herbal medicine.						
**n = 83 which corresponds with number of participants who admitted to have knowledge about herbal medicine and didn't use herbal medicine.						
§ n = 248 which corresponds with number of participants who attended Antenatal Care (ANC) and used herbal medicine.						
§§n = 112 which corresponds with number of participants who attended Antenatal Care (ANC) and didn't use herbal medicine.						
OR-Odds Ratios CI- 95% Confidence interval ANC-Antenatal care						

Variable	Used HM (n = 271) (Col %)	No HM Use (n = 114) (Col %)	Unadjusted analysis	Adjusted analysis
<b>Number of ANC visits</b>				
< 4	157(63.3) \$	63(56.3) \$\$	1.3(0.9–2.1)	0.2
>/=4	91(36.7) \$	49(43.8) \$\$		
<b>Satisfaction with ANC services</b>				
yes	159(64.1)\$	94(83.9)		
No	89(35.9)\$	18(16.1)	2.9(1.7–5.2)	<0.01 2.6(1.1–6.3) 0.04
*n = 267 which corresponds with number of participants who admitted to have knowledge about herbal medicine and used herbal medicine.				
**n = 83 which corresponds with number of participants who admitted to have knowledge about herbal medicine and didn't use herbal medicine.				
\$ n = 248 which corresponds with number of participants who attended Antenatal Care (ANC) and used herbal medicine.				
\$\$n = 112 which corresponds with number of participants who attended Antenatal Care (ANC) and didn't use herbal medicine.				
OR-Odds Ratios CI- 95% Confidence interval ANC-Antenatal care				

## Discussion

Use of herbal medicines is common amongst pregnant women in south western Uganda.

While herbal medicine is usually perceived as a rural phenomenon (19), the prevalence of herbal medicine in this current study done in an urban setting is high. This prevalence is similar to that reported other urban settings in Sub-Saharan Africa (12, 20, 21). However, the prevalence we report is higher than the reported prevalence in Northern Uganda(14), and other studies done in East Africa (11, 22) and West Africa (10, 23). This may be due to the difference in the social-cultural beliefs of the populations in these different study areas. Nonetheless, the study done in Nigeria by Gharoro and colleague (10) considered a few herbal medicines, which was not a representative of herbal medicine use among all pregnant women and possibly explains the lower prevalence they report.

Whereas pregnant mothers have different reasons for herbal medicine use in different stages of pregnancy, this current study revealed that more than three quarters of herbal medicine users, used them during labor. This finding is similar to what has been reported in Ethiopia(24). In addition, 80% of

pregnant women in rural areas of western Uganda deliver using herbal remedies (13). Labor is a critical stage of pregnancy and should be handled with utmost care because it has a great impact on the health of the mother and baby, as well as pregnancy outcome. Therefore, health workers should always be keen to screen for herbal medicine use during labor process.

The findings of the current study showed that participants who perceived that herbal medicines are safe and important, were more likely to use them during pregnancy. This is consistent with the study done in Sub-Saharan Africa(11, 14, 25). In Northern Uganda, study found out that most women regard herbal medicines as “effective and safe” in addition to treating a wide range of ailments(14). Additionally, pregnant women in Nigeria use herbal medicines because they perceive them as “natural” and “safe” with no side effects (20). This is however not backed up by evidence since there is generally paucity of studies evaluating the safety and efficacy of these herbal preparations in Africa. Further still, the dosage profiles of these herbs are largely unknown. Our findings also show that majority of women attended antenatal care from a health facility at least once an indication that they believe and use conventional therapies and herbal medicines concurrently, further causing worry for potential drug-herb interactions. Therefore, health workers should be keen to assess herbal medicine use during routine ANC visits and educate pregnant women about the potential consequences of these herbal medicines.

In this current study, we show that first time mothers were more likely to use herbal medicines compared to those who had more than one pregnancy, which is consistent with other studies (26–28). This may be attributed to naivety to the pregnancy experience, which makes them vulnerable to take any herbal medicines recommended to them by their parents and relatives(28). The various pregnancy related ailments that are new to first time mothers may also trigger them to use herbal medicine.

We show that respondents who lived further from the health facility were more likely to use herbal medicine and is consistent with findings from elsewhere in East Africa(28). In the context of health care generally, long distances have also been associated with poor uptake of services among pregnant mothers (14, 29). This is so critical in a sense that pregnant women will find it so easy to use the herbal medicines which are accessible compared to the conventional care. Furthermore, it is documented that over 80% of pregnant women in Western Uganda deliver at their homes mainly with the assistance of traditional birth attendants who use herbal medicines (13). Therefore in the effort to improve maternal health and check on the stagnantly high maternal mortality, government should decentralize maternal health services, to increase accessibility to the population.

In this current study, we demonstrate that respondents, who were not satisfied with the services rendered to them at the health facility, were more likely to use herbal medicines during their most recent pregnancy. This finding is comparable with a study done in northern Uganda(14). Additionally, a systematic review of literature in developing countries revealed that a wide range of structural, process and outcome factors influence women’s satisfaction, and ultimately their uptake of conventional therapies, which leaves them with an option of using herbal medicines which are less costly and readily available(30). It’s therefore

important that maternal health programs in health facilities put into account women's perspective of care they need in order to improve services delivered.

Majority of pregnant women who used herbal medicines did not disclose to the attending health care workers (HCW). This finding is consistent with the previous studies in sub Saharan Africa (11, 14, 25, 31, 32). The qualitative study done in rural Ghana also confirm that much as pregnant women use both conventional and herbal medicines, they were hesitant to disclose herbal medicine use to their attending HCW for several reasons such as; the belief that herbs are "natural and safe", fear of losing control of their health, perception that HCW don't have knowledge about herbs and fear of being victimized or discouraged by HCW(32). This therefore calls for health workers' concerted effort to continually update themselves on the herbs commonly used in their local communities. It is also relevant that HCWs actively assess herbal medicine use when pregnant women come to the health facilities during antenatal care or labor.

### **Limitations and Strengths**

The data about pregnancy experiences was collected retrospectively, which makes it prone to recall bias. This was however reduced by considering women who were only six weeks postpartum and below. Furthermore, women with severe complications like unconsciousness were excluded from participation, and therefore we couldn't determine associations between herbal medicine and complications, or if developing complications led to the use of herbal medicine.

The study was conducted in a hospital setting and therefore, it is likely that some participants may have concealed information due to fear of perceived repercussions regarding care or stigma. This was reduced by explaining to the participants that this was an independent survey which would not in any way affect the quality of care being received in the hospital. In addition, using the hospital setting as our sampling frame could have introduced selection bias therefore the herbal medicine use we report may not be representative of the region.

Despite these limitations, our findings highlight an important area that the health care system should study further in collaboration with herbalists.

### **Conclusion**

The use of herbal medicine is common among pregnant women in the study area. Most pregnant women seek conventional therapies but also use herbal medicines concurrently. This calls for community sensitization drives to change the perception of women regarding use of these herbal medicines in pregnancy. HCWs should always assess for the use of herbal medicines during antenatal care and advise pregnant women to make informed decisions.

### **Abbreviations**

ANC: Antenatal Care

aOR: Adjusted Odds Ratio

COR: Crude Odds Ratio

CI: Confidence Interval

HCW: Healthcare Worker

HM: Herbal medicine

HMIS: Health Management Information systems

KM: Kilometer

USA: United States of America

WHO: World Health Organization

## **Declarations**

### **Ethical Approval and Consent to participate**

The research study was reviewed and approved by the departments of Obstetrics and Gynecology and Administration of Mbarara Regional Referral hospital.

Written informed consent was obtained from each participant before study procedure. Assent from minor participants (below 18years) and informed consent from their parents or legal guardians was obtained before study procedures. All methods were conducted in accordance with good clinical practice and regulatory requirements of Uganda National Council of Science and Technology.

### **Consent to publication**

Not applicable

### **Availability of data and materials**

All data analyzed during this study are included in this publication (attached as supplementary information file)

### **Competing interests**

Authors declare no competing interests

### **Funding**

The authors received no specific funding for this work.

### **Authors' contributions**

LM (corresponding Author) participated in the initial conception of the study, design, data collection, analysis interpretation and drafting of the final version of the manuscript.

AS participated in the analysis, interpretation, and review the manuscript

AN participated in the analysis, interpretation, and review the manuscript

DM participated in the study design data collection, analysis, interpretation and drafting the manuscript

YM participated in the analysis, interpretation, drafting and extensive review of the manuscript

All authors listed above, approved the final manuscript for submission and consent to publish it.

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## Figures

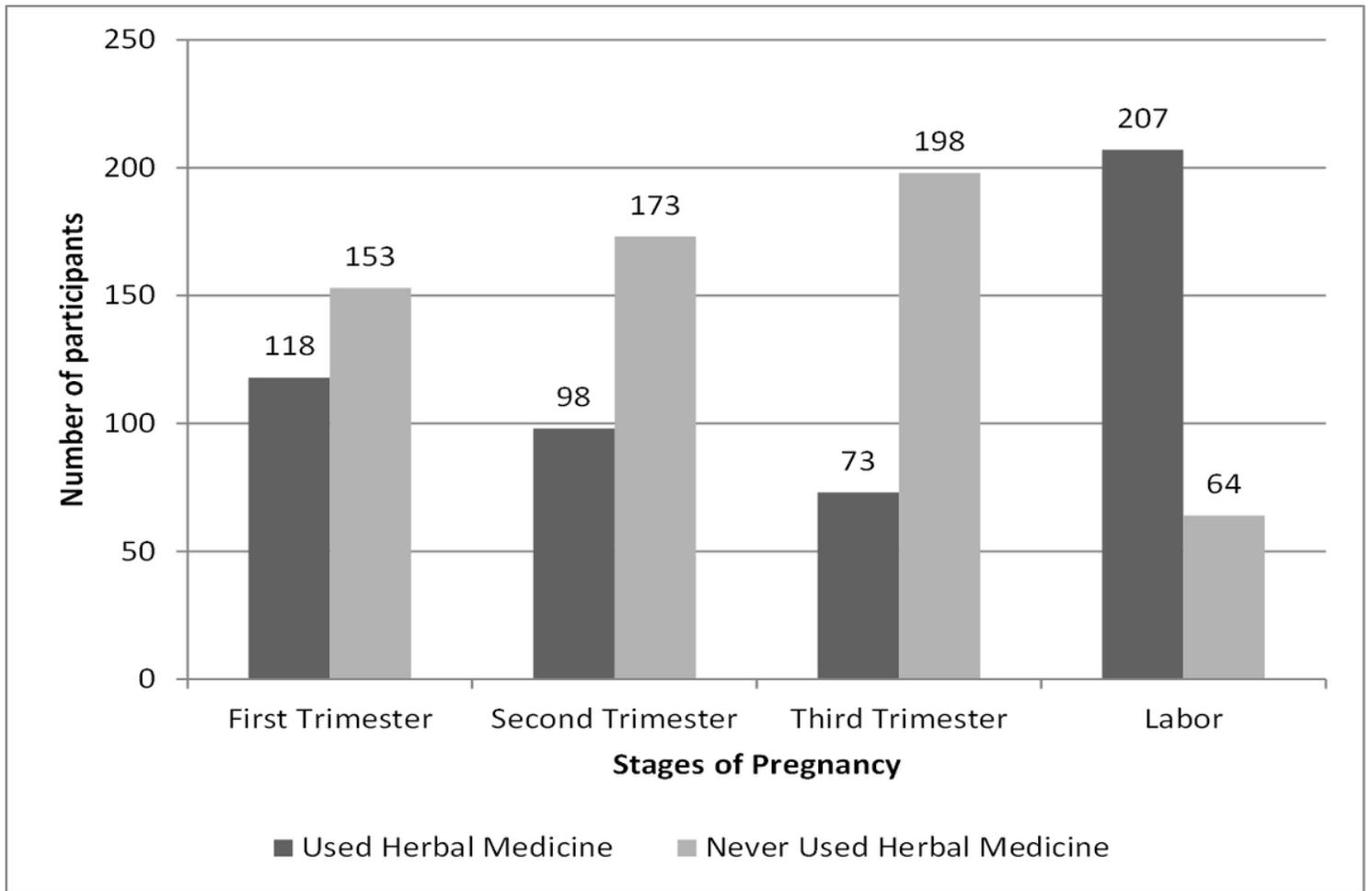


Figure 1

Herbal medicine use by pregnant women in the stages of pregnancy.

## Supplementary Files

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- [Additionalfile1dataset.dta](#)
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