

Herbal medicine use during pregnancy among women in Arbaminch town and surrounding district, southwest Ethiopia: community based cross sectional study**Biruk Wogayehu*¹, Tesfaye Guja², Wondimagegn Taye³, Bahiru Mulatu⁴, Yilima Chisha⁵, Mulugeta Dalbo⁶, Thomas Tesfaye⁷, Samuel Hailgebreal EmnetMerdekios⁷**¹Pharmacy department, Arbaminch College of Health Sciences, Arbaminch town, Southern state, Ethiopia²Nutrition department, Arbaminch College of Health Sciences, Arbaminch town, Southern state, Ethiopia³Public health department, Arbaminch College of Health Sciences, Arbaminch town, Southern state, Ethiopia⁴Clinical nursing department, Arbaminch College of Health Sciences, Arbaminch town, Southern state, Ethiopia⁵Biostatistic department, Arbaminch University, Arbaminch town, Southern state, Ethiopia⁶Midwives department, Arbaminch College of Health Sciences, Arbaminch town, Southern state, Ethiopia⁷Health informatics department, Arbaminch University, Arbaminch town, Southern state, Ethiopia**Research Article**

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ABSTRACT

Background: Herbal medicines are plant-derived preparations perceived to have healing benefits. There is lack of evidence on their benefit during pregnancy. In Ethiopia, study on herbal remedies use during pregnancy is scanty. Hence, our study aimed to assess the use of herbal remedy and its associated factor during pregnancy among women in Arbaminch town and surrounding district, Southern Ethiopia.

Methods: A community-based cross sectional study was conducted in Arbaminch town and surrounding district, southwest Ethiopia, from September to December 2019. A sample of 633 women was involved using the single population proportion formula. Nine rural Kebeles and three urban Kebeles were selected by lottery method. The data was entered into Epidata version 3.1, and then it was exported into SPSS version 20.0.

Results : Amongst the 633 participants, 307(48.5%) revealed that they had used at least one herbal remedies for different diseases during their pregnancy. The three most commonly used herbal remedies were flax seed, garlic and ginger. The finding of multivariable logistic regression analysis indicated that Orthodox religion (AOR=1.96, 95%CI(1.27,2.89)), rural residence(AOR=3.15,95 %CI(2.03,4.90)), illiteracy of spouse or husband (AOR=3.15,95%CI=2.03,4.90)), use of herb before pregnancy (AOR=5.35, 95%CI(2.77,10.31)), positive perception toward herbal medicine (AOR=7.29,95% CI(4.46, 11.94)), and unavailability of prescribed medicines in the health care facility (AOR=1.54, 95% CI(1.05, 2.25)) were found to be significantly associated with herbal medicine use during pregnancy.

Conclusion: Our study shows common use of herbal remedies during pregnancy. Few women disclosed the herbal remedy use to their maternity care professionals. Factors that were significantly related with herbal remedy use were religion, residence, spouse or husband's educational level, previous use of herbal medicines before pregnancy, attitude toward herbal medicines effectiveness and availability of prescribed medicines in the health care facility. The health authorities should work on awareness creation for midwife/nurse and pregnant women on herbal medicine safety.

INTRODUCTION

Herbal medicines are plant-derived preparations perceived to have healing benefits[1-3].Herbal medicines consist herbs, herbal preparations, herbal materials and finished products that comprise parts of plants as active constituents[4].Globally, 65 to 80% of the world population use herbal remedy as their main form of medicine [5].Most survey data revealed that female used herbal medicines predominantly [6-8].Studies found that herbal medicine use is high during pregnancy in Eastern Europe (51.9%) [9]; Dhaka, Bangladesh (70%) [10]; Kelantan, Malaysia (51.4 %) [11]; Riyadh, Saudi Arabia (56%) [12]; Melbourne, Australia (36%) [13]; and Norwich, United Kingdom (57.8%)[14]. On the other hand, low prevalence rates of herbal medicine use were reported in Northern Europe (4.3%) [9]; Tabriz, Iran (22.3%) [15]; and Riyadh and Al Kharj, Saudi (25.3%) [16].

The World Health Organization (WHO) report indicated that about 80% of African population use herbal medicine [17]. A study conducted in different regions of Africa revealed that 79.9% in Mali [18], 67.5% in Nigeria [19], 62.7% in Sierra Leone [20], 52.7% in northern Ghana [21], 27.3% in Egypt [22] and 12% in Kenya [23] of pregnant women used herbal medicine. In Ethiopia, a facility-based study conducted in Gondar revealed that 48.6% of pregnant women used herbal medicine and the commonly taken herbal medicines were garlic (19%) and ginger (40.7%) [24]. A facility-based study conducted among pregnant women in Nekemte; western Ethiopia showed that 69.8% of pregnant women used herbal remedies [25].

Very few clinical trials have been published that revealed the benefits of herbal remedies for pregnant women [26-28]. Moreover, concerns have been increased about the side effects of these remedies. Some herbal medicine may cause severe adverse effects on the fetus containing teratogen effect, fetal toxicity, malformation and premature birth [29-33]. Preventing gestational related and delivery related harms associated with herbal medicine use helps to keep the health of the mother and fetus. Assessing the level and predictors of herbal medicine use among pregnant women may aid to achieve the goals of Sustainable Development Goal.

Ethiopia has a unified policy, titled National Drug Policy of Ethiopia, which includes both herbal medicines and modern pharmaceuticals. The state office for traditional and complementary medicine is the Food, Medicine and Health Care Administration and the Control Authority (FMHACA) of Ethiopia. No regulations apply to the production of herbal medicines and there are presently no safety necessities. Neither Ethiopia's national essential medicines lists nor its market surveillance system for safety of medicines, in place since 1999, include herbal medicines. In spite of these known worries, in Ethiopia little is known about herbal medicine use during pregnancy. Therefore, the purpose of this community-based study is to assess the prevalence of herbal medicine use during pregnancy and its associated factor in Arbaminch town and surrounding district, Southern Ethiopia.

Materials and Methods

Study setting and subjects

A community-based cross-sectional study was conducted in Arbaminch town and surrounding district, southwest Ethiopia, from September to December 2019. The area is located at 505Km southwest of Addis Ababa (the capital city of Ethiopia), in the southern state of Ethiopia at elevation of about 1285 meters above sea level. The annual temperature varies from 600F to 910F and the average annual rainfall is 5.6 inches. The study area lies at longitude and latitude of 60 01' 59.99''N and 370 32' 60.00'' E, respectively. The area consists 40 Kebeles (the lowest administrative unit). Out of the 40 Kebeles, 11 are the urban Kebeles and 29 are the rural Kebeles. The area has a total population of 354,877(male-177,866 and female-177,011). In the area there are 30 health posts, 9 health centers (primary level) and one general hospital (secondary level).

Study participants

Our source population was all women who had a child less than one month of age and residing in Arbaminch town and surrounding district. The study population was women who had a child less than one month of age and residing in Arbaminch town and surrounding district during the data collection period. All women who had a child less than one month of age, who were permanent residents, and capable of providing informed consent were included in the study. Women who are not physically and mentally capable of being interviewed at the time of data collection were excepted from the study.

Sample size and sampling

A sample of 633 women was involved using the single population proportion formula seeing the prevalence of herbal medicine

use during pregnancy at Gondar town (48%) [24], 95% confidence interval, 5% margin of error, design effect of 1.5 and adding a 10% non-response rate. Multi-stage sampling method was employed to find study participants. Primarily, all the Kebeles (n=40) (the least administrative unit in the country) were classified into rural and urban Kebeles. Nine rural Kebeles and three urban Kebeles were chosen by lottery method (simple random sampling). The total calculated sample size was distributed to each of the selected Kebele proportional to their population size. The sampling frame was made for each Kebele after identifying women who had a child with age of less than one month through rapid registration by applying home-to-home visits. The sampling frame was calculated by dividing the total population in each selected Kebeles to the size of the sample needed from that Kebele. Participants were then nominated using systematic random sampling method from the sampling frame made. In case, there were two or more eligible in the selected house hold one of them was selected by lottery method.

Data collection instruments and procedures

A pre-tested and structured questioner tool was used to gather the data. Before conducting the research, a pretest was carried out in another Kebele (non-selected) before two weeks of the data collection time on 63(10%) individuals and the pretest data was not incorporated in the data analysis. The questioner was adapted from similar kinds of published studies [11,20-25]. The questioner was developed primarily in English and then translated into 'Amharic' and 'Gamocho', the local languages. Then back to English so as to confirm that the translated form provides the appropriate meaning. Trained nine BSc pharmacy holders performed the face-to-face interview. Trained two MSc (Pharmacist) were supervised the data collection process. The supervisors reviewed the data collection tool for completeness, consistency and quality at the end of each day. The data collection tool included the following three parts. The first part concerned about the socio-demographic characteristics, like age, religion, educational status, occupational status and spouse educational level. The second part dealt with maternal and health related measurements (parity, ANC visit, pregnancy status, accessibility of health care facility and availability of drugs). The last part was designed by including questions on status of herbal medicine use during pregnancy, source to obtain herbal medicine, reasons for using herb, type of herbal medicine use, satisfaction with herbal medicine use and reasons for non-disclose to health care professionals about herb use.

Operational definitions

- Herbal medicines are plant-derived preparations perceived to have healing benefits. Herbal medicines consist herbs, herbal preparations, herbal materials and finished products that comprise parts of plants as active constituents
- Participants were considered as herbal medicine users if they have taken herbal medicine(s) for the treatment of diseases via any route of administration during pregnancy. Routine food preparations were excluded.

Data processing and analysis

The data was entered into Epidata version 3.1, and then it was exported into SPSS version 20.0. Percentages and frequencies were calculated to explain the study population in relation to important independent variables. With the purpose of building on multivariable model, the standard p-value less than 0.25 was used to select candidate independent variables. Prior to performing the multivariable binary logistic regression, multicollinearity was checked. Adjusted odd ratios with 95% CI were calculated and independent variables with p-values of less than 0.05 in the multivariable binary logistic regression analysis were considered as statistically significant. The Hosmer and Lemeshow goodness of fit test was done to evaluate how the built model was good ($p > 0.05$).

RESULTS

Socio-demographic and health related characteristics of participants

A total of 633 women involved in this study with a response rate of 100%. Majority (61.6%) of the women surveyed were in the age class of 21-30 years. Just over half (54.0%) of the participants were residing in the urban area. Concerning their religion, more than half (68.9%) of the respondents were protestant and less than one fourth of them were other religions. More than half (56.2%) of the respondents were housewife and 29.1% were self-employee and 14.4% of them were governmental employee by the occupational status. More than half (63.3%) of the participants had a household income >30 United States Dollar (USD) per month. Regarding their educational level, 169(26.7%) of respondents were illiterate and 255(40.3%) of respondents attended secondary and above education. More than three fourth of the respondents 533(84.2%) reported that their last gestation was planned. Four hundred four (63.8%) of the respondents had visited an antenatal care more than four times. More than half (59.2%) parity was multipara mothers and the remaining (40.8%) were primipara. Four hundred fourteen (65.4%) of the respondents were had distance of less than 5km from health care facility (Table 1).

Herbal medicine use

Amongst the 633 participants, 307(48.5%) revealed that they had used at one or more herbal remedies for different diseases during their pregnancy. The average number of herbal remedies used by participants was one remedy per respondents. Amongst the 307 participants who used at least a single herbal remedy during pregnancy, 154(50.2%) reported use of a single herb, 91(29.6%) took two remedies, 44(14.3%) took three remedies, 15(4.9%) took four remedies and 3(1.0%) took five remedies.

Prescribers and antenatal care professionals, including general practitioners, midwives, health officers and nurses were

Table 1 Association of socio-demographic and health related characteristics with herbal medicine use during pregnancy, Arbaminch town and surrounding district, 2019(N=633).

Characteristics	Variables	Herbal medicine		Total n (%)	p-value
		Users	Non-users n (%)		
		n (%)			
Age category	≤ 20 years	25(38.5)	40(61.5)	65(10.3)	0.139
	21-30 years	189(48.5)	201(51.5)	390(61.6)	
	≥ 31 years	93(52.2)	85(47.8)	178(28.1)	
Residence	Urban	143(41.8)	199(58.2)	342(54.0)	0
	Rural	164(56.4)	127(43.6)	291(46.0)	
Religion	Protestants	191(43.8)	245(56.2)	436(68.9)	0.001
	Orthodox	111(60.7)	72(39.3)	183(28.9)	
	Others	5(35.7)	9(64.3)	14(2.2)	
Marital status	Married(with husband)	278(48.3)	297(51.7)	575(90.8)	0.823
	Single(living alone)	29(50.0)	29(50.0)	58(9.2)	
Educational level	illiterate	97(57.4)	72(42.6)	169(26.7)	0.001
	Primary school	114(44.7)	141(55.3)	255(40.3)	
	Secondary school and above	96(45.9)	113(54.1)	209(33.0)	
Employment status	Unemployed	181(50.6)	177(49.4)	358(56.2)	0.339
	Self-employed	81(44.0)	103(56.0)	184(29.1)	
	Government	45(49.5)	46(50.5)	91(14.4)	
Monthly income(USD)	≤30	132(56.9)	100(43.1)	232(36.7)	0.001
	>30	175(43.6)	226(56.4)	401(63.3)	
Spouse/husband educational level	illiterate	99(63.1)	58(36.9)	157(24.8)	0
	Primary school	82(40.4)	121(59.6)	203(32.1)	
	Secondary school and above	126(46.2)	147(53.8)	273(43.1)	
Parity	Primiparous	116(45.0)	142(55.0)	258(40.8)	0.152
	Para ≥2	191(50.9)	184(49.1)	375(59.2)	
Pregnancy	Planned	247(46.3)	286(53.7)	533(84.2)	0.013
	Unplanned	60(60.0)	40(40.0)	100(15.8)	
ANC attendant	<4	131(57.2)	98(42.8)	229(36.2)	0.001
	≥4	176(43.6)	228(56.4)	404(63.8)	
Perception	Effective/safe	117(79.1)	31(20.9)	148(23.4)	0
	Not effective	190(39.2)	295(60.8)	485(76.6)	
Herb use before pregnancy	Yes	62(81.6)	14(18.4)	76(12.0)	0
	No	245(44.0)	312(56.0)	557(88.0)	
Distance from the health facility	< 5km	196(47.3)	218(52.7)	414(65.4)	0.438
	≥ 5km	111(50.7)	108(49.3)	219(34.6)	
Cost of modern medicine	Expensive	113(50.0)	113(50.0)	226(35.7)	0.521
	Not expensive	194(47.7)	213(52.3)	407(64.3)	
Availability of prescribed medicines	Available	159(43.7)	205(56.3)	364(57.5)	0.004
	Not available	148(55.0)	121(45.0)	269(42.5)	

least likely to recommend use of herbal remedies during gestation, as findings have revealed that only 2.3% of users were recommended to use herbal medicines by this category of health professionals. Friends /family/neighbors were the commonly used recommendation source for herbal remedies (87.9%), followed by pregnant women who used herbal medicines (28.3%) and media (0.7%).

The majority of herbal medicine users (200) had prepared their own herbal remedies. Markets (83), neighbors (42) and traditional herbalists (26) were other common source of supply. Out of 307 herbal medicine users, only 22.5% disclosed it to their midwife or nurse. Health professional did not ask 107(45.0%), it was not important 54(22.7%), afraid of health professional's responses 40(16.8%) and did not visit the health facility at the time of use 25(10.5%) were the major reasons for non-disclosure of herbal medicine used to health professionals. Table 2 also reviews type of side effect after herbal medicine use based on the users' answers. Among 307 users, 23(7.5%) had faced some form of side effects after administration of herbal medicines. The most frequently reported untoward effects include: burning sensation (47.8%), vomiting (34.8%) and sweating (13.0%). One hundred seventeen (38.1%) participants responded that they were pleased with the result of herbal medicine use. The five most reported indications by participants for using herbal remedies during pregnancy were abdominal cramp, back pain, diarrhea and evil eye (Table 2).

Type of herbal medicines and indications

In total, 43 herbal medicines were reported by 307 respondents. The ten most commonly used herbal remedies were flax seed, garlic, ginger, fringed rue, halelo, demakese, kebercho, black cumin and africana worm wood. The five most reported indications

Table 2: Herbal medicine use during pregnancy among respondents, Arbaminch town and surrounding district, 2019 (N=633).

Items	Characteristics	Frequency (%)
Herbal medicine use during pregnancy	Yes	307(48.5)
	No	326(51.5)
Number of herb use(n=307)	One	154(50.2)
	Two	91(29.6)
	Three	44(14.3)
	Four	15(4.9)
	Five	3(1.0)
Herbal medicine use before pregnancy(N=633)	Yes	76(12.0)
	No	557(88.0)
Who has recommend the use of herbal remedies (N=307)-multiple choice	Family, friends, neighbor	270(87.9)
	Media	2(0.7)
	Health worker	7(2.3)
	Pregnant women who used herbal medicine	87(28.3)
Source to obtain herbal medicine (N=307)- multiple choice	Self-preparation	200(65.1)
	Traditional herbalist	26(8.5)
	Work place	11(3.6)
	Market	83(27.0)
	Neighbor	42(13.7)
Disclosed with health professions about herbal medicine (N=307)	Yes	69(22.5)
	No	238(77.5)
Reason of non-disclosure (N=238)	Forgot it	5(2.1)
	Health professional did not ask	107(45.0)
	Easy for use	7(2.9)
	It was not important	54(22.7)
	Afraid of health profession's response	40(16.8)
	I did not visit the facility at the time of use	25(10.5)
Side effect with HM use (N=307)	Yes	23(7.5)
	No	284(92.5)
Type of side effect after herbal medicine use	Sweating	3(13.0)
	Dizziness	1(4.3)
	Burning sensation	11(47.8)
	Vomiting	8(34.8)
Satisfaction with herbal medicine use(N=307)	Satisfied	117(38.1)
	Dissatisfied	190(61.9)

by participants for using herbal remedies during pregnancy were abdominal cramp, back pain, diarrhea and evil eye (Table 3).

Reasons for using and not using herbal remedies

The respondents were also asked about the reasons for using herbal medicines during pregnancy.

The most commonly cited reason for using herbal remedies was “herbal medicines are safe during pregnancy (56.4%)”, followed by “it is family culture (42.3%)”, “cures many illness” (16.9%) and “effective than modern medicines (8.89%)” (Figure 1). The reasons for not using herbal medicines included: did not sick during pregnancy (28.5%), lack of belief in the benefit of herbal medicines (26.1%), afraid the side effects (22.4%), did not hear about herbal medicines (15.3%) and lack of availability (3.1%) (Figure 2).

Factors associated with herbal medicine use during pregnancy

In Bivariate logistic regression analysis, age, religion, women educational level, residence, spouse/husband educational level, average monthly income (USD), parity, ANC attendant, use before pregnancy, perception toward herbal medicine effectiveness and availability of prescribed medicines in the facility were significantly associated with herbal medicine use at p-value less 0.05. However, the finding of multivariable logistic regression analysis indicated that religion, residence, spouse or husband education level, use of herb before pregnancy, perception toward herbal medicine and availability of prescribed medicines in the health care facility were found to be significantly associated with herbal medicine use during pregnancy.

Women who identified as Orthodox religion follower were 1.96 times more likely (95% CI: 1.27, 2.89) than protestant women to use herbal remedies. The odd herbal medicine use during pregnancy was 3.15(95% CI: 2.03, 4.90) times higher among highlanders compared to townies. Moreover, there was a negative relationship between partner's educational status of women and herbal medicine use. The odds of herbal medicine use were 3.15 (95% CI: 1.85, 5.38) and 1.50 (95% CI: 1.12, 2.01) times higher among women whose partners have no formal education and primary education compared to those who have educated (secondary and above) partners, respectively. Women who had history of herbal medicine use before their pregnancy were about 5.35(95% CI: 2.77, 10.31) times more likely to use herbal remedy to those who had not. The odds of using herbal medicine was seven times higher among women with positive perception towards herbal medicine effectiveness

Table 3: Type of herbal medicine used during pregnancy reported by participants, Arbaminch town and surrounding district.

Herb type	Users n(%)	Reason for use reported by women (number of specific herb users)- indications
Common name/local name		
Flax seed/Telba	80(26.1)	back pain (67), cough(1), abdominal cramp(2), healthy baby(1), vomiting(1), infection prevention(8)
Garlic/Nechi shinkurt	48(15.6)	common cold(15), anemia(2), abdominal cramp (9), cough (5), nausea(3), fever(5), malaria(7), diarrhea(2)
Ginger/Zingibil	46(15.0)	abdominal cramp(11), flatulent(4), common cold(24), back pain(2), malaria(1), nausea(4)
Fringed rue/Tenadam	46(15.0)	Abdominal cramp(37), diarrhea(1), nausea(1), back pain(1), wound(4), health baby(1), heart burn(1)
Halelo	36(11.7)	Diarrhea(36)
Africana worm wood/Ariti	30(9.8)	Abdominal cramp(10), diarrhea(1), back pain(4), common cold(1), headache(1), malaria(13)
Dechemarache	27(8.8)	Evileye(15), back pain(6), abdominal cramp(2), diarrhea(2)
Demakese	26(8.5)	Evileye(3), wound(23)
Kebercho/Borusa	25(8.1)	Evil eye(14), abdominal cramp(3), diarrhea(8),
Black cumin/Tikur- azmud	18(5.9)	Abdominal cramp(11), common cold(2), vomiting(4), malaria(1)
Cabbage tree/Haloco	15(4.9)	Hypertension(5), malaria(6), abdominal cramp(1), helmensis(1), wound(1), back pain(1)
Garden cress/Feto	12(3.9)	Abdominal cramp(2), cough(4), back pain(4), wound(1), malaria(1)

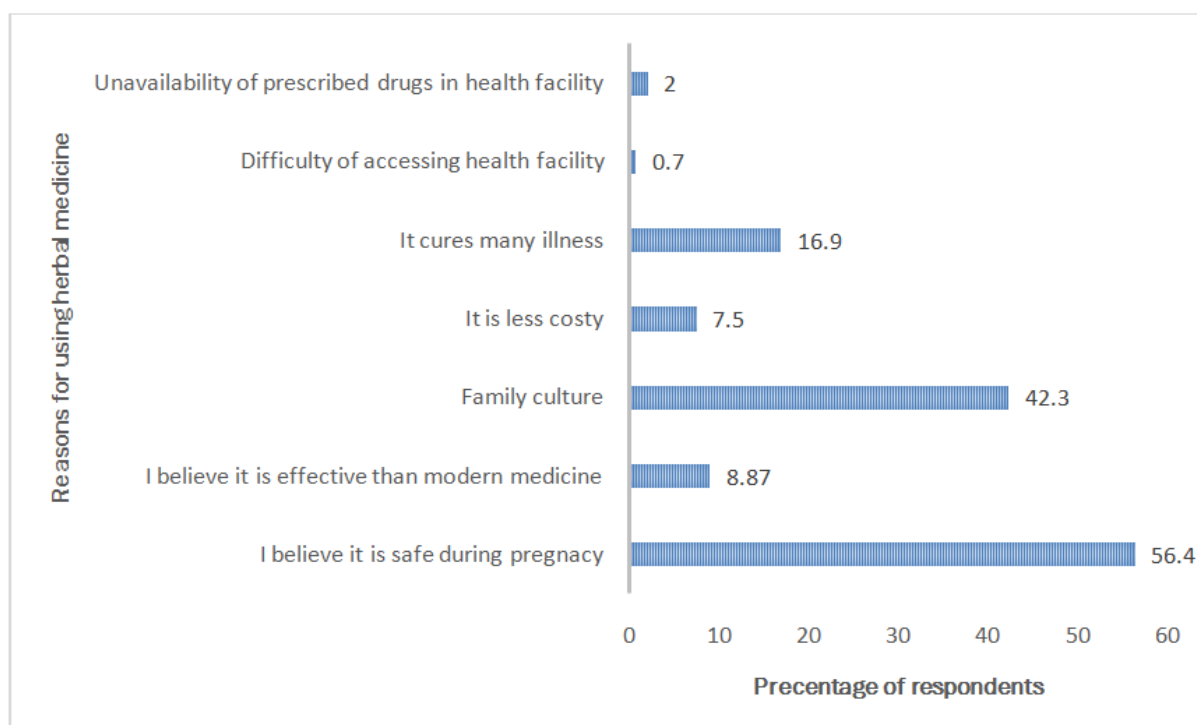


Figure 1. Reasons for using herbal medicine during pregnancy, Arbaminch town and surrounding district, 2019.

as compared to those with negative perception (AOR=7.29, 95% CI: 4.46, 11.94). Women who did not find all prescribed medicines in the health care facilities were 1.54 times (AOR=1.54, 95% CI=1.05, 2.25) more likely to use herbal remedies compared to those found (Table 3).

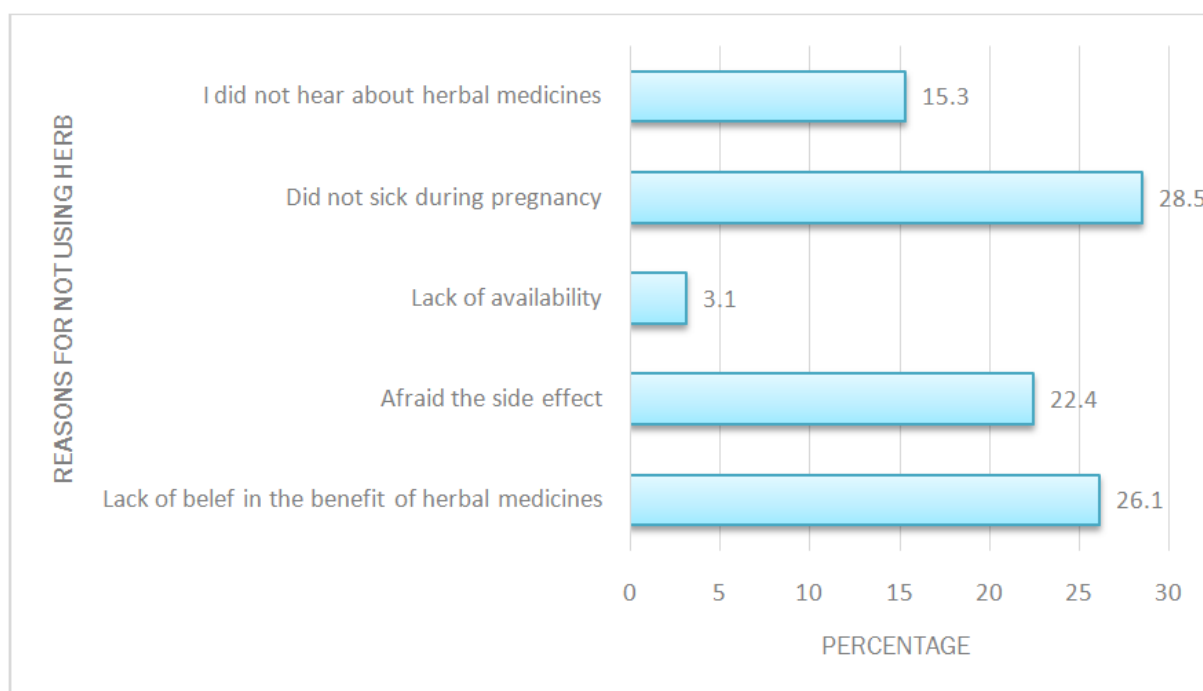


Figure 2. Reasons for not using herbal medicine during pregnancy, Arbaminch town and surrounding district, 2019.

Table 4: Bivariate and multivariate logistic regression analysis showing factors associated with herbal medicine use during pregnancy in Arbaminch town and surrounding district, southwest Ethiopia.

Characteristics	Variables	COR(95%CI)	p-value	AOR(95%CI)	p-value
Age category	≥ 20 years	1		-	
	21-30 years	1.50(0.87, 2.56)	0.142	-	
	≥ 31 years	1.79(1.00, 3.20)	0.049	-	
Religion	Protestants	1		1	
	Orthodox	1.94(1.37, 2.76)	0.000	1.96(1.27,2.89)	0.002**
	Others	0.71(0.23, 2.14)	0.540	0.48(0.13, 1.79)	0.277
Educational level	illiterate	1.57(1.04, 2.37)	0.030	-	
	Primary school	0.94(0.65, 1.37)	0.762	-	
	Secondary school and above	1		-	
Average monthly income(USD)	≤30	1.70(1.23,2.36)	0.001	-	
	>30	1		-	
Residence	Urban	1		1	
	Rural	1.79(1.30, 2.46)	0.000	3.15(2.03, 4.90)	0.000**
Spouse/husband educational level	illiterate	2.10(1.40, 3.16)	0.000	3.15(1.85, 5.38)	0.000**
	Primary school	0.79(0.55, 1.14)	0.213	1.22(0.77, 1.93)	0.403
	Secondary school and above	1		1	
Pregnancy(last pregnancy)	Unplanned	1.73(1.12, 2.67)	0.013	-	
	Planned	1		-	
Parity	Primiparous	1		-	
	Para ≥2	1.26(0.92, 1.74)	0.152	-	
ANC attendant	<4	1.76(1.27, 2.45)	0.001	-	
	≥4	1		-	
Use before pregnancy	Yes	5.63(3.08, 10.29)	0.000	5.35(2.77,10.31)	0.000**
	No	1		1	
Perception	Effective/safe	5.86(3.79, 9.07)	0.000	7.29(4.46, 11.94)	0.000**
	Not effective	1		1	
Availability of prescribed medicines	Available	1		1	
	Not available	1.59(1.16, 2.19)	0.004	1.54(1.05, 2.25)	0.026*

DISCUSSION

This study assessed the prevalence and factors associated with use of herbal medicines during pregnancy among 633 women who had a child less than one month of age. The use of herbal medicine during pregnancy in this research was 48%. This result is in line with that of a research conducted in University of Gondar referral and teaching hospital, north Ethiopia where the magnitude of herbal medicine was 48.6% [24]. This similarity might be due to the resemblance of respondents in both researches in some socio-demographic profiles.

For example, the percentage of participants who were unemployed in this study was 50.6%, and in the Gondar study it was 62%. Moreover, the average monthly income and the age distribution of the two participants were almost comparable [24]. Herbal medicine use in our study was lower than other researchers conducted in Ethiopia, for instance the Hossana town and Nekemete town reported 73.1% [34] and 50.4% [25], respectively. Our finding also lower than studies conducted in Mali (79.9%) [18], Bangladesh (70%) [10] and Nigeria (67.5) [19]. The inconsistency could be due to period gap of researches and the presence of some dissimilar cultural, socio-demographic and health service-related characteristics among respondents. Women in the study area mentioned safe during pregnancy, better effectiveness of herbal medicines, family culture, and cures many illnesses as reasons to use herbal medicines. Similar reasons were also recognized by other studies done in North Ethiopia [24], Sierra Leone [20] and Bangladesh [10].

According to the finding of this study, friends and family were the major source of recommendation for use of herbal remedies in pregnancy. This finding is comparable to the finding from North Ethiopia [24], Iraq [35] and Bangladesh [10]. This might be due to friends and families are the primary trusted and easily accessible members of a community. Among the herbal remedy users, less than 25 % of women disclosed it to their maternity care professional. The current finding on the disclosure of herbal medicine use was in line with study finding from Sierra Leone (4.8%) [20] and Gondar, North Ethiopia (10.2%) [24]. In our study the lack history taking on herbal remedy use suggested as the most frequent reason for non-disclosure of herbal medicine use during pregnancy. This might be due to deficiency of knowledge of midwives or nurses about teratogenic potential of herbal remedies, effect of herbs on infant and the effect of herb on other drugs that are taken during prenatal period. Given the high magnitude of the use of herbal remedies and lack of scientific proof of safety or efficacy, it is crucial that midwives or nurses do ask about the use of herbal remedies. However, in our country all health-related professional trainings do not include herbal medications as a course except pharmacy professional training. Therefore, antenatal care package and maternity care professional trainings should incorporate competences which focused on herbal medicine efficacy and safety during pregnancy.

The results of this study revealed that religion type was significantly associated with herbal medicine practice. This is similar to a study conducted in Gondar, north Ethiopia [24]. The odds of herbal medicine use among women who were Christian orthodox were 1.96 times the odds of those Protestants. This might be due to the fact that Ethiopian traditional medicine practices more adaptable to Orthodox Christian religion. The other independent variable that showed significant association with herbal remedy use during in our study was residence of respondents. Women living in rural Kebeles were three times more likely to use herbal medicine than those who were residing in urban Kebeles. A Similar study conducted in northern parts of Ethiopia has reported that women living in rural area were more likely to use herbal remedies compared to those in the urban area [24]. This might be due to the fact that difficulty of accessing health care facilities in the rural areas.

Partner/husband-level of education was negatively associated with herbal medicine use. Educational status of husbands does not promote the use of herbal medicine during pregnancy. This might be enlightened by the fact that higher educational-level of husbands plays an important role in promoting, communication, discussion and support for their partner/wife for conventional medicine use.

The percentage of women who had history of previous herbal remedies use (before pregnancy) was 5.63 times more likely to use herbal remedies than those who had no previous experience. This might be explained by the fact that women who had earlier history of herbal medicines use might have better attitude, knowledge and practice about the use of herbal medicines compared to those who had not. The finding of the current study is in line with a study in northern Uganda where women who used herbal remedies before pregnancy were more likely to have used herbal remedies during pregnancy [36]. A similar study conducted in Kenya indicated that herbal medicine use during pregnancy was positively associated with use of herbal remedies before pregnancy [23]. Results of regression analysis also showed that women who had positive attitude toward effectiveness of herbal medicines were more likely to use herbal remedies as compared with those had negative attitude which is consistent with studies done in Northern Uganda [36] and Kenya [23]. The reason might be that cultural belief on causation of disease and effectiveness of herbal medicines. Those participants who had not access to conventional medicines were nearly 2 times (AOR 1.54, 95% CI; 1.05, 2.25) more likely to use herbal medicines to those who had. This might be due to inability to afford modern medicine fees. This is supported by finding in that low cost of herbal medicines is noted as the reason for herbal medicine practice.

Implication of the study

Our study revealed that less than one fourth of respondents disclosed the use of herbal medicine to their nurses/midwives/medical doctor. Given that certain herbal medicines can reduce efficacy of modern medicines and cause teratogenicity effect, it is crucial for traditional herbalists as primary healthcare providers, and midwives/nurses/medical doctors as patient careers to be well equipped with current evidence-based knowledge on the effect of herbal medicines during pregnancy. The drug regulatory authority should also enforce rules that monitor traditional medicine practices. Community health workers should also create

awareness among community members on herbal medicines benefits and its harmful effects. We also recommend integrating course on herbal medicines during pregnancy in the curriculum of midwives, medical, nurses and health extension students so as to fill their knowledge gap on herbal medicines. The ministry of health should struggle to increase availability medicines in the health care facilities. The drug regulatory authority should also enforce rules that monitor herbal medicine practices.

Limitations of the study

This study had a number of limitations. Firstly, the cross-sectional study fails to show a temporal relationship between herbal medicine use and exposures. Secondly, women are sampled one month after the delivery. This may underestimate the magnitude of herbal medicines use because of recall bias. Lastly, the data are only representative of women who had a live birth.

CONCLUSIONS

Our study shows common use of herbal remedies during pregnancy. The common reasons for this practice were herbal remedies are safe during pregnancy, it is family culture and it cures many illnesses. Friends /family and pregnant women who used herbal remedies were the commonly used recommendation source for herbal remedies. The most typical sources of herbal medicines were self-preparation, markets and neighbors. Few women disclosed the herbal remedy use to their maternity care professionals. Factors that were significantly associated with herbal medicine use during pregnancy were religion, residence, spouse or husband's educational level, previous use of herbal medicines before pregnancy, attitude toward herbal medicines effectiveness and availability of medicines in the health care facility. Because of the absence of adequate scientific proof to support efficacy and safety of herbal remedies in pregnancy, the health authorities should work on awareness creation for midwife/nurse and pregnant women on herbal medicine safety.

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