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The Use of Herbal Medicines in Pregnancy: A Cross-sectional Analytic Study

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ABSTRACT

Background and aim: The use of complementary and alternative medicine is increasing worldwide; Some of the medications, including native herbs, are taken just before conception and in all trimesters and may be risky to the conceptus. The extent and the factors affecting usage vary and have not been adequately studied. The study aimed to determine the prevalence and factors associated with Herbal medicine use among pregnant and recently pregnant women.

Materials and methods: Magnitude of use of Herbal medication, the sociodemographic, other associated factors and, the various types of the medications used were evaluated. It was a cross-sectional study. An unvalidated semi-structured, interviewer-assisted questionnaire was used to obtain information. Consenting current or recently pregnant women attending public tertiary and private specialist hospitals were included in the study, while unconscious, severely sick women were excluded; 120 responded and were consecutively recruited. Stata version 13 statistical software was used for data analysis. The prevalence, type of Herbal medicines used, associated factors, and pregnancy outcomes were measured. A two-sided (5% significance level) test of significance at a 95% confidence level was adopted. The study duration was three months, from October to December 2020.

Results: The rate of usage of Herbal medication in the index pregnancy was 22.5%; bitter leaf was the highest 6 (22.2%), followed by Herbal concoctions (agbo) and moringa- 18.5% and 11.1%, respectively. Malaria in pregnancy was the commonest indication (18.5%). Usage was lower amongst high parity patients; use is the same across sociodemographic strata. Family and friends were the primary sources of information (40.7%).

Conclusion: The use of natural or Herbal products in pregnancy was relatively common in the study. The medications were used mainly for the presumed diagnosis of malaria. Therefore, there is a need for health personnel to be actively involved in the education of pregnant women, especially in the early trimester and lower parity, about Herbal drug use and the inherent dangers.

1. Introduction

Around the world, Herbal medicine, traditional treatment, and traditional practitioners are the main source of health care and sometimes the only source of care. The use of Herbal medicines is accessible, affordable, culturally accepted, and trusted by many people.^[1] Herbal medicines are naturally occurring plant-derived substances with minimal or no industrial processing that have been used to treat illness within local/regional healing practices.^[2] World Health Organization (WHO) estimated that 80% of the African population uses traditional Herbal medicine.^[3] The prevalence of Herbal medicine use during pregnancy ranges from 12%-82.3%.^[4-6] Pregnancy is associated with a lot of physiological changes resulting in many pregnancy-related problems such as nausea, vomiting, constipation, and heartburn.^[5] These pregnancy-related problems, as well as other illnesses due to pregnancy such as fatigue, nutritional, respiratory, and skin issues, lead to self-treatment.

The women tend to turn to Herbal medicines rather than prescription medicines because of their wide availability, possibly better effectiveness relative to modern medicine, cultural beliefs, and relatively low cost.^[7-8]

Although Herbal medicines are widely available, their use among pregnant women poses much concern as regards safety. In developing countries like Nigeria, there are inadequate regulations regarding the manufacturing, importation, and sales of these Herbal medicines. In addition, when compared to conventional ones, these medicines are poorly researched to understand their efficacy, drug interactions, and adverse effects, which could affect the pregnant women and the unborn fetus causing congenital malformation and other deleterious effects.^[9-11] The most commonly taken Herbal medicines during pregnancy include ginger, cranberry, garlic, palm kernel oil, bitter kola, dogonyaro, thyme, fenugreek, peppermint, green tea, bitter leaf, utazi leaf. These herbs are either self-prepared by mixing different

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parts of plants or taken in pre-packaged forms.^[4, 11-12] Factors associated with using Herbal medicines among pregnant women are lower level of education, use before the index pregnancy, previous adverse pregnancy outcome, older age, low socioeconomic status, trimester of pregnancy, the severity of nausea and vomiting.^[4, 11-12] A systematic review conducted by Munoz et al. reported that the use of some Herbal medicines during the third trimester of pregnancy was significantly associated with pre-term birth (< 37 weeks gestational age), early pre-term birth (<34 weeks gestational age), caesarian delivery, fetal ductus arteriosus constriction, and low birth weight.^[13]

There are limited studies on the use of Herbal medicine among pregnant women in our environment. The composition of most Herbal medicines is not known and is unquantifiable. Intakes are usually during the early trimester when organogenesis occurs, which may be deleterious to the unborn fetus. Therefore, this study is important because it will help increase awareness among health care providers about Herbal medicine use among pregnant women. Consequently, they can provide proper counselling during antenatal, postnatal, and preconception care to prevent the unrecognized adverse effects of Herbal medicines on pregnancy, labour, and the unborn fetus. This study aimed to determine the prevalence of Herbal medicine use and the factors associated with pregnant and recently pregnant women. The types of Herbal remedies with the expense and possible pregnancy outcomes were also considered.

2. Materials and methods

Study Design

It was a cross-sectional analytic design.

Study Site

Nnamdi Azikiwe University Teaching Hospital, Nnewi, and a private Obstetrics and Gynecology specialist hospital, also in Nnewi, were used.

Study population and Sampling

The study population included all pregnant women attending the antenatal clinic, who had recently delivered, had a miscarriage, or terminated pregnancy. The participants for the study were consecutively recruited from this population by convenience sampling technique. Random sampling was not feasible because of the inability to identify the entire study population at a time.

Sample Size

The sample size calculation was based on the primary objective; the variable, use, and non-use of herbs are categorical and of the dichotomous type. The statistic for the measurement of prevalence is proportion or percentage.

Therefore, the following formula was used:

$$N = \frac{4Z_{\alpha}^2 p(1-p)}{w^2}$$

N is the total sample size, Z_{α} is standard normal deviate for a 2-sided α ; for a 95% confidence level ($1-\alpha$), the value is 1.96. The α value, which is the error probability or level of significance for this study, is 0.05; p is the proportion estimate of the use of Herbal medicine in the population and from previous studies, a value of 0.50 was assumed; w is the measure of precision or the total width of the confidence interval; a value of 0.20 was used.

Therefore

$$N = \frac{4 \times 1.96^2 \times 0.50 (1-0.50)}{0.20^2} = 96;$$

Assuming a non-response rate of 20%,

$$N \text{ total} = \frac{N}{1-2} = \frac{96}{.8} = 120$$

Sample size statement

120 subjects would allow estimation of the prevalence of Herbal use within 10% on either side of the estimated prevalence of 50%, using a 95% confidence interval.

Data collection tool

A semi-structured self-administered and interviewer-assisted questionnaire was used to collect data. The distribution was aided by the researchers and some (voluntary) research assistants that were trained on proper distribution and collection of data. The patients were recruited from antenatal clinics, labour, postnatal, post-surgical wards, gynaecological emergency, and postnatal clinics. The distribution and collection of questionnaires were continued until the calculated sample size was achieved.

Ethical Considerations

Ethical permission was obtained from the institution's ethical committee before collecting data. The participants were voluntarily enrolled following informed consent and assured that anonymity of information was maintained. All data will be securely preserved and destroyed after about three years.

Inclusion and exclusion criteria

All pregnant and recently pregnant subjects within the last 42 days, at the study sites, who were able to give consent constituted the study population from which the sample was drawn. Every subject unable to give consent, including the unconscious and severely sick, was excluded from the study.

Outcome measures

This includes the prevalence of Herbal medicine use, the type of Herbal medicine used, the factors associated with Herbal medicine used, and pregnancy outcomes.

Statistical analysis

The data analysis is both descriptive and inferential. For normally distributed, categorical variables were presented as numbers, percentages with a confidence interval, continuous variables as means, and standard deviation. Bivariate analysis (Chi-square) was used to test for association between each of the factors and use of herbs; crude odds ratio was calculated. The associations were further explored using multivariate logistic regression to obtain an adjusted odds ratio. Data were analyzed using Stata version 13 statistical software. A two-sided (5% significance level or probability of error/Type 1 error) test of significance was adopted at a 95% confidence level.

3. Results

Table 1 shows the sociodemographic characteristics of the study subjects that all the study subjects (100%) were married. The mean age of the study subjects was 30.07±5.20 years.

More than half of them had tertiary education (54.17%). Those who were traders made up the highest proportion (33.33%). The majority of the study subjects (91.40%) had <100,000 naira as their monthly income.

Table 1. Sociodemographic Characteristics of the study subjects.

Variable	Frequency	Percentage (%)
Age group (years)		
<20years	1	0.83
20-24 years	14	11.67
25-29 years	46	38.33
30-34 years	33	27.50
34-39 years	22	18.33
40-44 years	4	3.33
Mean±S.D	30.07 (5.20)	-----
Marital status		
Married	120	100
Religion		
Eckanka	1	0.83
Anglican	35	29.17
Catholic	65	54.17
Jehovah Witness	2	1.67
Muslim	1	0.83
Pentecostal	16	13.33
Educational status		
No formal education	1	0.83
Primary	3	2.50
Secondary	51	42.50
Tertiary	65	54.17
Occupation		
Artisan	13	10.83
Civil servant	32	26.67
Housewife	24	20.00
Professional	2	1.67
Student	7	5.83

Trader	40	33.33
Farmer	2	1.67
Monthly Income (Naira)		
<100,000	85	91.40
100,000-200,000	7	7.53
≥ 300,000	1	1.08
Median (IQR)	40,000 (20,000-60,000)	-----

S.D: Standard Deviation. IQR: Interquartile Range.

Table 2 shows that 27(22.50%) of the study subjects used Herbal medication in their index pregnancy. Out of the 120 study subjects, 92 had been pregnant previously, while 28 were primigravida. Of this 92, 11(11.96%) used Herbal medicines in their previous pregnancy.

Table 2. Use of Herbal medication among the study subjects.

Variables	Frequency	Percentage (%)
Use of Herbal medicine in the index pregnancy	(n=120)	
Yes	27	22.50
No	93	77.50
Use of Herbal medicine in the previous pregnancy	(n=92)	-----
Yes	11	11.96
No	81	88.04

Table 3 shows the distribution of the types, sources of information, and the cost of procurement of Herbal medications among the study subjects. Bitter leaf had the highest proportion of use 6 (22.22%); this was followed by agbo Herbal mixture 5 (18.51%). Malaria 5 (18.51%) was the most common reason for use. A higher proportion of the study subjects had their sources of information about Herbal medication from family and friends 11 (40.74%), followed by Traditional Herbalist 6 (22.22%). The majority of 25(92.59%) of the study subjects spent <5000 naira (13.12USD) to procure these Herbal medications.

Table 3. Distribution of the types, sources of information, and the cost of procurement of Herbal medications among the study subjects.

Variables	Frequency	Percentage (%)
Type of Herbal medication used		
Agbo(Herbal mixture)	5	18.51
Bitter kola (akiinu)	1	3.70
Bitter leaf	6	22.22
Bitter leaf, dogoyaro	1	3.70

Garlic, bitter leaf, honey, aloe vera	1	3.70
Ginger	2	7.41
Honey	1	3.70
Moringa	3	11.11
Nzu (calabash chalk)	2	7.41
Raw ewedu	2	7.41
Uguleaf (pumpkin leaf)	1	3.70
Utazi(jute leaf)	1	3.70
Utazi(jute leaf), Ugu (pumpkin leaf)	1	3.70
What did you use any of the above for		
Back pain	1	3.85
Cough	2	7.69
Excessive salivation	1	3.85
Fibroid co-existing with pregnancy	1	3.85
Headache	2	7.69
Malaria	5	18.51
Nausea	4	14.81
Passing watery stool	1	3.85
Swelling feet	3	11.54
To hasten the onset of labour	1	3.85
To turn her baby to the right position	1	3.85
Urinary tract infection	1	3.85
Vaginal itching	1	3.85
Vomiting	2	7.69
Sources of information about Herbal medication		
Family and friends	11	40.74
Family and friends, media	1	3.70
Health professional	1	3.70
Media	1	3.70
Neighbours	2	7.41
Self	3	11.11

Self, media	1	3.70
Self, media, health professionals	1	3.70
Traditional Herbalist	6	22.22
Cost of procurement of Herbal medications		
<5000	25	92.59
≥5000	2	7.40

Table 4 shows the pregnancy outcome among Herbal medication users. Out of the 27 study participants who used Herbal medication during their pregnancy, 5 study subjects were still pregnant, while 22 had a pregnancy outcome. Half of them, 11(50.00%), had normal delivery while 2 (9.09%) had a miscarriage and pre-term delivery, respectively.

Table 4. Distribution of pregnancy outcome among the Herbal medication users.

Variables	Frequency (n=22)	Percentage (%)
Pregnancy outcome		-----
The baby was very big	1	4.55
Delivery was by operation	6	27.27
Miscarriage	2	9.09
Normal delivery	11	50.00
Preterm delivery	2	9.09

Table 5 shows the association between socio-demographic characteristics and the use of Herbal medications during pregnancy. The association between the sociodemographic characteristics and the use of Herbal medications during pregnancy was not statistically significant.

Table 5. Association between the socio-demographic characteristics and the use of Herbal medications during pregnancy.

Socio-demographic variables	Use of Herbal medicine in pregnancy		P-value	χ^2 value
	Yes	No		
Age group (years)			-----	-----
<20years	0	1 (1.08)	-----	-----
20-24 years	3 (11.11)	11 (11.83)	3.353	0.646
25-29 years	12 (44.44)	34 (36.56)	-----	-----
30-34 years	9 (33.33)	24 (25.81)	-----	-----
34-39 years	2 (7.41)	20 (21.51)	-----	-----

40-44 years	1 (3.70)	3 (3.23)	----	----
Marital status			----	----
Married	27 (100.00)	93(100.00)	----	----
Religion			----	----
Eckanka	0	1 (1.08)	----	----
Anglican	9 (33.33)	26 (27.96)	----	----
Catholic	14 (51.85)	51 (54.84)	19	1.8 74 0.8
Jehovah Witness	1 (3.70)	1 (1.08)	----	----
Muslim	0	1 (1.08)	----	----
Pentecostal	3 (11.11)	13 (13.98)	----	----
Educational status			----	----
No formal education	0.00	1 (1.08)	----	----
Primary	0.00	3 (3.23)	03	1.9 93 0.5
Secondary	10 (37.04)	41 (44.09)	----	----
Tertiary	17 (62.96)	48 (51.61)	----	----
Occupation			----	----
Artisan	3 (11.11)	10 (10.75)	----	----
Civil servant	9 (33.33)	23 (24.73)	----	----
House wife	2 (7.41)	22 (23.66)	----	----
Professional	1 (3.70)	1 (1.08)	16	8.1 30 0.2
Student	0	7 (7.53)	----	----
Trader	12 (44.44)	28 (30.11)	----	----
Farmer	0	2 (2.15)	----	----
Monthly Income (Naira)			----	----
<100,000	23 (88.46)	62 (92.54)	----	----
100,000-200,000	2 (7.69)	5 (7.46)	12	2.6 71 0.2
≥ 300,000	1 (3.85)	0	----	----

Table 6. shows factors associated with Herbal medicine use during pregnancy. The association between the use of Herbal medicine in pregnancy and parity was statistically significant with a p-value of 0.032.

Table 6. Factors associated with Herbal medicine use during pregnancy.

Variables	Use of Herbal medicine in pregnancy		χ^2 value	p-value
	Yes	No		
Parity			----	----
1	12 (57.14)	23 (33.82)	----	----
2	7 (33.33)	16 (23.53)	----	----
3	0	17 (25.00)	8.879	0.032*
4	1 (4.76)	4 (5.88)	----	----
>4	1 (4.76)	8 (11.76)	----	----
Use of Herbal medicine in the previous pregnancy			----	----
Yes	4 (19.05)	7 (9.86)	1.299	0.254
No	17 (80.95)	64 (90.14)	----	----
Outcome			----	----
The baby was very big	0	1 (14.29)	----	----
Delivery was by operation	3 (20.0)	3 (42.86)	----	----
Miscarriage	2 (13.3)	0	5.238	0.264
Normal delivery	9 (60.0)	2 (28.57)	----	----
Preterm delivery	1 (6.7)	1 (14.29)	----	----

*: significant p-value<0.05

Table 7 shows that on logistic regression, the likelihood of using Herbal medicine during pregnancy was about 50% lower in women who have been pregnant thrice, and this was not statistically significant. (95% CI= 0.259to1.048, OR= 0.521, p-value= 0.068).

Table 7. Logistic regression showing the level of relationship between parity and the use of Herbal medicine in the current pregnancy.

Parity	Odds Ratio	Std. Error	p-value	95% Confidence Interval	
				Lower	Upper
Once*	1	1	1	1	1
Twice	0.838	0.483	0.760	0.271	2.594
Thrice	0.521	0.185	0.068	0.259	1.048
Four	0.479	0.562	0.531	0.048	4.778
>4	0.239	0.268	0.202	0.026	2.146

*= Reference category

4. Discussion

The prevalence of Herbal medication use in the index pregnancy in this study was 22.50%, while its use in previous pregnancies was 11.96%. The disparity in the prevalence rates could be explained by the fact that some study subjects were primigravida who had not been pregnant previously. The observed prevalence rate gotten from this study falls within the range of 12%–82.3% reported in several studies.^[4-6, 8, 14-15] The slightly low prevalence rate of use of Herbal medications in index pregnancy observed in this study could be attributed to Herbal medication use non-disclosure by the study subjects to the researchers in the hospital setting since the study is hospital-based.

There are variations in the prevalence rate gotten from various studies conducted across the world compared to the present study; studies conducted in Australia and Iran found high prevalence rates of 36% and 30.8%.^[14, 16] Within Africa, a similar study conducted in Western Ethiopia also a high prevalence rate of 50.4%.^[17] However, other studies carried out in Kenya and Uganda reported low prevalence rates of 12% and 20%, respectively.^[16, 18] In Nigeria, Ologe et al., in their study, observed Herbal medicine use among pregnant women to be 12.2%, while studies conducted in Kano and Imo state found prevalence rates of 25% and 36.3%, respectively.^[9, 11] These variations in the prevalence rates noted in these studies could be attributed to variations in cultural beliefs across the various countries, the variations in their ethnicity, the variations in the characteristics of the study populations, their various access to Herbal medicine and the various study methods used.^[9, 15] The commonly used Herbal medications in the current study were bitter leaf (22.2%), Agbo Herbal mixture (18.5%), Moringa (11.1%). It is similar to the study conducted in Imo State, South-Eastern Nigeria, which observed bitter leaf as the commonest herb used during pregnancy.^[11] This finding is not surprising as both locations have similar vegetations grown and cultural practices. Other studies conducted within Nigeria^[9, 15] noted bitter kola, ginger, garlic as the common types of Herbal medicines used during pregnancy. The difference could be attributed to Herbal availability, cultural behaviours, and beliefs of the environment. For example, in Kwara State (North-central part of Nigeria), chewing kola nut is common, and it is believed to reduce nausea and vomiting associated with early pregnancy.^[9] Other works^[5, 7-8, 14, 16-17, 19] reviewed, which were conducted beyond Nigeria, observed ginger as the most common Herbal medication used during pregnancy. Malaria was the most common indication for using Herbal medications in this study; this may probably be because the study subjects mistook early pregnancy symptoms for malaria.

A higher proportion of the study subjects in the present study sourced information of their Herbal medication use from family and friends, and the majority spent <5000 naira (<13.12USD) to procure them. Similar studies corroborated this finding.^[5-6, 16] This observation can be explained by the fact that family and friends represent the social and cultural environment in which these pregnant women live, and they form their close acquaintances, thereby influencing their health practices.^[6] Hence, there is a need to create awareness within the communities on the adverse effects of unguarded use of Herbal medications during pregnancy with professional advice, thereby changing their perceptions. From this study, half of the study subjects who took Herbal medications during their pregnancy had a normal delivery, 27.27% had caesarean section, while 9.09% had a miscarriage and pre-term delivery. This finding could be attributed to the duration of the Herbal medication use. Most of the respondents could not remember the duration of usage, which may probably be for a short time; some used them for less than three months. A large Norwegian mother and child cohort study with 1020 exposed pregnancies observed no increase in congenital malformation or poor pregnancy outcome.^[20] However, another study conducted in South Africa found out that Herbal use during pregnancy was associated with increase perinatal mortality, increased caesarean section, and poor indicators of fetal well-being.^[21] This difference may be attributed to the variations in the Herbal medication use details such as type, duration of use, and trimesters of use. There was no statistical difference between the sociodemographic characteristics of the study subjects and the use of Herbal medications during pregnancy. Similarly, a study conducted by Al-ramahi et al. among Palestinian women reported a similar finding.^[7] However, this observation is at variance with several studies^[6, 8, 11-12, 15, 18, 22] which have been conducted previous where any of the sociodemographic characteristics such as age, educational status, occupation, monthly income influenced the use of Herbal medications during pregnancy. It may probably be attributed to the variations in the characteristics of the study subjects used in the various studies. In the current study, there was a significant association between Herbal medication use and high parity on bivariate analysis, but on regression analysis, women who had been pregnant thrice were less likely to use Herbal medications than the other parities. It is agreeing with studies conducted by Forster et al.^[14] and Kennedy et al.^[19] who in their various studies found that primiparous and those having their first pregnancy respectively were significantly associated with Herbal medicine use during pregnancy. The convenience sampling method used for the study limited the generalization of the finding to the population; the sample of participants was not representative. The hospital-based nature of the sample also affected the external validity. Depending on the time between intake of the medication and interview, the ability to recall may also have affected the response pattern.

5. Conclusion

The use of natural or Herbal products in pregnancy is relatively common in the population studied. Most of the women used the medications for a presumed diagnosis of malaria. Though the use of the medications was not triaged according to trimester, the early pregnancy symptoms could have been mistaken for malaria and natural remedies taken at such times. Therefore, there is the need for health personnel to actively inquire after the use of native medications in pregnancy, especially in the early trimester, and educate the patients on the similarities between early pregnancy symptoms and malaria. Since using Herbal remedies is higher in lower parity, more attention should be given to the group. It will help reduce the use of the native medications at such a critical period and the possible danger to the embryo or fetus.

Conflict of Interest

The authors declared that there is no conflict of interest.

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