ISSN: 2476-8642 (Print)
ISSN: 2536-6149 (Online)
www.annalsofhealthresearch.com
African Index Medicus, Crossref, African Journals Online, Scopus, C.O.P.E & Directory of Open Access Journals

Annals of HEALTH RESEARCH

(The Journal of the Medical and Dental Consultants' Association of Nigeria, OOUTH, Sagamu, Nigeria)

Volume 11 | No. 2 | Apr. - Jun., 2025

IN THIS ISSUE

PUBLISHED BY THE MEDICAL AND DENTAL CONSULTANTS ASSOCIATION OF NIGERIA, OOUTH, SAGAMU, NIGERIA.
www.mdcan.oouth.org.ng

Annals of Health Research
(The Journal of the Medical and Dental Consultants Association of Nigeria, OOUTH, Sagamu, Nigeria)

Volume 11, Issue 2: 141-153
June 2025
doi:10.30442/ahr.1102-04-280

ORIGINAL RESEARCH

Prevalence and Factors Associated with the Use of Self-Prescribed Orthodox and Herbal Medications Among Pregnant Women in Remo Zone of Ogun State, Nigeria

Akadri Adebayo A*[1], Odelola Oluwaseyi I[2], Adepoju Akinmade A[3], Akiseku Adeniyi K[4], Grillo Elizabeth O[1], Akadri Omobolanle M[5]

[1]Department of Obstetrics and Gynaecology, Babcock University, Ilishan-Remo, Ogun State, Nigeria
[2]Department of Obstetrics and Gynaecology, State Hospital, Ijebu-Ode, Ogun State, Nigeria
[3]Department of Community Medicine, Babcock University, Ilishan-Remo, Ogun State, Nigeria
[4]Department of Obstetrics and Gynaecology, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria
[5]Department of Physiotherapy, General Hospital Iperu, Ogun State, Nigeria

*Correspondence: Dr AA Akadri, Department of Obstetrics and Gynaecology, Babcock University, Ilishan-Remo, Ogun State, Nigeria. E-mail: bayoakadri@yahoo.com ; ORCID – https://orcid.org/0000-0001-8238-2652.

Citation: Akadri AA, Odelola OI, Adepoju AA, Akiseku AK, Grillo EO, Akadri OM. Prevalence and factors associated with the use of self-prescribed orthodox and herbal medicines among pregnant women in Remo zone, Ogun State, Nigeria. Ann Health Res 2025;11:141-153. https://doi.org/10.30442/ahr.1102-04-280.

Abstract

Background: The indiscriminate use of medicines in pregnancy is a public health concern because of the possibility of adverse consequences for both the mother and the developing foetus.
Objective: To determine the prevalence and factors associated with the use of self-prescribed orthodox and herbal medicines among pregnant women.
Methods: A cross-sectional study was conducted in three public health facilities (secondary and tertiary) in Remo Zone, Ogun State, Nigeria, from 1 April 2023 to 30 June 2023. A multistage sampling technique was used to select 262 antenatal clinic attendees. Interviewer-assisted questionnaires were used for data collection.
Results: Overall, 75 pregnant women (28.6%) used self-prescribed medicines. Thirty-nine pregnant women (14.9%) used self-prescribed orthodox medication, 43 (16.4%) used herbal medicines, and seven women (2.7%) used both. Analgesics (17; 43.6%) were the most commonly used orthodox drugs. Pregnant women who engaged in pre-pregnancy alcohol use were 4.7 times more likely to take self-prescribed orthodox medicines (AOR = 4.7, C.I = 1.5-14.5; p = 0.008). Pregnant women with high-status occupations were 80% less likely to take herbal medication (AOR = 0.2, C.I.= 0.1-0.6; p = 0.003). Similarly, pregnant women with tertiary education were 70% less likely to take herbal medicines (AOR = 0.3, C.I.= 0.1-0.6; p = 0.001).
Conclusion: The use of self-prescribed medicines is prevalent among women attending antenatal clinics in public health facilities in Remo zone Ogun State, Nigeria, with more women engaging in the use of herbal than orthodox medicines.

Keywords: Antenatal care, Alcohol, Herbal medicine, Orthodox care, Pregnancy, Self-prescription.

Introduction

Pregnant women often experience a diverse array of symptoms, many of which occur as a consequence of the anatomical and physiological changes associated with pregnancy.[1] These symptoms are often regarded by pregnant women as minor, leading them to engage in self-medication with orthodox and/or herbal medicines. [2-4] The practice of herbal medication use is widespread in Africa, South America and some parts of Asia. [5,6] The prevalence of self-prescribed drug use in pregnancy was reported to be 36% in Brazil [7] and 72% in France.[8] In Africa, 40.8% and 69% prevalence rates were reported in Ethiopia [9] and Ghana. [6] Researchers in Nigeria have also reported prevalence rates ranging from 31.9% to 51%. [4,10,11]

Several factors make pregnant women take medications without a prescription. Some of these are poverty, ignorance, low education status, and a weak health system. [6,10,12,13] Others include poor legislation regarding the sales of drugs and the widespread availability of both orthodox and herbal medicines in the open markets. [10,13] Regarding herbal medication, some women perceive them to be more effective for some conditions, with fewer side effects compared to orthodox medication. [14] Herbal medicines are also believed in some cultures to improve the well-being of both mother and baby, act as immune boosters, and help to prepare for or ease labour pain. [15, 16]

The National Agency for Food and Drug Administration and Control (NAFDAC) is the regulatory authority in Nigeria, which is mandated to regulate and control the advertisement, distribution, sale, and use of orthodox and herbal remedies.[17] However, regulating the pharmaceutical sector often clashes with powerful business interests, making the process contentious. This is especially true in developing countries with weak regulatory institutions, where most pharmaceutical products are imported.[17] The safety of many orthodox drugs has not been well established in pregnant women, more so for the majority of herbal remedies. [9,18] Pregnant women who take herbal drugs may thus be exposed to inherently toxic medicinal plants or herbal medications that are contaminated during production. Sadly, many pregnancies are not planned in Nigeria, pre-conceptional care is rare, and many women would have taken some drugs before knowing that they are pregnant. [19] Inappropriate use of self-prescribed orthodox medicines such as non-steroidal anti-inflammatory drugs, antidepressants and nasal decongestants has been associated with adverse pregnancy outcomes such as preterm birth, low birth weight, congenital malformations and attention deficit disorder. [4,20] The World Health Organization (WHO) regional office for Africa has been spearheading a regional strategy to promote the incorporation of complementary therapies into the health systems in the African region.[21] Although numerous studies have investigated either orthodox or herbal self-medication separately, there is limited research on their combined use among pregnant women in Nigeria. This gap in knowledge hinders a comprehensive understanding of potential drug interactions and compounded health risks. This study was thus designed to ascertain the prevalence and factors associated with using self-prescribed orthodox and herbal medicines among pregnant women in the Remo zone, Ogun State, Nigeria.

Methods

Setting

This was a cross-sectional study conducted in the Remo zone in Ogun State. Remo is one of the four zones in Ogun State, southwest Nigeria, and falls within the country's rainforest climatic zone. Its geographical size is 964.3 km^2, with a projected

population of 797,000.[22] The people of the Remo zone are predominantly farmers. From the extrapolation of available data, women in the reproductive group (15-49 years) constitute 22.5% of the zone's population. [23]

Ethical consideration

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Health Research Ethics Committee of the Olabisi Onabanjo University Teaching Hospital, Ogun state (OOUTH/HREC/665/2023AP).

Study population

The study population was all pregnant women who were attending antenatal clinic at the study sites, i.e. General Hospital Ikenne, General Hospital Isara, and Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu, from 1 April 2023 to 30 June 2023.

Inclusion and exclusion criteria

Pregnant women attending antenatal clinics at the study sites who were at least 18 years of age and whose pregnancies had been confirmed by ultrasound were included in the study. At the same time, women who were too ill and those who had obstetric emergencies at the time of recruitment were excluded from the study.

Sample size determination

The minimum sample size required for the study was estimated using the formula for determining the prevalence of a factor in a descriptive study ($n = Z^2pq/d^2$). [24] Inputting Z as 1.96, p as 19.2% from a previous study [25] and d as 0.05, the desired sample size was 236. Adjustment for a 10% non-response rate gave a final sample size of 262 women.

Sampling technique

Multistage sampling was used for this study. In stage one, Remo Zone was divided into its three constituent LGAs: Ikenne, Remo North, and Sagamu. In stage two, the public hospitals that served as secondary or tertiary health facilities in the three LGAs in Remo Zone, Ogun State, were selected because they had good enrolment and attendance data at their antenatal clinics and provided standard antenatal care services. There are two secondary health facilities / General Hospitals (GH) in Ikenne LGA and one in Remo North LGA. One of the two GHs in Ikenne LGA (GH Ikenne) was selected randomly by a coin toss. GH Isara, the only GH in Remo North LGA, was selected, while OOUTH, a public tertiary health facility providing secondary care for Sagamu LGA, was also selected. The three study sites are appropriately spread out across the Remo zone, for which results from the study could be generalised. In stage three, a proportionate allocation method was used to determine the number of women to be interviewed from each health facility after considering the average antenatal clinic attendance in each health facility. The average weekly antenatal clinic attendance was 30, 60 and 90 clients for GH Ikenne, GH Isara, and OOUTH; hence, 44, 88 and 130 pregnant women were recruited from these study sites, respectively. A sampling frame of antenatal attendees was drawn from the antenatal clinic enrolment register, and each attendee was allocated a number. The first respondent in each health facility was selected by simple random sampling through a ballot. Subsequently, every third respondent was chosen until the desired sample size was attained. If a selected pregnant woman declined or was ineligible, the respondent with the following number replaced her. All women who agreed to participate in the study were asked to sign an informed consent form.

Study instrument

The study instrument was a semi-structured, interviewer-administered questionnaire. This instrument was adapted from a previous study in Ibadan, Nigeria. [4] The validity of the questionnaire was established by the subject

experts comprising a pharmacist with prior research experience, an obstetrician, and an experienced midwife. These experts were not part of the study. The questionnaire was pretested on twenty-six pregnant women (i.e., 10% of the calculated sample size) attending an antenatal clinic at GH Iperu, and all necessary adjustments were made.

Data collection and data management

Written informed consent was obtained before data collection. Data collection was done by the researchers and two trained research assistants using interviewer-administered questionnaires. Filled questionnaires were checked for completeness, consistency and accuracy. The data were extracted from the questionnaires and entered into a Microsoft Excel spreadsheet. All data were de-identified and stored in a personal computer, which was password-protected to ensure data integrity and security.

Statistical analysis

Statistical analysis was performed using IBM-SPSS Statistics for Windows version 23.0 (IBM Corp., Armonk, NY, USA). The normality of the distribution of continuous variables was assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests. Maternal age was summarised using mean (S.D), while gestational age, parity, and number of antenatal clinic visits were summarised using median (Q1-Q3). Categorical variables were summarised using frequencies and percentages. The association of each independent variable with self-prescribed drug use was determined using univariate logistic regression analysis. Binary logistic regression analysis was performed to determine the factors that were independent predictors of the use of self-prescribed orthodox and herbal medication. The significance level was set at 5% ($p < 0.05$).

Results

Out of 262 study participants, 75 pregnant women (28.6%) used self-prescribed medicines. Thirty-nine pregnant women (14.9%) used orthodox medicines, while 43 pregnant women (16.4%) used herbal medicines. Seven women (2.7%) used both orthodox and herbal medicines during pregnancy.

Table I depicts the study participants' socio-demographic characteristics, parity, and gestational age. One hundred and thirty women (49.6%) were over 30 years of age, while (126; 48.1%) had a parity of 1 or 2. Most participants (197; 75.2%) attained tertiary education. The median gestational age (IQR) of the study participants was 32 (26-36) weeks, and the majority (195; 74.4%) were in the third trimester. The median gestational age (IQR) of women who took herbal medicines was 34 (27-37) weeks, while that of women who took self-prescribed orthodox medicines was 32 (27-37) weeks. The overall mean age (S.D) of study participants was 30.8 (5.1) years. The mean ages (S.D) of women who took orthodox medicines and herbal medicines were 31.2 (4.8) years and 30.2 (6.7) years, respectively. The median parity (IQR) was 1(0-2) in the two groups. The median number of antenatal visits (IQR) was 5(3-6) visits and 5(3-7) visits in women who took orthodox medicines and herbal medicines, respectively, while the median number of ANC visits for all study participants was 4 (2-6) visits. Analgesics (24; 61.5%) were the most commonly used orthodox medicines by pregnant women. This was followed by antimalarial drugs (15; 38.4%), antibiotics (11; 28.2%) and sedatives (6; 15.4%). Antihypertensive drugs and cough syrups were used by two pregnant women each. Regarding the use of herbal medications, all the women reported taking herbal concoctions prepared by boiling leaves, tree barks and some unknown components in water and allowing them to ferment.

Table I: Socio-demographic and obstetric characteristics of study participants

Characteristics	*Use of self-prescribed medicines*		
	Total (n = 262)	**Yes (n = 75)**	**No (n = 187)**
	Frequency (%)	**Frequency (%)**	**Frequency (%)**
Age (Years)			
≤30	132 (50.4)	41 (54.7)	91 (48.7)
>30	130 (49.6)	34 (45.3)	96 (51.3)
Parity			
0	101 (38.5)	24 (32.0)	77 (41.2)
1-2	126 (48.1)	40 (53.3)	86 (46.0)
3-4	33 (12.6)	11 (14.7)	22 (11.8)
≥ 5	2 (0.8)	0 (0.0)	2 (1.0)
Occupation			
Housewife	21 (8.0)	2 (2.7)	19 (10.2)
Trader	101 (38.5)	34 (45.3)	67 (35.8)
Artisan	37 (14.1)	13 (17.3)	24 (12.8)
Civil Servant	38 (14.5)	7 (9.3)	31 (16.6)
Professionals	65 (24.8)	19 (25.3)	46 (24.6)
Marital Status			
Single	6 (2.3)	2 (2.7)	4 (2.1)
Married	256 (97.7)	73 (97.3)	183 (97.9)
Religion			
Christianity	201 (76.7)	56 (74.7)	145 (77.6)
Islam	60 (22.9)	19 (25.3)	41 (21.9)
Traditional	1 (0.4)	0 (0.0)	1 (0.5)
Educational level			
No formal education	5 (1.9)	3 (4.0)	2 (1.1)
Primary	9 (3.4)	0 (0.0)	9 (4.8)
Secondary	51 (19.5)	25 (33.3)	26 (13.9)
Tertiary	197 (75.2)	47 (62.7)	150 (80.2)
Gestational age			
1st Trimester	7 (2.7)	2 (2.7)	5 (2.7)
2nd Trimester	60 (22.9)	13 (17.6)	47 (25.1)
3rd Trimester	195 (74.4)	60 (79.7)	135 (72.2)

Private pharmacies were the most common source of information on orthodox medicines (22; 56.4%), followed by the patent medicine stores (8; 20.5%). Four women (10.3%) got information regarding orthodox medicines use from hospital pharmacies, and another four women from leftovers of previous prescriptions. Only one respondent reported getting information from a drug vendor. Twenty-nine women (67.4%) who took herbal medicines reported getting information from "family and friends", six women (13.9%) reported having personal knowledge of the herbal medications used, and three women (7.0%) got information from health workers and mass media. In contrast, two respondents (4.7%) got information about the use of herbal medicines from Traditional Birth Attendants or Herbalists. The occurrence of "minor symptoms" was the commonest motivation factor for the use of both orthodox (20; 51.3%) and herbal medicines (14; 32.5%) (Table II).

Table II: Motivational factors for use of self-prescribed orthodox and herbal medications

Motivational factors	*Self-prescribed orthodox medicines (n=39)*		*Herbal medicines (n = 43)*	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Minor symptoms	20	51.3	14	32.5
Need for emergency treatment	2	5.1	3	7
Long waiting time in hospitals	1	2.6	0	0
Convenience	8	20.5	3	7
Lack of access to health facilities	3	7.7	4	9.3
Had done it before without any harm	5	12.8	8	18.6
Forced by relatives	0	0	11	25.6

The commonest symptoms associated with the use of self-prescribed orthodox medicines were headaches/body pains (16; 41.0%). However, the majority of the study participants who took herbal medications during pregnancy reported no symptoms before the use of these medications (25; 58.1%) Table III.

The analysis of socio-demographic and obstetrics factors associated with the use of self-prescribed orthodox and herbal medicines are depicted in Tables IV and V. Univariate analysis revealed that respondents' occupation, pre-pregnancy alcohol use, and contraceptive use were significantly associated with the use of self-prescribed orthodox medicines ($p = 0.044$, $p = 0.001$ and $p = 0.036$ respectively). In contrast, respondents' occupations and educational levels were significantly associated with using herbal medications ($p<0.001$).

Logistic regression analysis was performed to ascertain the independent effects of age, occupation, educational level, pre-pregnancy alcohol use, and pre-pregnancy contraceptive use on the likelihood that participants used self-prescribed orthodox and herbal medicines during pregnancy.

Table III: Symptoms associated with use of self-prescribed orthodox and herbal medicines

Symptoms	*Self-prescribed orthodox medicines (n = 39)*		*Herbal medicines (n = 43)*	
	Frequency	**Percentage**	**Frequency**	**Percentage**
No symptoms	8	20.5	25	58.1
Headache/ Body Pains	16	41	7	16.3
Malaria symptoms	15	38.5	15	34.9
Weakness/tiredness	4	10.3	0	0
Gastrointestinal symptoms	5	12.8	3	7
Urinary symptoms	4	10.3	0	0
Insomnia	6	15.4	0	0
Respiratory symptoms	2	5.1	0	0

Multiple entries allowed

Women who engaged in pre-pregnancy alcohol use were 4.7 times more likely to take self-prescribed orthodox medicines in pregnancy when compared with those who did not take alcohol (AOR = 4.7, C.I.= 1.5-14.5; p = 0.008). Women with high-status occupations (Civil servants and professionals) were 80% less likely to take herbal medicines during pregnancy when compared to those with low-status occupations (housewives, traders, artisans) [AOR = 0.2, C.I.= 0.1-0.6; p = 0.003]. Similarly, women with tertiary level education were 70% less likely to take herbal medicines in pregnancy when compared to those without tertiary level education (AOR = 0.3. C.I. = 0.1-0.6; p = 0.001).

Discussion

Our findings suggest that approximately one out of every four pregnant women used self-prescribed medicines, with more women engaging in the use of herbal medicines than orthodox medicines. The study also revealed that pregnant women who engaged in pre-pregnancy alcohol use were more likely to take self-prescribed orthodox medication than women who did not take alcohol. Also, highly educated women and those with high-status occupations were less likely to take herbal medicines during pregnancy.

The prevalence of the use of self-prescribed orthodox medications in this study was 14.9%. This is lower than findings from other studies done in southwestern Nigeria. Bello *et al*. reported a prevalence of 19.2% in Ibadan. [25] A more recent study also done in Ibadan by Adeoye *et al*. [4] reported a prevalence of 31.9%. In comparison, studies done in Ogbomoso [10] and Osogbo, Osun State [26] reported a prevalence of 51% and 30%, respectively. Regarding the use of herbal medicines in pregnancy, the prevalence in this study was 16.4%. This is higher than reports from Ogbomoso, Oyo State (11.3%) [10] but lower than in Osogbo, Osun State (24.2%) [26] and Ibadan, Oyo state. (21.7%). [4] Possible reasons for the wide disparities in prevalence include cultural differences, ease of access to drugs and varying drug regulatory mechanisms in different regions and countries. [4,7,16]

Table IV: Factors associated with use of self-prescribed orthodox medicines

Predictor	*COR*	*p-value*	*AOR*	*p-value*
Age (Years)				
≤30	Reference		Reference	
>30	1.2 (0.6-2.4)	0.567	1.6 (0.7-3.3)	0.233
Parity				
Nulliparous	Reference			
Multiparous	0.9 (0.4-1.8)	0.731		
Occupation				
Low status jobs	Reference		Reference	
High status jobs	2.0 (1.0-4.0)	**0.044**	1.3 (0.6-3.0)	0.471
Educational level				
No tertiary education	Reference		Reference	
Tertiary	1.6 (0.7-3.8)	0.282	1.4 (0.5-3.7)	0.509
Gestational age (week)				
≤ 20	Reference	0.908		
> 20	0.9 (0.3-3.3)			
Number of ANC visits				
< 4	Reference	0.198		
≥ 4	1.6 (0.7-3.4)			
Pre-pregnancy alcohol use				
No	Reference		Reference	
Yes	5.2 (1.8-14.9)	**0.001**	4.7 (1.5-14.5)	**0.008**
Pre-pregnancy contraceptive use				
No	Reference		Reference	
Yes	2.2 (1.0-4.5)	**0.036**	1.7 (0.8-3.9)	0.19
Chronic medical condition				
No	Reference	0.315		
Yes	0.6 (0.2-1.7)			

The higher prevalence of the use of herbal medicines compared to orthodox medication is another area of grave concern. The use of herbal medications, in many instances, has sociocultural, religious and spiritual values among the people. [16] Many women in sub-Saharan Africa believe in the efficacy and safety of herbal medicines. [6,16] It is also important to note that seven pregnant women used both herbal and orthodox medicines.

Table V: Factors associated with use of herbal medicines

Predictor	*COR*	*p-value*	*AOR*	*p-value*
Age (Years)				
≤30	Reference		Reference	
>30	0.6 (0.3-1.2)	0.148	0.6 (0.3-1.3)	0.231
Parity				
Nulliparous	Reference	0.22		
Multiparous	1.5 (0.8-3.1)			
Occupation				
Low status jobs	Reference		Reference	
High status jobs	0.2 (0.1-0.4)	<0.001*	0.2 (0.1-0.6)	0.003*
Educational level				
No tertiary education	Reference		Reference	
Tertiary	0.2 (0.1-0.4)	<0.001*	0.3 (0.1-0.6)	0.001*
Gestational age (week)				
≤ 20	Reference	0.939		
> 20	1.1 (0.3-3.8)			
Number of ANC visits				
< 4	Reference	0.473		
≥ 4	1.3 (0.6-2.6)			
Pre-pregnancy alcohol use				
No	Reference		Reference	
Yes	1.8 (0.5-5.8)	0.339	2.4 (0.6-9.5)	0.227
Pre-pregnancy contraceptive use				
No	Reference		Reference	
Yes	1.2 (0.6-2.5)	0.148	1.9 (0.8-4.7)	0.141
Chronic medical condition				
No	Reference	0.738		
Yes	0.9 (0.3-2.2)			

This may also be challenging because of the potential risk of interactions between the active substances and the possibility of teratogenicity. [27] The National Agency for Food and Drug Administration and Control (NAFDAC) has been making efforts to regulate herbal medicines in Nigeria.[28] However, the traditional medicine practitioners who are major stakeholders are still averse to subjecting their herbal remedies to modern healthcare safety standards. [28] There is an urgent need for more advocacy to address this.

The commonest self-prescribed orthodox drugs used by pregnant women in this study were analgesics. This is also related to the fact that the commonest symptoms associated with drug use were headaches and body pains. Similar findings were reported in previous studies. [4,7,10,13] While paracetamol, which is the first-line analgesic and antipyretic among pregnant women, is

considered safe during pregnancy, [4] other commonly used analgesics like non-steroidal anti-inflammatory drugs have been associated with miscarriages and premature closure of ductus arteriosus. [29]

The majority of the study respondents decided to use either orthodox or herbal medicines without prescription because they felt that they had minor symptoms. Pereira *et al.* also reported similar findings from a study in Brazil. [7] The general ease of access to medications without prescription in Nigeria may also be a contributory factor. More than half of pregnant women who took self-prescribed orthodox medicines got their information from private pharmacies, similar to findings from an Ethiopian study. [13] Interestingly, about a quarter of pregnant women who took herbal medicines reported that they were forced to do so by their relatives. Again, this indicates the widespread belief in the efficacy of herbal medicines in traditional African families. [16] It also shows the far-reaching influence relatives, especially in-laws, usually have on women. This underscores the importance of engaging community gatekeepers to drive any intervention to solve this problem.

Logistic regression analysis showed that only pre-pregnancy alcohol use was a significant predictor of the use of self-prescribed orthodox medicines during pregnancy. It can be hypothesised that women who took alcohol may more likely have poor lifestyle choices and thus engage in other harmful practices, including indiscriminate use of self-prescribed orthodox drugs. The factors associated with the use of herbal medicines in pregnancy were occupation and educational level. After adjusting for confounding variables, pregnant women with high-status occupations (Civil servants and professionals) and those with tertiary-level education were less likely to take herbal medicines. These findings are similar to reports from Ibadan (Nigeria) and Cameroun. [4,28] Highly educated women and women with high-status occupations are likely more conscious of the potential harmful effects of herbal drugs on the foetus and thus avoid them during pregnancy. This study also shows that the number of antenatal visits did not affect the likelihood of taking self-prescribed orthodox drugs. Antenatal care (ANC) is one of the critical interventions for improving maternal health. It is expected to provide an effective platform for health-promoting services through education, nutritional support and drug and substance abuse cessation. [4,30] This study brings to the fore the need for health workers to use the platform of ANC to provide evidence-based information to pregnant women on medication use during pregnancy.

Strengths and Limitations

The multistage sampling technique allowed for the selection of a representative study population, thus enhancing the generalizability of the study. Using logistics regression analysis to control for multiple confounders also improved the validity of the study findings. It is, however, important to also appreciate the limitations of the cross-sectional study design used in this study, which meant that one could not ascertain the temporal sequence of exposures and outcomes. This study depended on self-reported assessment of drug use by pregnant women with a potential for underreporting, recall bias or social desirability bias. Moreover, our findings should be applied with caution in other cultural settings, as drug use practices among pregnant women may be grossly affected by government policies and cultural practices.

Conclusion

The use of self-prescribed medicines is prevalent among women attending antenatal clinics in public health facilities in Remo zone Ogun State, Nigeria, with more women engaging in the use of

herbal medicines than orthodox medicines. Pregnant women who engaged in pre-pregnancy alcohol use were more likely to take self-prescribed orthodox medication. Also, highly educated women and those with high-status occupations were less likely to take herbal medicines during pregnancy. The findings from this study highlight the popularity of herbal medicine among the study population. While this may justify the recent drive led by the WHO to integrate complementary therapies into the existing healthcare system, it also underscores the importance of paying particular attention to medication safety in pregnancy.

Authors' contributions: AAA1 conceptualised and designed the study. OOI, AAK, GEO and AOM did the literature review. AAA1, OOI, AAK and AOM collected the data, while AAA1 analysed and interpreted the data. AAA1 and AAA2 drafted the manuscript while OOI, AAK, GEO and AOM revised the manuscript for sound intellectual content. All the authors read and approved the final version of the manuscript.

Conflicts of Interest: None.

Funding: Self-funded.

Publication History: Submitted 29 November 2024; **Accepted** 13 May 2025.

References

1. Soma-Pillay P, Nelson-Piercy C, Tolppanen H, Mebazaa A. Physiological changes in pregnancy. Cardiovasc J Afr 2016;27:89-94. https://doi.org/10.5830/CVJA-2016-021.
2. Botyar M, Kashanian M, Abadi ZRH, Noor MH, Khoramroudi R, Monfaredi M, *et al.* A comparison of the frequency, risk factors, and type of self-medication in pregnant and nonpregnant women presenting to Shahid Akbar Abadi Teaching Hospital in Tehran. J Family Med Prim Care 2018; 7(1):124-129. https://doi.org/10.4103/jfmpc.jfmpc_227_17.
3. Zewdie T, Azale T, Shimeka A, Lakew AM. Self-medication during pregnancy and associated factors among pregnant women in Goba town, southeast Ethiopia: a community based cross sectional study. BMC Res Notes 2018;11:713. https://doi.org/10.1186/s13104-018-3821-8.
4. Adeoye I, Etuk V. Prevalence, predictors and pregnancy outcomes of unprescribed and herbal medicine use in Ibadan, Nigeria. BMC Complement Med Ther 2023;23:17. https://doi.org/10.1186/s12906-023-03838-8.
5. Adane F, Seyoum G, Alamneh YM. Non-prescribed drug use and predictors among pregnant women in Ethiopia: systematic review and meta-analysis. J Matern Fetal Neonatal Med 2022;35:4273-4284. https://doi.org/10.1080/14767058.2020.1849105.
6. Gbagbo FY, Nkrumah J. Self-medication among pregnant women in two municipalities in the Central Region of Ghana. Health Care Women Int 2021;42:547-562. https://doi.org/10.1080/07399332.2020.1716235.
7. Pereira G, Surita FG, Ferracini AC, Madeira CS, Oliveira LS, Mazzola PG. Self-Medication Among Pregnant Women: Prevalence and Associated Factors. Front Pharmacol. 2021;12:659503. https://doi.org/10.3389/fphar.2021.659503. Erratum in: Front Pharmacol. 2021;12:810762.
8. Cabut S, Marie C, Vendittelli F, Sauvant-Rochat MP. Intended and actual use of self-medication and alternative products during pregnancy by French women. J Gynecol Obstet Hum Reprod. 2017;46:167-173. https://doi.org/10.1016/j.jogoh.2016.10.005
9. Niriayo YL, Mohammed K, Asgedom SW, Demoz GT, Wahdey S, Gidey K. Self-medication practice and contributing factors among pregnant women. PLoS One. 2021;16:e0251725. https://doi.org/10.1371/journal.pone.0251725.
10. Babatunde OA, Adeoye IA, Usman AB, Umeokonkwo CD, Fawole OI. Pattern and determinants of self-medication among pregnant women attending antenatal clinics in primary health care facilities in Ogbomoso, Oyo State, Nigeria. J Interval Epidemiol

Public Health 2021;4(3):7. https://doi.org/10.37432/jieph.2021.4.3.36
11. Edet CK, Wegbom AI, Samuel KG, Sapira-Ordu L, Jaja ID, Ene-Peter J, *et al.* Prevalence and Factors Influencing Self-Medication among Pregnant Women Attending Antenatal Clinics in Urban Tertiary Hospitals in Nigeria. BioMed 2023;3:166-176. https://doi.org/10.3390/biomed3010014
12. Makam CE, Adam A, Fusheini A. Self-medication and pregnancy care: the use of herbal products and prescription drugs among pregnant women attending antenatal clinics in Hohoe Municipality of Volta region. Ghana J Nurs Midwifery Res 2021;1:1-8.
13. Lerango TL, Alagaw A, Tunje A, Andarge E, Duko B, Tilahune AB, *et al.* Self-medication practice among pregnant women in Wolaita Zone, Southern Ethiopia: An institutionally based cross-sectional study. Heliyon 2023;9:e13833. https://doi.org/10.1016/j.heliyon.2023.e13833.
14. Dafam DG, Denou A, Idoko A, Jimam NS, Okwori VA, Ohemu TL, *et al.* Use of herbal medicine during pregnancy and attitudes of pregnant women in Jos, Nigeria. J Pharm Bioresources 2021;18(1): 64-73. https://dx.doi.org/10.4314/jpb.v18i1.9
15. Illamola SM, Amaeze OU, Krepkova LV, Birnbaum AK, Karanam A, Job KM, *et al.* Use of Herbal Medicine by Pregnant Women: What Physicians Need to Know. Front Pharmacol. 2020;10:1483. https://doi.org/10.3389/fphar.2019.01483.
16. El Hajj M, Holst L. Herbal medicine use during pregnancy: A review of the literature with a special focus on sub-Saharan Africa. Front Pharmacol 2020;11:866. https://doi.org/10.3389/fphar.2020.00866.
17. Olugbenga EO. The Politics of Pharmaceutical Regulation in Nigeria: Policy Options for Third World Countries. Public Pol Admin Res 2013;3:2224-5731.
18. Briggs GG, Polifka JE, Wisner KL, Gervais E, Miller RK, Berard A, *et al.* Should pregnant women be included in phase IV clinical drug trials? Am J Obstet Gynecol. 2015;213:810-815. https://doi.org/10.1016/j.ajog.2015.05.047.
19. Ojifinni OO, Ibisomi L. Health Care Providers Perceptions About Preconception Care in Ibadan, Southwest Nigeria: A Qualitative Study. Matern Child Health J 2022;26:587-600. https://doi.org/10.1007/s10995-021-03305-1.
20. Muñoz Balbontín Y, Stewart D, Shetty A, Fitton CA, McLay JS. Herbal medicinal product use during pregnancy and the postnatal period: a systematic review. Obstet Gynecol 2019;133:920–932.
21. James PB, Wardle J, Steel A, Adams J. Traditional, complementary and alternative medicine use in Sub-Saharan Africa: a systematic review. BMJ Glob Health 2018;3:e000895. https://doi.org/10.1136/bmjgh-2018-000895.
22. National Population Commission (NPC) [Nigeria]. 2006 Population and Housing Census: Priority Tables (Volume III). Abuja: NPC, 2009.
23. National Population Commission (NPC) [Nigeria] and ICF. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF, 2019
24. Sharma SK, Mudgal SK, Thakur K, Gaur R. How to calculate sample size for observational and experimental nursing research studies? Natl J Physiol Pharm Pharmacol 2020;10:1-8. https://doi.org/10.5455/njppp.2020.10.0930717102019
25. Bello FA, Morhason-Bello IO, Olayemi O, Adekunle AO. Patterns and predictors of self-medication amongst antenatal clients in Ibadan, Nigeria. Niger Med J 2011;52:153-157. https://doi.org/10.4103/0300-1652.86124
26. Akinnawo EO, Bello IB, Akpunne BC, Ajibola BS. Self-Medication in Pregnancy and Associated Psychopathological Symptoms of Antenatal Nigerian Women. Psychology 2020;11:2039-2054. https://doi.org/10.4236/psych.2020.1112127
27. Leke AZ, Dolk H, Loane M, Casson K, Maboh NM, Maeya SE, *et al.* Prevalence, determinants and attitude towards herbal medicine use in the first trimester of pregnancy in Cameroon: A survey in 20

hospitals. PLOS Glob Public Health 2022;2:e0000726. https://doi.org/10.1371/journal.pgph.0000726.

28. Eruaga MA, Itua EO, Bature JT. Exploring herbal medicine regulation in Nigeria: Balancing traditional practices with modern standards. GSC Adv Res Rev 2024;18:83-90. https://doi.org/10.30574/gscarr.2024.18.3.0094.
29. Shah S, Banh ET, Koury K, Bhatia G, Nandi R, Gulur P. Pain Management in Pregnancy: Multimodal Approaches. Pain Res Treat 2015;2015:987483. https://doi.org/10.1155/2015/987483.
30. McCauley H, Lowe K, Furtado N, Mangiaterra V, van den Broek N. What are the essential components of antenatal care? A systematic review of the literature and development of signal functions to guide monitoring and evaluation. BJOG 2022;129:855–867. https://doi.org/10.1111/1471-0528.17029