

Determinants of self medication practices among pregnant women in Ibadan, Nigeria

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Abstract *Objective* To assess the frequency and evaluate the factors underlining self-medication with orthodox and herbal medicines among pregnant women in Ibadan, Nigeria. *Setting* Antenatal clinics at the major antenatal care facility in Ibadan, south-western Nigeria. *Methods* A prospective cross-sectional study with a pre-tested 15-item structured questionnaire over a 12 week period among 1,650 pregnant women who attended antenatal clinics at a major antenatal care facility in Ibadan, south-western Nigeria. Data analysis was done with Chi-square, multivariate logistic regression and summary statistics. *Main outcome measure* Frequency and major factors associated with self-medication in pregnancy. *Results* The response and completion rate was 96.6% (1,594) [mean age \pm SD 27 ± 5.3 years]. The majority of the respondents were literate (92.6%), self-employed (61.5%) and in the third trimester (49.5%). A significant majority (63.8%) used self-medication (orthodox and herbal medicines) as their first response to perceived ill-health ($P < 0.001$). Self-medication in pregnancy was strongly associated with self-employment (OR: 3.8 (2.6–4.7)), unemployment (OR: 2.6 (1.4–4.2)) and third trimester of pregnancy (OR: 4.2 (3.1–5.6)). The major over-the-counter medicines and

potentially harmful prescription medicines kept at home for self-medication were Paracetamol, vitamins and haematinics; and piroxicam, dipyrrone, chloramphenicol and Diazepam respectively. About one-third of the respondents who self-medicated (1,017) used local herbs (31.2%). The most frequent source of the medicines purchased during self-medication was patent medicine stores (55%). Mothers-in-law and relatives (41.3%) were the most frequently cited sources of advice during self-medication. Miscarriage/bleeding (44.3%) was the most frequently cited potential adverse effect that could occur with the use of certain medicines during pregnancy. Only 32% of respondents could identify medicines that are potentially harmful in pregnancy. *Conclusion* Poorly guided self-medication with prescription, over-the-counter and herbal medicines is pervasive and significantly associated with gestational age and occupational pattern among pregnant women in Ibadan, south-western. A majority lacked the knowledge of potential adverse outcomes associated with the use of certain medicines, and the potentially harmful medicines to avoid during pregnancy.

Keywords Nigeria · Pregnancy · Self-medication

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Impact of findings on practice

- The choice of self-medication as the first response to perceived ill-health during pregnancy in developing settings, including Nigeria, has important public health implication which may impact negatively on the reduction of high maternal mortality.
- A majority of pregnant women in Nigeria lacks the knowledge of potential harms associated with unauthorised use of certain medicines, potentially harmful

medicines to avoid, and the appropriate source to consult for information during self-medication.

- Public drug education, enlightenment campaigns and access to the right advice from health professionals such as pharmacists may be crucial in safely guiding self-medication during pregnancy.

Introduction

Self medication has been defined as patients' purchase and use of medicines without the knowledge and advice of physicians either for diagnosis, treatment or prevention of diseases [1, 2]. It is a health-seeking behaviour that is associated with supposedly minor diseases that are usually self-diagnosed and treated with medicines purchased at pharmacies or other medicines outlets. Self medication is generally pervasive and is even promoted for initial treatment of some endemic diseases at community levels in sub-Saharan Africa where geographic and economic access to orthodox health care services is poor [3–5]. Self-medication therefore becomes critical for reducing morbidity and mortality from plethora of diseases which are endemic in these areas [6]. However, self-medication is beneficial only when consumers are guided by adequate information from trained health professionals or by printed pictorial materials that are provided during medicine purchase [2, 7]. Community pharmacists are particularly suited for this counselling role because of their easy accessibility, unique training and expertise at guiding safe and appropriate use of medicines especially during self-medication [8–10]. However, studies have shown that consumers especially in developing countries including Nigeria purchase medicines and seek advice during self-medication at medicine outlets operated by non-pharmacists [11–14]. For instance, patent medicine stores are usually manned by non-pharmacists who have been licenced to sell certain categories of patent and proprietary medicines in Nigeria [15]. However, non-pharmacists lack the necessary professional training and expertise required to guide appropriate and safe self-medication especially in pregnancy. Indeed, poorly guided self-medication which results in inappropriate use of prescription-only, over-the-counter (OTC) and herbal medicines has been widely reported in Nigeria and other developing countries [16–18]. This habit has been linked to a health-seeking behaviour which prefers self-medication as the first response to perceived ill-health, patients' dissatisfaction with service delivery particularly at public health facilities, poor geographic and economic access to orthodox health care and unrestricted access to both prescription-only medicines (POM) and OTC medicines at both authorized and illegal medicines outlets [11, 19, 20].

Self-medication may be pervasive among pregnant women particularly in developing settings where the habit is high in the general population. This is because pregnant women are known to suffer varieties of minor ailments such as back pain, headache, heartburn, nausea, vomiting, and haemorrhoids which may be treated appropriately with self-medication. This seems plausible as it may be practically difficult for health facilities to cope with attending to every ailments encountered during pregnancy. Furthermore, self-medication with herbal medicines is also well documented among pregnant women [21, 22]. Yet, a fetus is most vulnerable to the negative consequences of unguided self-medication and irrational use of medicines in the first 12 weeks of pregnancy [23]. Therefore, it is important to closely monitor the use of medicines especially during the first trimester of pregnancy. This will reduce or eliminate the risk of occurrence of fetal abnormalities associated with inappropriate use of certain medicines in pregnancy. Self medication practices among pregnant women are well studied in developed settings, but such inquest is few and far between in Nigeria and other developing settings [24, 25].

Aim of the study

The objective of the study was to assess the frequency and evaluate factors underlining self-medication with orthodox and herbal medicines among pregnant women in Ibadan, Nigeria.

Method

A prospective cross-sectional exploratory study was carried out among consecutive samples of all pregnant women, who attended antenatal clinics at the Adeoyo Maternity Hospital over 12 weeks (1st September to 31st November, 2008). Adeoyo Maternity Hospital is a major secondary care facility located in Ibadan, a cosmopolitan city located in southwestern Nigeria. Ibadan is one of the largest cities in sub-Saharan Africa and consists of 11 local government areas. It is populated by people of diverse background and ethnicities. Adeoyo Maternity Hospital is a premier obstetrics and gynaecological care facility in Ibadan and it is also a major site for the postgraduate residency training of doctors in obstetrics and gynaecology. Ethical clearance and formal approval was obtained from the Ethics Committee of Oyo State Hospital Management Board and office of the Chief Consultant in-charge of the hospital respectively.

The study was carried out with a pre-tested 15-item structured questionnaire that consisted of pre-formulated and free response questions. The process consisted of initial

construction of twenty questions after a thorough review of the literature on self medication. The final 15 questionnaire items were then selected based on face and content validity, and relevance to the study objective. Face and content validity of the questionnaire were assessed through in-depth discussion with two experienced senior colleagues and 2 senior physicians at the study site. In addition, the questionnaire was pre-tested on a sample of 20 pregnant women to assure completeness of data capture and reduce possibility of ambiguity. This resulted in minor modification of the final instrument. Data collected during pre-testing were not included in the final results. The data collected were age, highest educational attainment, occupation, monthly income, gestational age, respondents' first response to ill-health, name and/or description of medicines used during self-medication, medicines bought and kept at home for this purpose, sources of information on medicines being self-medicated with, where the medicines were purchased/obtained, awareness of potential harms inherent in self-medication and knowledge of medicines that could be potentially harmful during pregnancy. The interviews were brief (10.5 ± 2.3 min) and conducted in simple English by ten data collectors (8 nurses and 2 pharmacy undergraduates) who had a 1 day review of the structured data collection tool to standardize the interview format before the commencement of the study. The main objective of the study was explained to all respondents, and their verbal consent was obtained by the senior nursing sister in charge of maternal and child welfare services before the commencement of the interviews.

Respondents were asked to bring packets, sachets, strips, bottles and other containers of medicines used during self-medication within 90 days to the next antenatal appointment. This was considered necessary to corroborate respondents' self-report of medicines used during self-medication. Respondents who did not comply with this instruction due to forgetfulness were visited at their various homes to obtain the information.

Responses were coded and entered for statistical analysis into the SPSS version 10 for Windows (SPSS Inc, Chicago, IL). Results were presented as means (standard deviations), percentages and odd ratios (95% CI). Chi square test was used to test for significant difference between dichotomous groups while multivariate logistic regression model was used to evaluate factors underlining self-medication practices. An a priori level of statistical significance of $P < 0.05$ was used for all comparisons.

Results

Of the 1,650 pregnant women who attended the antenatal clinic during the study period, 1,594 (96.6%) consented,

responded and completed the interviews. Mean age \pm SD was 27 ± 5.3 years (range 19–36 years). The socio-demographic details are as shown in Table 1. The majorities (92.6%) of the 1,594 respondents had primary, secondary or tertiary education, and were self-employed (61.5%). The average monthly income estimate for the respondents was 5,440 naira (4,500–11,500 naira) [US\$37.5 (US\$31–79.3)]. About half of the respondents were in the third trimester of gestation. Gestational age and occupational pattern appeared strongly associated with self medication practices. The adjusted odd ratios (95% CI) are as shown in Table 1. The third trimester of pregnancy was the strongest factor associated with self medication during pregnancy (OR: 4.2; 3.1–5.6), followed by self-employment (traders and artisans) (OR: 3.8; 2.6–4.7) and lack of employment (OR: 2.6; 1.4–4.2).

Self-medication with orthodox and herbal medicines was the first response to perceived ill-health in 63.8% (1,017) of the respondents. Only 36.2% (577) of pregnant women visited health facilities to seek medical help. The proportion of pregnant women who self-medicated was significantly higher than those who visited health facilities ($P < 0.001$). The most frequently cited reasons for self-medication were accessibility/uncontrolled availability (40%, 780/1,950) and long distance to public health facilities (29.6%, 577/1,950). Of the respondents who engaged in self-medication (1,017), 58.4% used orthodox medicines, 31.2% used local herbs while 10.4% used both. The most frequently cited reason for self-medication with local herbs was perception that local herbs are more effective, make parturition easy, faster acting and make babies 'stronger' (55.4%, 377/680). The perceived ill-health for which respondents self-medicated are as shown in Table 1. Body pains/fever (30.1%, 432/1,436), joint pains (14.5%, 208/1,436) and cough (10.2%, 147/1,436) were the most frequently identified.

The most frequent source of the medicines purchased by pregnant women during self-medication was patent medicine stores (55%, 560/1,017). Only about one-third of respondents purchased their medicines from pharmacies (Table 2). The proportion of pregnant women who regularly kept medicines at home for the purpose of self-medication (77.4%, 787/1,017) was significantly higher ($P < 0.0001$); and the frequency and types of medicines kept at home is as shown in Table 2. Paracetamol, vitamins and haematinics (Iron tablets) accounted for about 70% of these medicines. A number of medicines, though at relatively lower frequencies, that are potentially harmful to both the fetus and pregnant women were identified. These include piroxicam, dipyrone, chloramphenicol and diazepam. Mothers-in-law and relatives (41.3%) were the most frequently cited sources of advice by pregnant women during self-medication.

Table 1 Demographic profile and adjusted odd ratios (95% CI) of association with self-medication pregnant women

Item	Respondents (n = 1,594)	Self-medicated (n = 1,017)	Self-medicated (OR 95% CI)	P value
Educational level				
Primary	550 (34.5%)	280 (27.5%)	0.32 (0.21–0.57)	0.501
Secondary	669 (42%)	301 (29.6%)	0.41 (0.26–0.64)	0.864
University	257 (16.1%)	230 (22.6%)	0.28 (0.17–0.41)	0.625
None	118 (7.4%)	206 (20.3%)	Reference	
Occupation				
Self-employed (traders and artisans)	980 (61.5%)	501 (49.3%)	3.8 (2.6–4.7)	<0.001
Unemployed	400 (25.1%)	364 (35.8%)	2.6 (1.4–4.2)	<0.001
Civil servants	214 (13.4%)	152 (14.9%)	Reference	
Gestational age				
Third trimester	789 (49.5%)	569 (55.9%)	4.2 (3.1–5.6)	<0.001
Second trimester	558 (35%)	257 (25.3%)	0.72 (0.57–0.87)	0.006
First trimesters	247 (15.5%)	191 (18.8%)	Reference	
First response to perceived ill-health (n = 11,594)				
Self-medication with orthodox + local herbs		1,017 (63.8%)		<0.001 (X ²)
Visited hospital for treatment		577 (36.2%)		
Reasons cited for self-medication (n = 1,950)				
Unrestricted availability of medicines		780 (40%)		0.003 (X ²)
Long distance to public health facilities		577 (29.6%)		
Financial difficulty		361 (18.5%)		
Perceived poor service delivery at facilities		232 (11.9%)		
Conditions for which medicines were self-prescribed (n = 1,436)				
Body pains/fever		432 (30.1%)		
Joint pain		208 (14.5%)		
Cough		147 (10.2%)		
General weakness		132 (9.2%)		
Indigestion		122 (8.5%)		
Headache		112 (7.8%)		
Sleeplessness		109 (7.6%)		
Nausea		103 (7.2%)		
Heart burn		36 (2.5%)		
Body swelling		35 (2.4%)		

X² Chi-square statistic, OR odd ratio

The orthodox medicines used during self-medication by respondents are as shown in Table 2. Paracetamol, Vitamins and Haematinics accounted for 68.1% of these medicines. 57.7% (920) claimed awareness of potential adverse effects to fetus and mothers when certain medicines are during pregnancy; while 42.3% claimed non-awareness of any potential harm. There was no significant difference between the two groups ($P > 0.05$). Of those who claimed awareness (920), 52.4% cited specific adverse affects, while 47.6% could not identify any. There was no significant difference between respondents who could and

could not identify potential adverse effects ($P > 0.05$). The most frequently cited potential adverse effect was miscarriage/bleeding (44.3%, 288/650). The frequency and types of medicines cited as being potentially harmful by respondents are as shown in Table 3. Of the thirteen different medicines identified, seven appeared to be potentially harmful. These include piroxicam, Tetracycline, dipyron, cotrimoxazole, sulphadoxime-pyrimethamine, chloramphenicol and Ciprofloxacin. Furthermore, only 32% of respondents could identify medicines that are potentially harmful when used during pregnancy. The

Table 2 Sources of medicines kept, used and consulted for advice by pregnant women during self medication

Item	n (%)	X ² (P values)	
Bought and kept medicines at home for SM* (n = 1,017)			
Yes	787 (77.4)	<0.001	
No	230 (22.6)		
Sources of medicines used during SM* (n = 1,017)			
Patent medicine stores	559 (55)	<0.001	
Pharmacies	310 (30.5)		
Drug Hawkers	147 (14.5)		
Sources consulted for advice during SM* (n = 1,450)			
Mother-in-law + relatives	599 (41.3)	0.003	
Patent medicine vendor	293 (20.2)		
Pharmacist	186 (12.8)		
Nurse	147 (10.1)		
Neighbour	120 (8.3)		
Traditional healer	106 (7.3)		
Medicines usually kept at home (n = 1,620)			
Paracetamol	556 (34.3)		
Hematinics + vitamins	548 (33.8)		
Local herbs	190 (11.7)		
Piroxicam	91 (5.6)		
Cough medicines	88 (5.4)		
Dipyron	44 (2.7)		
Ampicilin	31 (1.9)		
Chloramphenicol	26 (1.6)		
Prednisolone	23 (1.4)		
Diazepam	13 (0.8)		
Calcium supplements	13 (0.8)		
Medicines used by PW* during SM* (n = 1,560)			
Paracetamol	485 (31.1)		
Hematinics + vitamins	365 (23.4)		
Promethazine	130 (8.3)		
Piroxicam	120 (7.7)		
Diazepam	119 (7.6)		
Amoxicilin	75 (4.8)		
Dipyron	70 (4.5)		
Chloramphenicol	64 (4.1)		
Ampicilin	55 (3.5)		
Panadol extra (paracetamol + caffeine)	53 (3.4)		
Procolol (paracetamol, pseudoephedrine, chlorpheniramine)	25 (1.6)		

SM* Self medication, PW* pregnant women

proportion of respondents that could not identify the potentially harmful medicines (68%) was significantly higher ($P < 0.001$)

Discussion

The use of self-medication as the first response to perceived ill-health by the majority of pregnant women may be contributing to the late booking and subsequent delay in accessing modern obstetric care. This is a strong possibility

as late booking for obstetrics care is a major factor accounting for poor obstetrics outcomes and high maternal mortality in Nigeria [26–28]. In addition, our finding which showed a strong association between self-medication practices and third trimester of pregnancy may worsen the situation. This has important negative public health implication as possible cases of negative pregnancy outcomes such as teratogenesis or other birth defects that could result from unguided self-medication and would have been prevented may have been missed. There are very scant reports of cases of teratogenesis in Nigeria, but this is

Table 3 Awareness of potentially adverse outcomes and potentially harmful medicines by pregnant women

Item	n (%)	X ² (P value)
Awareness of potential adverse outcomes (n = 1,594)		
Yes	920 (57.7)	0.132
No	674 (42.3)	
Proportion that identified potential adverse outcomes (n = 920)		
Yes	482 (52.4)	0.198
No	438 (47.6)	
Adverse outcomes identified (n = 650)		
Miscarriage/bleeding	288 (44.3)	
Birth defects/deformity	204 (31.4)	
Teeth discolouration	158 (24.3)	
*Medicines identified as potentially harmful (n = 1,064)		
Piroxicam	265 (24.9)	
Tetracycline	198 (18.6)	
Chloroquine	170 (16.0)	
Sulphadoxime/pyrimethamine	102 (9.6)	
Ampicilin/cloxacilin	60 (5.6)	
Oral contraceptives	60 (5.6)	
Dipyron	54 (5.1)	
Cotrimoxazole	42 (3.9)	
Metronidazole	36 (3.4)	
Paracetamol	24 (2.2)	
Chloramphenicol	18 (1.7)	
Ciprofloxacin	18 (1.7)	
Procold	18 (1.7)	

* Medicines are either capsule or tablet

not necessarily due to lack of such cases but attributable possibly to non-reports as cultural beliefs associated with childhood diseases and the stigma associated with birth defects is deep-seated among Nigerians [29].

Our finding with regards to occupational distribution suggests that occupational pattern appeared to be a major determinant of self medication practices among pregnant women. In addition, the disposable income available to majority of cohorts who were either petty traders or artisans may be insufficient to access modern obstetric care. Indeed, low financial capability and high cost of health care services have been identified as predicting self-medication in Nigeria [30, 31]. This is a critical point for possible intervention by government and its development partners, as targeted financial support through initiative such as the provision of financial supports through micro credits to pregnant women who were found to be mainly employed in the informal sector of the economy may boost their disposable income and increase their economic access to modern obstetric care. This initiative which may be labelled as Micro- credit Scheme for Safe Motherhood (MSSM) may contribute to achieving the reduction of

maternal mortality which is a key component of the Millennium Development Goals [32].

The identification of distant location of health facilities by most of the respondents as a key factor encouraging self-medication during pregnancy may be particularly important in rural parts of Nigeria, where a significant majority of Nigerians reside and where functional access roads and motor vehicles are often in short supply [33]. A sizeable proportion of pregnant women may therefore be resulting to self-medication to meet their perceived health needs rather than seek proper medical care at distant health facilities. This is a strong possibility because studies have shown that pregnant women especially in rural areas have to walk an average distance of about 5 km from their residence to the nearest health facility. These may contribute to high maternal mortality as irregular clinic attendance for antenatal care and high rate of home births are well documented factors accounting for high maternal mortality in Nigeria [26, 34].

Our finding showing about a quarter of respondents self-medicating with local herbs is not surprising, as this habit is generally rampant among Nigerians and consistent with report of previous studies [21, 22, 24, 35, 36]. However, the perception that local herbs are more effective, faster acting and safe requires an educational intervention. This belief appears related to the age old cultural ethos underlining the use of herbal remedies in Nigeria and other developing countries [37]. Public drug education is therefore crucial especially because negative outcomes attributable to use of orthodox and herbal medicines of both known and unknown risk status during pregnancy have not been studied in Nigeria. Furthermore, none of the respondents could identify or name the content of the local herbs used during self medication. This is unsurprising as local herbs are often purchased from the local market or ambulant vendors as infusions, decoctions, soaps and creams. Hence, the buyers or end users are often not the ones who prepare the herbal products. Thus, it is difficult to obtain valid information from users about the actual components of these herbal products.

The most frequent source of purchase of medicines used during self-medication by respondents was patent medicine stores. This finding is consistent with that of Afolabi (2008) who reported that 52.2% of a Nigerian adult population obtained their medicines from patent medicine stores during self-medication [38]. Hence, majority of pregnant women do not have the opportunity of accessing counselling services that should have been provided by pharmacists; who are the best positioned to guide self-medication by virtue of their training and knowledge unlike patent medicine dealers or itinerant drug hawker who are often untrained and barely literate [12, 39]. In addition, the quality and accuracy of information provided particularly

on appropriate storage conditions that will prevent deterioration of medicines are in doubt. This is important because of the hot climatic and humid tropical ambience in Nigeria which favours quick and easy deterioration of medicines [40].

The identification of mothers-in-law as the main source of advice by pregnant women during self-medication is unique, as there has been no previous report in literature to the best of our knowledge. This prominent role of mothers-in-law during self-medication in pregnancy appears related to their culturally-entrenched role in the decision-making concerning obstetric care as other studies have reported that decisions relating to booking for antenatal care in Nigeria are often taken by persons other than pregnant women themselves [28, 41].

A significant proportion of respondents kept a range of medicines at home for the purpose of self-medication. The type of medicines kept at home is consistent with the conditions for which medicines were self-prescribed, and with the range of medicines that are usually used for minor ailments encountered in pregnancy [25, 42]. However, the identification of some medicines that are potentially harmful during pregnancy among the medicines kept at home for the purpose of self medication underlines the urgent need for sustained public enlightenment and counselling during antenatal clinics on dangers inherent in unguided self-medication practices [43, 44]. This will ensure that pregnant women and women of child-bearing age are regularly and adequately informed of medicines to avoid before and during pregnancy.

Only about one-third of respondents could identify the potential adverse effects that could arise during self medication with certain medicines in pregnancy. A majority of respondents lacked knowledge of potential adverse effects, and potentially harmful medicines to avoid during pregnancy. These findings clearly shows a knowledge gap, and further underscore the importance of appropriate intervention targeted towards empowering pregnant women in Nigeria with comprehensive information about potential adverse outcomes inherent in indiscriminate and unauthorized use of medicines.

The findings of this study should be interpreted in the light of the consecutive nature of the samples used due to the risk of selection bias. However, the large size of the sample which provides a fairly good representation of the targeted population and the wide inclusion period may have mitigated this risk. Indeed, the demographic characteristics of the pregnant women sampled mirrors those of previous studies that were not focused on self-medication practices. However, future studies may consider the use of a multi-centre approach. Furthermore, social desirability may have compelled favourable response from respondents. However, this appeared to have been mitigated by

the validation of respondents' self-reports of self-medication with containers of medicines used during antenatal clinics and home visitations to respondents who did not comply with this instruction due to forgetfulness.

Conclusion

Poorly guided self-medication with both prescription-only, over-the-counter and herbal medicines appear pervasive and significantly associated with gestational age and occupational pattern among pregnant women in Ibadan, south-western Nigeria. A majority of these women lacked the relevant knowledge of potential adverse outcomes associated with the use of certain medicines, and the potentially harmful medicines to avoid during pregnancy.

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