

USE OF HERBAL MEDICINES IN PREGNANCY IN AMINU KANO TEACHING HOSPITAL – MYTH OR REALITY?

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ABSTRACT

Background: There is increasing reports of use of herbal medicines worldwide. Among the patients who are likely to be at risk from adverse effects of herbal medicines are pregnant and lactating women. A study of the use of herbal medicines in pregnancy is necessary.

Objective: To determine the period incidence, socio-demographic pattern, knowledge, attitude and use of herbal medicines in pregnancy.

Method: A cohort study of 440 women, who attended the antenatal clinic and delivered in Aminu Kano Teaching Hospital, Kano Nigeria, between June and December, 2011.

Results: The period incidence for use of herbal medicines in pregnancy in this study was 25%. There was no significant association between the use of herbal medicines and age or parity groups ($P > 0.05$), but there was significant association with no formal education (OR = 2.97, CI = 1.49 – 5.91, $P = 0.001$), and low socioeconomic class (OR = 1.90, CI = 1.17 – 3.08, $P = 0.008$). Majority of the respondents used herbal medicines in the first (58.2%) and second trimesters (56.4%) trimesters of pregnancy, were not sure of its safety and efficacy, but hope to use it in future pregnancies, because it is their traditional medicine. Their mothers were the commonest source of procurement and information.

Conclusion: The use of herbal medicines among a cohort of pregnant women in Aminu Kano Teaching Hospital is high. Use of herbal medicines in pregnancy should be made prominent in our training curriculum, health talks and history taking during antenatal clinic visits.

Key words: Herbal medicine, pregnant women, socio-demographic pattern, Knowledge, attitude, use.

INTRODUCTION

Herbal medicine is the study and use of medicinal properties of plants¹. The use of plants as medicines predates written human history². Plants have the ability to synthesize a wide variety of chemical compounds, that are used to perform important biological functions, and to defend against attack from predators such as insects, fungi and herbivorous mammals^{2,3}. Many of these phytochemicals have beneficial effects on long-term health

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when consumed by humans, and can be used to effectively treat human diseases²⁻⁶.

Chemical compounds in plants, mediate their effects on the human body, through processes identical to those already well understood for the chemical compounds in conventional drugs, thus herbal medicines do not differ greatly from conventional drugs in terms of how they work⁷⁻⁹. This enables herbal medicines to be as effective as conventional medicines, but also gives them the same potential to cause harmful side effects^{2,3}. Although there are many forms in which herbal medicines can be administered, the most common is in the form of a liquid that is drunk by the patient³.

Many of the pharmaceuticals that are currently available to physicians, have a long history of use as herbal remedies^{3,10}. Alternative medicine is recognized in many countries, and herbal treatments are the most popular form of traditional medicine, and are highly lucrative in the international marketplace¹¹. Annual revenues in Western Europe reached US\$ 5 billion in 2003-2004. In China, sales of products totaled US\$ 14 billion in 2005. Herbal medicine revenue in Brazil was US\$ 160 million in 2007¹¹.

Herbalists criticize the manner in which many scientific studies make insufficient use of historical knowledge, which has been shown to be useful in drug discovery and development in the past and present, like the new antimalarial drugs which were developed from the discovery and isolation of artemisinin from *Artemisia annua* L., a plant used in China for almost 2000 years¹¹. They maintain that this traditional knowledge of ethno-medicinal plants, can be used as phytotherapy to guide the discovery of future drugs to cure conditions like

diabetes, cancers, Human Immunodeficiency Virus infection (HIV), and Autoimmune Deficiency Syndrome (AIDS), and if herbal medicines are allowed to extinct, cure for these conditions, which are likely to originate from ethno-medicinal study of plants, may become extinct before they are ever found^{3,10,11}.

The World Health Organization (WHO) estimates that about 80% of people living in Asia and Africa depend on herbal medicines for primary health care because of accessibility, affordability, availability and acceptability of herbal medicines by majority of the population in developing countries¹²⁻¹⁸. Medical reports have long alerted the world of the risks that are associated with herbal medicines^{1,19-24}. A number of herbs are likely to cause adverse effects due to adulteration, inappropriate formulations, or lack of understanding of plant and drug interactions, the distribution of herbal drugs are not properly regulated, most of the herbal medicines are procured in their crude forms, and are available over the counter²⁵⁻²⁸. Although some pharmaceutical prepackaged forms now exist, but in several parts of the world, herbal products are usually marketed without the benefit of clinical trials to demonstrate either efficacy or safety^{29,30}.

Among the patients who are likely to be at risk from adverse effects of herbal medicines are pregnant and lactating women^{14,15}, but ironically there is a paradoxical increase in the quantity of self administered herbal and over the counter medications, despite increasing campaign by health care providers that they should avoid unnecessary exposures during pregnancy²⁰⁻²³, and many patients do not disclose use of herbal medicines to their health care providers²⁴. Some pregnant women have reported that it was

recommended by health care providers, natural or alternative health care providers, pharmacists, friends or family members, and even in response to information from media sources²⁶⁻³⁰.

Herbal drug use among pregnant women raises particular concerns of safety to mother and fetus. These safety concerns have been attributed to the herbal ingredients and dosage, interactions between a herbal product and other pharmaceuticals, and contamination of products by unlabeled toxins like lead and mercury, with the effect that some may be teratogenic, life threatening or lethal^{12,22}. The poor regulatory framework for importation, manufacturing and distribution of herbal medicines in developing countries like Nigeria, keeps herbal medicine poorly researched, even where they are registered, and the products may not adhere to principles of safety and efficacy that is required for conventional medicines^{22,23}.

In spite of these known concerns, herbal medicines continue to play significant roles in the management of minor and major ailments during pregnancy¹⁸, with a prevalence rate ranging from 7% to 96% for use of herbal medicines in pregnancy, with most of the studies from developed countries²³. Ironically, in Nigeria, data on herbal medicine use in pregnancy is scanty¹⁸, use of herbal medicines are not usually prominent in our training curriculum, health talks and history taking during antenatal clinic visits, with an impression that it is being treated as a myth rather than reality.

It is against this background that this study was designed, to determine the period incidence,

knowledge, attitude and use of herbal medicines in pregnancy, at Aminu Kano Teaching Hospital, Kano, Nigeria, so that recommendations can be made, that will actively influence the management policy, to give the subject of the use of herbal medicines in pregnancy, its place of priority in our obstetric care, and improve fetomaternal outcome.

METHODS

This cohort study was conducted among women who booked for antenatal care and delivered at Aminu Kano Teaching Hospital, Kano, Nigeria, between June 2011 and December 2011, to determine the period incidence, knowledge, attitude and use of herbal medicines during pregnancy.

Following delivery, the women who booked and attended our antenatal clinic regularly, and delivered in our labour ward were counseled, and details of the study were explained to them, and informed consent was obtained before they were recruited for this study (cases). Exclusion criteria were patients who did not meet above recruitment criteria, or did not give consent to participate in the study.

A pre-tested structured questionnaire, which was designed for the study, was administered on the patients by the research team, with the aid of the assistants who had been trained on the study. The questionnaires which took about 15 minutes to complete, were self administered and contained mainly close ended questions. For the purpose of this study, herbal medicines were taken as herbs, herbal materials, herbal preparations, and finished herbal products that contain parts of plants or other plant materials as active ingredients, that were procured from the traditional herbal medicine man, those bought over the counter in shops, local markets and

medicine stores or pharmacies.

The study variables of interest were, the period incidence, the socio-demographic characteristics of the women, the use of herbal medicines and self medication(s) during pregnancy, knowledge of safety of herbal medicines to the fetus, mother or both at different stages of pregnancy, knowledge of and attitude to the use of herbal drugs during pregnancy, and the source of information and procurement of herbal drugs.

SAMPLE SIZE

Sample Size Determination Fakeye et al¹⁸, in a study done in Ilorin Nigeria, found a prevalence rate of 35.0% for use of herbal medicines among the pregnant women in their antenatal clinic. Using the result obtained in the study above, and accepting a study power of 80%, confidence interval of 90%, and an acceptable dropout rate of 10%.

The sample size was then determined using the statistical formula for comparison of proportions as follows:-

$$n = \frac{1}{(1-f)} \times \left\{ \frac{(2 \times (Z\alpha + Z\beta))^2 \times P \times (1-p)}{(P_0 - P_1)^2} \right\}$$

Where n = minimum sample size

P₀ - Prevalence of use of herbal medicine among antenatal women in the study above

$$= 35.0\% \text{ or } 0.35$$

P₁ - The proportion of pregnant women that are expected to exhibit the outcome of interest. This is usually set relative to P₀ and the investigator desires to detect P₁ as being different from P₀. For this study, we would like to reduce the number of women using herbal medicine by 50%.

$$= \frac{50}{100} \times 0.35$$

$$= 0.175$$

Z_α – determined from a statistical table based on the value of the level of significance.

For this study we are setting it at 0.05. Therefore,

$$Z\alpha = 1.96$$

Z_n – determined from a statistical table based on the acceptable power. For this study we are using a power of 80% (0.80) therefore,

$$Z = 0.84$$

f = proportion of study participants who are expected to be lost to follow up.

$$\text{For this study } f = 10\% (0.1)$$

$$P = \frac{P_0 + P_1}{2}$$

$$= 0.263$$

Therefore, the minimum sample size required for it to be statistically significant was:

$$n = \frac{1}{(1-f)} \times \frac{(2 \times (1.96 + 0.84))^2 \times 0.263 \times (1-0.263)}{(1-0.1)(0.35-0.175)^2}$$

$$= 1.1 \times \frac{2 \times 7.84 \times 0.263 \times 0.737}{0.0306}$$

$$= 1.1 \times 123.7$$

$$= 110 \text{ respondents approximately.}$$

The sample size was increased by a factor of 4, to minimize the small error applied over the larger number of women who may not use herbal medicines.

$$= 110 \times 4$$

$$n = 440 \text{ respondents}$$

The data obtained were entered into Microsoft excel data base, and statistical analysis was done using EPI INFO version 6.0 software packages. Chi square test was used to test associations, and level of significance was set at P < 0.05. Odds

ratio (OR) and 95% confidence interval (CI) were also be determined where appropriate.

RESULTS

Questionnaires were administered and completed by 440 pregnant women who were recruited into this study. Among them 110 women used herbal medicines during pregnancy, giving a period incidence of 25% for use of herbal drugs among the cohort of pregnant women in this study. Among the respondents who used herbal medicines, Ginger 92 (83.6%) and Garlic 82 (74.5%) were the most commonly used herbal preparations during pregnancy.

Majority of the patients were in the age range of 19 – 40 years, with a modal age group of and mean age of 31 ± 2.6 years. There was no statistically significant association between the age groups and the use of herbal drugs ($P > 0.05$). Parity range was from 0 – 11, with a modal parity group of 1 – 4, and mean parity of 5.0 ± 2.4 . There was no statistically significant association between the parity groups and the use of herbal drugs ($P > 0.05$). Secondary school education was the commonest educational group among the respondents, but no formal education was the only educational group that showed significant association with the use of herbal medicine in pregnancy (OR = 2.97, CI = 1.49 – 5.91, $P = 0.001$). Low socioeconomic class was also the only socioeconomic group that showed significant association with the use of herbal drugs in pregnancy (OR = 1.90, CI = 1.17 – 3.08, $P = 0.008$). Table 1.

About 40% of those using herbal medicine admitted to have been engaged in self medication during pregnancy. Majority of the respondents used herbal medicines in the first

(58.2%) and second (56.4%) trimesters of pregnancy, while only 7 (6.4%) used it in the third trimesters. Most of the respondents 49 (44.6%) did not know if herbal medicines could be dangerous to mother and/or fetus, 35 (31.8%) were of the opinion that herbal medicine use may be dangerous to both mother and fetus, while 27 (24.6%) the fetus alone, and 13 (11.8%) the mother alone. Majority of the respondents 103 (94.6%) said they use herbal drugs because it is their traditional medicine, while 96 (87.3%) said it is because they have been using it since birth. Majority of them 88 (80.0%), said that they were not sure of its effectiveness, but 64 (58.2%) said that they will use it in the future, while 46 (41.8%) were not sure if they will use it in future. Table 2.

The major source of information among the respondents, who used herbal medicines in pregnancy were their mothers 85 (77.3%), peers 67 (60.9%), radio/television 93 (84.5%), community societies 88 (80.0%) and traditional healers 78 (70.9%). Sources of herbal medicines were from mothers (91.8%) traditional healers 96 (87.3%), hawkers 85 (77.3%), Chemist shops /Pharmacy (over the counter) 68 (61.8%) and family elders 54 (49.1%). Table 3

DISCUSSION

The period incidence of use of herbal medicines in pregnancy of 25% in this study, is similar to 35% from Ilorin in north central Nigeria¹⁸, and 36% from Australia³⁰ and Norway²⁷, which shows a global acceptance to the use of herbal medicines among pregnant women^{11,12}. This has been attributed to its long term use, association with the local culture, and its perception as their own indigenous medicine^{18,27}, which can be appreciated in this study, where majority of the

respondents said that the reason for its use, is because it is their traditional medicine, they have been using it from birth, and still hope to use it in future pregnancies, even though they were not sure of its efficacy. The perception of herbal medicines as their own indigenous medicine, and reluctance to part ways with traditional and local herbal medicines is evident in Nigeria¹⁸ and China³, where the herbalists have been registered and licensed to practice as Alternative Medicine Practitioners, and given the right to sell their drugs as over the counter drugs¹².

In this study, the use of herbal medicine was significantly more among the respondents from the low socioeconomic class, and those without formal education, which agrees with other studies from Nigeria^{12,18}, probably because the poor who cannot afford the more expensive orthodox drugs, are common in these groups, and manufacturers and marketers of herbal medicines in Nigeria, usually offer broad range of therapeutic claims, which constitute powerful temptations for consumers, especially in the low educational and socioeconomic class¹².

However, it does not agree with reports from developed countries like, The United States of America⁸ and Norway²⁷, where formal education and high socioeconomic status were associated with the use of herbal medicines among pregnant women, probably because of the high literacy levels and socioeconomic empowerment of the women²⁴, and herbal medicines are usually marketed after they had undergone clinical trials, and their safety and efficacy had been confirmed in their community²⁴.

Majority of the respondents used herbal medicines in the 1st and 2nd trimester of

pregnancy, which raises concerns about fetal safety, because these are the critical periods of fetal organogenesis and maturation³. This agrees with similar studies from Nigeria^{12,18}, and has been attributed to poor awareness about the safety of use of herbal medicines in pregnancy in Nigeria, where data on herbal medicine use in pregnancy is scanty, and advertisements on use of herbal medicines are not regulated¹⁸. This may be appreciated in this study, where majority of the respondents who used herbal medicines in pregnancy, did not know if it may have adverse effects on the mother and/or the fetus, and 40% of the women who used herbal medicines in pregnancy also engaged in self medications.

The influence of the mothers, peers, radio and television advertisements, community societies and traditional healers, were found to have significant influence that encouraged the use herbal medicines in pregnancy in this study, which agrees with the findings of other studies from Nigeria^{12,18}, and has been attributed to high prevalence of low literacy levels and socioeconomic status, uncensored radio/television adverts, as well as undue adherence to culture and tradition in the communities^{12,18}. This calls for female formal education and improvement in socioeconomic status, as well as community mobilization and education, which should include the husbands, community and religious leaders, on the risks to the mother and fetus, of indiscriminate use of herbal medicines in pregnancy without medical prescription, in order to ensure proper orientation of the parents, peers and community leaders, and regulate radio and television adverts, as well as community society's health talks, on the use of herbal medicines in pregnancy.

Majority of the respondents claimed that their

source of herbal medicines were from their mothers, traditional healers, hawkers, Chemist shops/Pharmacies (over the counter, OTC), and family elders, which agree with the findings of other studies from Nigeria^{12,18}, and has been attributed to ineffective regulations that control advertisements, and the manufacturing and marketing of herbal medicines by hawkers and unauthorized people in Nigeria^{12,18}. This may encourage indiscriminate use of herbal medicines in pregnancy, because of the ease with which the women may avail themselves of the drugs, and incorrect information that are transmitted to the community in the adverts¹².

The Federal Government in Nigeria, should further empower regulatory agencies like National Agency for Food Drug Administration and Control (NAFDAC), to ensure enforcement of the regulations that control the manufacturing, advertisement and marketing of herbal medicines, because when used in pregnancy without medical prescriptions, they may have adverse effects on the growing fetus, like prenatal exposure to Ginger, which was one of the commonest herbal preparations that was used in pregnancy in this study, is associated with increased uterine activity and fetal loss, and is a thromboxane synthetase inhibitor, which may potentiate the effects of anticoagulants³¹.

Majority of the respondents claimed that they were not sure of the safety of herbal medicine in pregnancy, but will like to use it in future pregnancies, because herbal medicine is their traditional medicine, and they have been using it since childhood. To educate the populace and achieve the required regulation and control, NAFDAC may be required to go beyond community policing, and include community mobilization and education about risks and

safety of herbal medicines in pregnancy, in order to influence the public opinion, and create awareness about the risks involved in indiscriminate use of herbal medicines in pregnancy, especially those that have not undergone proper clinical trials to demonstrate their dosage, efficacy and safety. Community education may be in the form of community and antenatal clinic health talks, Radio/Television adverts, jingles, hand bills, posters and inclusion in schools' curriculum.

However, because of the biases inevitable in this hospital-based series and the small sample size, larger multicentre studies will be required to confirm these findings.

CONCLUSION AND RECOMENDATIONS

The high period incidence of use of herbal medicines in pregnancy in Aminu Kano Teaching Hospital, showed that the use of herbal medicines in pregnancy is a reality and not a myth, which has attained a proportion of importance, that has transformed it into a real threat to obstetric practice if not regulated, and has become a relevant subject in antenatal care programs, which merits its inclusion and/or prominence in the Medical Students / Postgraduate training curricula, the health talks in the antenatal clinics, and history taking at every antenatal clinic visit.

Female formal education and socio-economic empowerment, that will ensure that the women are enlightened and economically empowered to discriminate about the use of drugs in pregnancy, and community mobilization and education, to control advertisements and optimize the knowledge of the populace, about the risks and benefits of herbal medicines to the fetus and mother in pregnancy, as well as empowerment of

regulatory agencies like the National Agency for Food Drug Administration and Control (NAFDAC) in Nigeria, will be needed to control the indiscriminate use of herbal medicines in pregnancy.

Table 1: Socio-Demographic Distribution Of All Patients In The Study

Variables	Use of Herbal Medicine (S)		OR	CI	P-value
	Yes n= 110 (%)	No n=330 (%)			
Age					
≤20	10 (9.1)	34 (10.3)	0.87	0.39 – 1.91	0.854
21 – 30	67 (60.9)	208 (63.0)	0.91	0.57 – 1.46	0.776
31 – 40	37 (33.6)	88 (26.7)	1.39	0.85 – 2.28	0.200
Parity					
0	30 (27.3)	84 (25.5)	1.10	0.65 – 1.84	0.802
1–4	45 (40.9)	132 (40.0)	1.04	0.65 – 1.65	1.000
= 5	39 (35.5)	88 (26.7)	1.51	0.93 – 2.45	0.101
Educational Status					
No Formal Education	20 (18.2)	23 (7.0)	2.97	1.49 – 5.91	0.001*
Primary/Secondary	50(45.5)	143 (43.3)	1.09	0.69 – 1.72	0.782
Tertiary education	32 (29.0)	104 (31.5)	0.89	0.54 – 1.47	0.721
Postgraduate education	12 (10.9)	64 (19.4)	0.56	0.27 – 1.13	0.113
Socioeconomic Status					
Lower	45 (40.9)	98 (29.7)	1.90	1.17 – 3.08	0.008*
Middle	52 (47.3)	132 (40.0)	1.59	0.99 – 2.55	0.054
Upper	14 (12.7)	101 (20.2)	0.36	0.19 – 0.70	0.001

*Statistically significant for use of herbal drugs

Table 2: Knowledge, Attitude And Practice Of Pregnant Women Using Herbal Medicines.

Variables	Frequency (%) n = 110
Gestational age when Herbal Medicine(s) was/were used	
1 st Trimester	64 (58.2)
2 nd Trimester	62 (56.4)
3 rd Trimester	7 (6.4)
Herbal Medicine Use is Dangerous to	
Fetus	27 (24.6)
Mother	13 (11.8)
Both Mother and Fetus	35 (33.6)
I Don't Know	49 (31.8)
Why are you using it?	
It is our traditional medicine	103 (93.6)
I have been using it from birth	96 (87.3)
Is it effective?	
Yes	23 (20.9)
I am not sure	88 (80.0)
Will you use herbal medicine in future pregnancies?	
Yes	64 (58.2)
No	--
I do not know	46 (41.8)

*Some of the respondents had multiple responses

Table 3 : Source Of Information About Herbal Drugs Among Pregnant Women Using Herbal Medicines.

Variables	Frequency (%) n=110
How did you know about Herbal Medicine ?	
Family members	
Father	34 (30.9)
Mother	85 (77.3)
Siblings	24 (21.8)
Other relatives	6 (5.5)
Peers	67 (60.9)
Radio/Television advertisements	93 (84.5)
Community society	88 (80.0)
Health workers	6 (5.5)
Religious homes	
Pastors	-
Islamic teachers (Mallams)	-
Traditional healers	38 (34.6)
Sources of herbal medicines	
Mother	101 (91.8)
Traditional healers Mother	96 (87.3)
Hawkers	85 (77.3)
Chemist shops /Pharmacy (over the counter)	68 (61.8)
Family elders	54 (49.1)

*Some of the respondents had multiple responses

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