

Use of traditional medicines in treatment of malaria among pregnant women in two urban slums in Enugu State, Nigeria

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ABSTRACT: Malaria in pregnancy can lead to malaria-related anaemia, a condition that when left untreated, can result in death, especially among vulnerable populations such as pregnant women. Malaria can lead to severe anaemia and maternal and foetal death. This study aimed at exploring the perception and use of traditional medicine in the treatment of malaria among pregnant women in Ngenevu and Udi siding communities. A descriptive cross-sectional survey method was adopted for the study. Study population was 93 pregnant women purposively selected from two urban slums of Ngenevu and Udi siding, Enugu state. Structured questionnaire with reliability coefficient of 0.75 was used for data collection. Health Research Ethics Committee of University of Nigeria Teaching Hospital Enugu approved the study. Data collection was on the spot and was analysed with SPSS/IBM version 23. Inferential statistics was used to test the significance of income and educational level in determining the use of traditional medicine among pregnant women at $p < 0.05$ level of significance. Majority (93.5%) of pregnant women in Udi siding and Ngenevu used traditional medicine to treat malaria. More than half (87.1%) perceived traditional medicine used in treating malaria as effective. Of the 32 women who reported to have experienced side effects, 81.3% had nausea and vomiting of which 57.7% and 42.3% are from Udi Siding and Ngenevu respectively. There was a significant relationship between income and level of education and use of traditional medicine in treatment of malaria in pregnancy ($p < 0.05$). Pregnant women in the two urban slums utilized traditional medicine in treating malaria. Efforts should be intensified to discourage and reduce to the barest minimum the use of traditional medicines in treating malaria in pregnancy. This will help in stemming the tide of maternal and child mortality and morbidity in these urban slums.

Keywords: Enugu State, pregnant women, traditional medicines, treatment of malaria, urban slums.

INTRODUCTION

According to the World Health Organization (WHO) (2019), malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. The World Malaria Report 2018 showed that fifteen countries in sub-Saharan Africa and India carried almost 80% of the global malaria burden with five countries accounting for nearly half of all malaria cases worldwide: Nigeria (25%), Democratic Republic of the Congo (11%), Mozambique (5%), India (4%) and Uganda (4%). Of these, Nigeria,

Madagascar and the Democratic Republic of the Congo had the highest estimated increases, all greater than half a million cases (WHO, 2018). A close look at these statistics places Nigeria as the country with the highest malaria burden globally. The female anopheles mosquitoes (which abound in the region) are carriers of the plasmodium parasite and they spread the infection by injecting the plasmodium into the bloodstream of the individual. This parasite can live up to 30 days in the body but are not spread from person to person except in

pregnancy (Nwanze, 2017). Malaria kills more than 400,000 people annually in the tropics than any other infectious diseases (Erhun et al., 2014). Although the incidence rate of malaria declined globally between 2010 and 2017, from 72 to 59 cases per 1000 population at risk, Nigeria was listed among the 10 highest burden countries in Africa with reported increases in cases of malaria in 2017 compared with 2016 (WHO World Malaria Report, 2018). With respect to deaths caused by malaria, in 2015, 90% of malaria cases and 92% of malaria deaths occurred in Africa (WHO, 2016). In the 2018 World Malaria Report, Nigeria accounted for 19% of the global death burden of malaria (WHO, 2018).

Malaria is prevalent in rural areas due to favorable environmental conditions for parasite transmission as presence of bushes, stagnant water and use of open containers to preserve water for home use especially during the raining season; however, there is significant risk of infection in urban areas (De Silva and Marshal, 2012). Uncontrolled urbanization leads to an increased number of slums simulating a rural environment and results in increased malaria transmission in some third world urban areas especially in Nigeria. The presence of swamps, gutters and thick vegetation in such environment enhances the breeding of vectors. The problem of rural-urban migration, presence of poverty in the population, environmental degradation and challenges of providing decent housing, portable water, sanitation and transportation are common in many Nigerian cities and they cumulatively encourage risks of malaria infection.

WHO (2017), affirmed that "in Africa, 30 million women living in malaria-endemic areas become pregnant each year". For these women, malaria is a threat both to themselves and to the foetus as it can result to malaria related anaemia. Maternal and foetal death can arise as a consequence of this anaemia. According to Takem and D'Alessandro (2013), the main effects of malaria in pregnancy include maternal anaemia, low birth weight (LBW), preterm delivery and increased infant and maternal mortality. Malaria during pregnancy compounds or provokes anaemia, which, when severe, increases the risk of maternal death, low birth weight, pre-term delivery and congenital infection (Fakeye et al., 2009). Malaria in pregnancy is therefore one of the most important health issues affecting pregnant women.

Traditional herbal medicine are herbs, herbal materials, herbal preparations and finished herbal products whose contents include active ingredients of parts of plants, or other plant materials, or combinations. They can be in the form of liquids, powder, capsules, tablets or ointments. Some are pre-packaged while others are prepared when needed and are used not only to cure illness but to maintain or boost one's health (WHO, 2013). In Africa, reliance on herbal medicines is relatively high, and the global use of herbal medicine is growing. There is a general belief that that these medicines are 'natural' and 'safe' and accessible compared to modern drugs. Besides,

traditional medicine among some individuals is believed to treat medical problems and improve health status during pregnancy, birth and post-partum care in some locations (Khadivzadeh and Ghabel, 2012).

Negard et al. (2015) in their study on Attitudes and use of medicinal plants during pregnancy among women at health care centers in three regions of Mali, West-Africa concluded that there was an extensive use and knowledge of medicinal plants during pregnancy in three regions in Mali. Exclusive use of medicinal plants as treatment of malaria and urinary tract infections during pregnancy they opined may pose a health risk for the mother and her unborn child. They therefore recommended a wider collaboration among Traditional Practitioners, local communities and conventional health workers of the health care centres, on the safe use of medicinal plants, as it is an important strategy to promote safer pregnancies and better health care for pregnant women and their unborn infants in Mali. In addition, several factors such as, socio-economic status of the women, poverty issues, cultural perception, age, sex, income level, religion and belief of certain diseases' entity and their perceived responses to indigenous medications have been widely reported as indicators that influences their use of traditional medicine in the treatment of malaria.

Erhun et al. (2014) opined that many pregnant women involved in such practice acquire the knowledge from relatives, neighbours, friends, traditional medicine dealers and sometimes media. Hence, herbal traditional medication for curing malaria has become a norm and is widely practiced and patronized by pregnant women, owing to general ease of access, social and cultural influences, perceived efficacy and beliefs about its safety (Langloid-Klassen et al., 2007).

Traditional medicine use among pregnant women raises particular concerns about its safety. Exposure of pregnant women to chemicals such as herbs and supplements during pregnancy period could affect their fetuses (Bercaw et al., 2010) and this could contribute to maternal morbidity and mortality. Despite these known concerns by health professionals, many pregnant women using traditional medicine in treating malaria do not disclose use of herbal medicines to their health care providers, although some herbal medicine use by pregnant women have been reported to have been recommended by health care providers (Duru et al., 2016). In an urban slum such as Ngenevu and Udi Siding, the environmental condition favours the breeding of mosquitoes. In addition, there may be the problems of accessibility, affordability and acceptability of orthodox medical services including antenatal services. This study therefore aimed at exploring the perceptions on the use of traditional medicine in the treatment of malaria among pregnant women in Udi siding and Ngenevu communities in Enugu State. The specific objectives were to determine the use of traditional medicine in treatment of malaria; the perceived effectiveness for use of traditional medicine in treatment of

malaria; occurrence of side effects in using traditional medicine in treatment of malaria and to ascertain the perceived reason for the use of traditional medicine in treatment of malaria. It also explored the relationship between income and education and the use of traditional medicine in the treatment of malaria in pregnancy.

MATERIALS AND METHODS

Study area

The areas of study comprised two urban slums; Ngenevu and Udi siding communities both located in Enugu North Local Government Area of Enugu State, Nigeria. Ngenevu and Udi Siding are urban slums with environmental conditions that favour the breeding of mosquitoes. The area is located on latitude 6°28'N and longitude of 7°31'E with annual rainfall of 1730 mm, relative humidity of 83% and average annual temperature of 26.30°C. In addition, there may be problems of accessibility, affordability and acceptability of orthodox medical services including antenatal services

Study design

The study adopted a descriptive design. Data were collected by the use of structured questionnaire developed by the researchers. The questionnaire yielded a Cronbach's alpha coefficient of 0.814 after testing suggesting good internal consistency and reliability of the instrument.

Sample size

The population of the study comprised of all pregnant women in Ngenevu and Udi siding communities giving a total of 93 women. This number was arrived at using the snowball method and data obtained from traditional birth attendants operating in the two communities. All were involved in the study.

Ethical approval

Ethical clearance was obtained from the Health and Research Ethics Committee of University of Nigeria Teaching Hospital, Ituku Ozalla. Consent was obtained from the respondents and assurance was also given to them that the information obtained from this study were purely for research purpose and confidentiality will be maintained strictly at all times.

Data collection

Prior to data collection, initial visits were made to each of

the communities by the researchers for the purpose of introduction and establishment of rapport between the researcher and the leaders of the communities. Data collection was on the spot and lasted for a period of one month.

Statistical analysis

The data collected was sorted out and analysed with the aid of a statistical analytical software IBM SPSS version 23. Descriptive statistics of percentages and means was used while Chi-square inferential statistics at $p < 0.05$ level of significance was used to analyse the hypothesis.

RESULTS

Table 1 shows the sociodemographic characteristics of the respondents. Majority of the respondents were within the ages of 26 to 30 years (representing 42.7%), with a mean age of 28 years (± 8). It also revealed that 80.6% of respondents were married. All the respondents were Christians. With respect to educational qualification, 45.2% were educated to tertiary level while 14% of the respondents had no formal education. Majority of the respondents (representing 60.2%) were traders while 39.8% of the respondents have an average monthly income of more than N20, 000.00.

The results on Table 2 shows that 93.5% used traditional medicine to treat malaria. Also 40.2% used it every month. Concerning where they obtained the herbs for use from, 66.7% stated that they made the herbal medicine by themselves after obtaining the raw materials either from their neighbourhood or buying from the market; *Azadirachta indica* leaf (Dogonyaro leaf) is the type of traditional medicine mostly used as reported by 52.5%, while 3.8% of the respondents used garlic.

The results on Table 3 show that 80.6% perceive traditional medicines used in treating malaria in pregnancy to be effective. In rating the effectiveness of the traditional medicines in the treatment of malaria in pregnancy, 76% rated it as "Good". Among the 18 respondents who see traditional medicines as not effective, 66.7% rated their level of dissatisfaction as "bad". Similarly, 61.3% of the respondents supported their answer with the fact that they think that they were treated of malaria while 19.4% stated that they were relieved of the symptoms. Twelve respondents (representing 12.9%) supported their answers with the fact that there was no improvement while 6 respondents (representing 6.5%) stated that the condition worsened after taking the traditional medicine.

Table 4, shows the perceived occurrence of side effects from the use of traditional medicine in treatment of malaria among the pregnant women. Majority of the respondents (representing 65.6%) disagreed to have ever had side effects after using herbal medicine. Of the 32 who affirmed to have experienced side effects (representing 100%); the

Table 1. Demographic characteristics of the respondents (n = 93).

Variables	Options	Frequency	Percentage
Age	20 – 25 years	19	20.4
	26 – 30 years	49	42.7
	31 – 35 years	19	20.4
	Above 35 years	6	6.5
Mean (\pm SD) age	28 years (\pm 8)		
Marital status	Single	12	12.9
	Married	75	80.6
	Separated	6	6.5
	Divorced	0	0
	Cohabiting	0	0
Religion	Christianity	93	100.0
	Islam	0	0
	African Traditional Religion	0	0
	Others	0	0
Educational level	Primary	13	14.0
	Secondary	25	26.9
	Tertiary	42	45.2
	No formal education	13	14.0
Occupation	Civil servant	12	12.9
	Business woman	6	6.5
	Trader	56	60.2
	Artisan	6	6.5
	Unemployed	13	14.0
Average monthly income	Less than N5,000	25	26.9
	N5000 – N10,000	25	26.9
	N11,000 – N20,000	6	6.5
	More than N20,000	37	39.8

nature of side effects experienced after using herbal medicine were skin rashes.

In addition, 66.7% stated that the use of traditional medicine in treatment of malaria in pregnancy can affect unborn baby, 62 respondents stated that nature of side effects they think that will occur in the unborn baby as a result of the use of traditional medicine is difficulty in breathing in babies when delivered; while 6.5% stated that it can result to death of babies.

The result of the chi square as shown in Table 5 suggests that there is a significant relationship between income and perception and use of traditional medicine in treatment of malaria in pregnancy with a $X^2=17.4$ at $p < 0.05$ significance level. The null hypothesis is therefore rejected. Furthermore, it also suggests that there is a significant relationship between level of education and

perception and use of traditional medicine in treatment of malaria in pregnancy ($p < 0.05$) significance. The null hypothesis is therefore rejected.

DISCUSSION

Use of traditional medicine in treatment of malaria among pregnant women in Udi Siding and Ngenevu

The majority (93.5%) of the pregnant women in Udi siding and Ngenevu used traditional medicine to treat malaria. It also revealed that majority of them used traditional medicine to treat malaria every month (40.2%). They obtained the herbal medicine mainly by self-preparation. Explanations for this finding can be attributed to two

Table 2. Use of traditional medicine in treatment of malaria among pregnant women (n = 93).

Variables	Options	Frequency	Percentage%
Do you use traditional medicine to treat malaria?	Yes	87	93.5
	No	6	6.5
If yes, how often do you use traditional medicine?	Every month	35	40.2
	Every 3 months	6	6.9
	Every 6 months	18	20.7
	1 year	28	32.2
Where do you obtain the herbal medicine you use?	Herbalist	6	6.9
	Self-made	62	71.3
	Traditional-birth attendants	31	35.6
	Parents	43	49.4
	Friends	13	14.9
	Local healer	13	14.9
	Herbal vendors	20	22.9
What are the types of traditional medicine you use	Bitter leaf	8	9.2
	Bitter kola	19	21.8
	Palm kernel oil	8	9.2
	Dogoyaro	42	48.3
	Garlic	3	3.5
	Utazi	24	27.5
	Ginger	13	14.9
	Aloe vera	6	6.9
	Lime juice	6	6.9
	Moringa	13	14.9
	Agbo	32	36.8
	Paw-paw leaf	24	27.6
Honey	12	13.7	
Others	6	6.9	

reasons. Firstly, the nature of the urban slum is one that encourages the breeding of mosquitoes and consequently a higher incidence of malaria. Secondly considering the social class resident in these urban slums, traditional medicines may be more affordable and accessible to the population. This finding agrees with that of Fakeye et al. (2009) in whose study there was wide spread use of herbal medicines by pregnant women in Nigeria; in the said study, 67.5% had used herbal medicine either in the raw form or as pharmaceutical prepackaged dosage forms, with 74.3% preferring self-prepared formulations. The attraction to the self-prepared formulations may be as a result of the cost implications of purchasing the prepackaged products. The study also revealed that the types of traditional medicine commonly used by the pregnant women include *Azadirachta indica* leaf (Dogonyaro leaf) (52.5%), agbo (34.4%), paw-paw leaf (25.8%), *Gongronemma latifolium* leaf (Utazi leaf) (25.8%) and bitter kola (23.8%). The prevalence of use of these substances may be because they are readily available in the community. Secondly,

significant others such as mothers, mother-in-laws and grandmothers; as well as traditional birth attendants and even vendors may have referred to these substances as possessive of healing attributes for malaria and other ailments. This finding concurs with the study of Duru et al. (2016) where pregnant women used ginger, garlic, bitter leaf, palm kernel oil, bitter kola, dogoyaro among others in the treatment of malaria in pregnancy.

Effectiveness for use of traditional medicine

The findings of the study revealed that majority of the pregnant women think traditional medicines used in treating malaria were effective and more than half of the respondents rated the effectiveness level as "good". Majority (61.3%) also believed that they were treated of malaria using traditional medicines. The belief that they were treated of the malaria is one of the reasons that may fuel the continued use of traditional medicine in treatment

Table 3. Perceived effectiveness for use of traditional medicine in treatment of malaria among the pregnant women (n = 93).

Variables	Options	Frequency	Percentage
How effective is the use of TM in treatment of malaria in pregnancy?	Effective	75	80.6
	Not effective	18	19.4
If effective, rate your level of satisfaction	Fair	12	16.0
	Good	57	76.0
	Very good	6	6.5
If not effective, rate your level of dissatisfaction	Bad	12	66.7
	Very bad	6	33.3
Support your answers in 14 & 15	I was treated of the malaria	57	61.3
	I was relieved of the symptoms	18	19.4
	There was no improvement	12	12.9
	The condition worsened after taking the traditional medicine	6	6.5

Table 4. Perceived occurrence of side effects from the use of traditional medicine in treatment of malaria among the pregnant women (n = 93).

Variables	Options	Frequency	Percentage
Have you ever had side effects after using herbal medicine?	Yes	32	34.4
	No	61	65.6
If yes, what is the nature of side effects experienced after using herbal medicine?	Vomiting	26	81.3
	Skin rashes	32	100.0
	Abdominal pains	13	40.6
	Nausea	26	81.3
	Dizziness	6	18.8
	Watery stool	7	21.9
	Miscarriage	7	21.9
Do you think that the use of traditional medicine in treatment of malaria in pregnancy can affect the unborn baby?	Yes	62	66.7
	No	31	33.3
If yes, what side effect do you think will occur in the unborn baby as a result of the use of traditional medicine?	Miscarriage	13	21.0
	It can cause difficulty in breathing in babies when delivered	62	100.0
	It can result to delivering of small babies	12	19.9
	It can result to death of babies	6	6.5

of malaria in pregnancy. This finding also agrees with that of Fakeye et al. (2009) who stated that almost 30% of pregnant women using herbal medicine believed that the use of herbal medicine is safe and have better efficacy

than conventional medicine. In Fakeye et al. (2009), pregnant women may also use traditional medicine because they have not benefited from previous treatment using orthodox medicine and apprehensions concerning

Table 5. Chi-square result of hypothesis 1 and 2.

Variable	Use of TM (YES)	Use of TM (No)	Test statistics
Income			
Less than N5000	19	6	$\chi^2=17.4$
N5000 – N10,000	25	0	df = 3
N11,000 – N20,000	6	0	p=0.05
More than N20,000	37	0	
Level of education			
Primary	13	0	$\chi^2=7.78$
Secondary	25	0	df = 3
Tertiary	36	6	p=0.05
No formal education	13	0	

the toxicity and safety of modern drugs.

Occurrence of side effects

As much as 65.6% of the pregnant women claimed not to have had any side effects after using herbal medicine but of the remaining who agreed to have experienced side effects, vomiting is reported to have been experienced by all the respondents. Vomiting is one of the side effects associated with drugs even orthodox medicines.

According to Osuchukwu et al. (2017), side effects are linked to toxic or carcinogenic constituents present in traditional medicines used in treatment of malaria in pregnancy and include conditions such as acute renal failure, nausea, vomiting, skin rashes and abdominal pains. The study further revealed that 66.7% of the pregnant women were of the opinion that the use of the traditional medicine in the treatment of malaria in pregnancy can affect unborn babies. One hundred percent (100%) of the pregnant women stated that it can cause difficulty in breathing in babies when delivered. It is surprising that women will still continue to utilize these traditional medicines if they believe them to be harmful to the baby. This finding agrees with the study of Mabina et al. (2011) that herbal medicine used in pregnancy may lead to fetal distress, as indicated by high frequency of meconium – stained liquor during child delivery.

Income and level of education

Income and level of education were found to be significant determinants of the use of traditional medicine in treating malaria in pregnancy. This implies that cost and ability of women to pay for medicine influences the choice of using traditional medicines in treating malaria in pregnancy. Traditional medicines are generally cheaper than orthodox medicines especially the artemisinin based combination therapies used by orthodox health practitioners as either prophylaxis or treatment for malaria in pregnancy. Women who are more educated use less of traditional medicines

in treating malaria in pregnancy. Educational exposures may have exposed them to the dangers inherent in using traditional medicines generally and while pregnant in particular. Another dimension is that education may also provide opportunities that provide economic power influencing a person's income. In the words of King and Winthrop (2015), "more educated girls, for example, marry later, have healthier children, earn more money that they invest back into their families and communities, and play more active roles in leading their communities and countries".

Conclusion

It can be concluded that majority of the pregnant women in Udi siding and Ngenevu use traditional medicine to treat malaria and majority affirmed that traditional medicines used in treating malaria was effective. Also, the perceived reasons for the use of traditional medicine include traditional medicine being more accessible than orthodox medicine, less expensive than orthodox medicine, the belief that traditional medicine will treat the malaria. Therefore, policies and intervention strategies by policymakers should be aimed at addressing the issues of use of traditional medicine in pregnancy by organizing enlightenment programmes that will enhance the attitudes of pregnant women to frequent health centres and clinics for appropriate treatment during antenatal and treatment of any ailment during pregnancy.

Recommendation

The findings from this study highlights an urgent need for nurses and other health care givers to be aware of this practice and make efforts in obtaining information about herb use during ante natal. There is need to create awareness on the possible side effects occurring from use of traditional medicine in pregnancy. Intervention strategies should be aimed at addressing the issues of use of traditional medicine in pregnancy by organizing enlighten-

ment programmes that will enhance the attitudes of pregnant women to frequent health centers and clinics for appropriate treatment to be given to them during antenatal and treatment of any ailment during pregnancy. Adequate care should be provided and given to pregnant women when treating the pregnant women of malaria during antenatal. Orthodox medicine for prevention and treatment malaria should be made available, affordable if possible free and accessible to pregnant women in communities.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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