

# Utilization Of Malaria Prophylaxes Amongst Nigerian Urban Antenatal Population

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Vaduneme Kingsley Oriji, Terhemem Kasso

*Department of Obstetrics and Gynaecology, College of Health Sciences, University of Port Harcourt, Port Harcourt, Nigeria*

## ABSTRACT

### BACKGROUND

*The recommendation of the World Health Organization (WHO) towards preventing malaria and its effects in pregnancy is the utilization of a combination of interventions such as sleeping under insecticide treated nets (ITNs), Intermittent Preventive Treatment in pregnancy (IPTp), insecticide room spraying (IRS) and effective case management and treatment. All these strategies have been adopted in Nigeria through a national policy on malaria treatment and prophylaxis. Despite these interventions, the high prevalence of malaria in pregnancy continues to rise in Nigeria, with the attendant cost in human lives and economic loss<sup>1,2</sup>. There is therefore need to determine the level of public awareness and utilization of these preventive measures. The objective of this study was to determine the knowledge and the use of known interventions towards preventing malaria in pregnancy prior to registration for antenatal care.*

### METHODS

*Four hundred women were recruited by simple random sampling for this study. They were interviewed using a semi-structured questionnaire to obtain information on their socio-demographic characteristics, their pregnancy, knowledge on malaria and its prophylaxis in pregnancy.*

### RESULTS

*Many (51.6%) of the respondents registered for antenatal care after 20 weeks of gestation. Though majority (79.3%) rightly associated malaria with mosquito bite, only a few (15.75%) of the respondents had ever used insecticide treated nets to prevent mosquito bites in their lifetime and only 1% used it the night before joining this study. About 27.5% of them were already on self-administered malaria chemoprophylaxis before registration.*

### CONCLUSION

*Over one half of these women register late for antenatal care. The attitude of the pregnant women towards malaria prevention prior to registration for antenatal care is poor even though they have adequate knowledge of the cause of malaria and its prevention.*

### KEYWORDS

*Malaria Prophylaxis; Insecticide Treated Bed Nets; Antenatal Population; Sulphadoxine-Pyrimethamine.*

*Correspondence: Dr. V. K. Oriji  
e-mail: vadoriji@yahoo.com*

### INTRODUCTION

Malaria in pregnancy is a serious public health problem in Sub-Saharan Africa. It is a major contributor to maternal and perinatal morbidity and mortality and accounts for about 11% of maternal mortality in Nigeria<sup>2</sup>. Each year, it is estimated that malaria kills about 1.1 to 2.7 million people worldwide and

more than 90 percent of these deaths occur in Africa<sup>3</sup>.

Malaria in Pregnancy is an important cause of maternal anaemia, intrauterine growth restriction, intrauterine fetal death, premature delivery, still birth and low birth weight<sup>4</sup>. Approximately 50 million women living in malaria endemic areas become pregnant every year, half of them in sub Saharan Africa and many in areas of intense *plasmodium falciparum* malaria transmission<sup>5</sup> like Nigeria. Pregnant women, children under the age of 5 years, patients with sickle cell anaemia, non immune visitors to endemic areas and immunocompromised persons are more susceptible to malaria infection.

The high prevalence of malaria in pregnancy has persisted despite the several malaria preventive programmes that have been undertaken over the years. The WHO's strategies towards preventing the adverse effects of malaria in areas with high levels of transmission such as Africa include the use of insecticide treated bed nets (ITN's); which when properly used can reduce malaria transmission by at least 60%, and the use of intermittent preventive treatment (IPT) which involves the administration of drug in full treatment dose for women in stable transmission areas<sup>5,7</sup>.

The prevalence of malaria during pregnancy ranges from 10% to 65% in areas with stable malaria transmission<sup>5</sup>. In the same vein high transmission rates ranging from 30% in Benin City and 58.4% in Enugu<sup>89</sup> have also been reported. Similar findings were obtained from Awka, Lagos and Libreville Gabon where the prevalence were 63.5%, 42.2% and 57% respectively<sup>10-12</sup>. In Lagos, the prevalence was higher in the primigravidae than multigravidae, showing that primigravidae are more susceptible to malaria infection than the multigravidae. In Port Harcourt, malaria accounted for 14% of women admitted with medical disorders into the antenatal ward<sup>13</sup>.

Finding the reasons behind the very high prevalence and transmission rate of malaria in pregnancy among Nigerian women despite the adoption of these wide ranging preventive measures is the rationale behind this study.

The aim of the study is to evaluate the use of known interventions in malaria prophylaxis in pregnancy prior to antenatal registration. Specific objectives were to determine the proportion of pregnant women that understand the life cycle of malaria, the proportion of pregnant women using insecticide treated nets prior to registration and the proportion of pregnant women who have received IPT prior to registration.

## METHODOLOGY

This was a cross sectional study carried out among antenatal attendees at the University Of Port Harcourt Teaching Hospital (an urban Tertiary Medical institution) between May and October 2009. Four hundred pregnant women were randomly selected from all those who presented for antenatal registration within the period of study. Consent was obtained from the women and they were subsequently interviewed on the same day of clinic attendance (booking visit) using a semi-structured questionnaire.

The questionnaire was divided into sections, which included socio-demographic characteristics of the patients, parity, gestational age at booking, knowledge of aetiopathogenesis of malaria and the use of malaria prophylaxis in the current pregnancy. The minimum sample size of 384 was determined using the formula for determining sample size<sup>14</sup> and rounded up to 400.

## RESULTS

The mean age of respondents was 30.2 ± 4.6 years (Table I). About 60% of respondents had parity of 1 to 4. (Table II) and 90% of them had at least secondary education.

The mean gestational age at registration was 21.37±7.9 weeks with majority of the respondents (51.6%) registering for antenatal

care after 20 weeks of pregnancy. Over three quarter of the women (79.3%) rightly associated malaria with mosquito bite (Table III). Majority of the women (89%) rated malaria as a serious disease and 64% considered it a very serious disease that could affect pregnancy adversely.

About 109 (27.5%) of these women had commenced malaria chemoprophylaxis as compared to 240 (60%) who were already using haematinics by the time of registration. The practice of malaria prophylaxis among the respondents and the drugs used as chemoprophylaxis prior to registration are demonstrated on table IV and figure 1 respectively.

Only 15.75% of the respondents had ever used insecticide treated nets in their lifetime. However, less than 10% of the respondents sleep under insecticide treated bed nets and only 4 women representing 1% slept under insecticide treated nets the night prior to the antenatal care registration, while the greater majority did not.

**Table 1:** Age Distribution of Respondents

AGE GROUP	FREQUENCY	PERCENTAGE (%)
15-19	5	1.0
20-24	49	12.3
25-29	114	28.6
30-34	151	37.9
35-39	74	18.6
40-44	7	1.5
TOTAL	400	100.0

**Table 2:** Parity Distribution

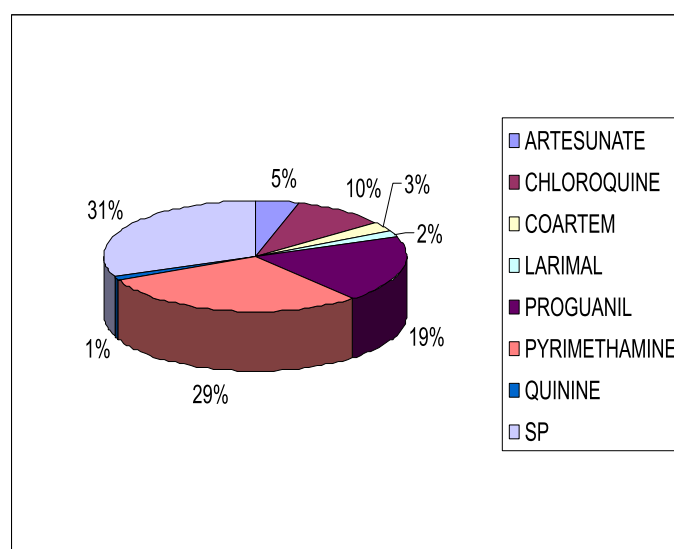
PARITY	FREQUENCY	PERCENTAGE (%)
0	152	38.2
1-4	240	60.3
≥5	8	1.5
TOTAL	400	100.0

**Table 3:** Perceived Causes of Malaria among Antenatal Women at Booking

Aetiology	Frequency	%
Mosquito bite	317	79.3
Stress	19	4.8
Bad water	18	4.5
Dirty environment	12	3
Cold	2	0.5
Poor diet	9	2.3
Groundnut oil	4	1.0
Sun	3	0.8
Excess palm oil	2	0.2
Fried food	2	0.5
Too much work	2	0.5
Witchcraft	1	0.3
Don't know	9	2.3
TOTAL	400	100

**Table 4:** Use of Malaria Prophylaxis by the Respondents

PROPHYLAXIS	FREQUENCY	PERCENTAGE (%)
INSECTICIDES	151	37.5
NOTHING	114	28.5
DRUGS	109	27.5
MOSQUITO NETS	26	6.5
TOTAL	400	100.0



SP- SULPHADOXINE-PYRIMETHAMINE

**Figure 1:** Drugs used as Chemoprophylaxis by Respondents before Booking

## DISCUSSION

Malaria affects pregnancy adversely and it is a major public health problem. There is therefore great need to determine why both prevalence and transmission of malaria is still high despite deploying known interventions aimed at reducing the transmission and prevalence of malaria in pregnancy.

Majority of the women in this study were primigravidae in their third decade of life with secondary and tertiary levels of education. The late antenatal registration observed in this study is similar to what has been reported in other centers in developing countries<sup>11,15,16</sup>. The implication of this finding is that efforts at improving malaria prophylaxis in pregnancy occurring after registration may not be fully beneficial as the adverse effects of malaria in early pregnancy would have already occurred. Many of the respondents associated malaria with mosquito bites and 89% rated it as a serious disease with 64% considering it as a very serious disease that could affect pregnancy adversely. Only 2.3% of the respondents could not associate malaria with mosquito bites. The high knowledge of malaria transmission and possible adverse outcome seen in this study is probably because of the endemic nature of the disease in our environment, which makes its mode of transmission a common knowledge. The proportion of respondents (2.3%) unaware of the mode of transmission of malaria is lower than the findings from Lagos and Ile-Ife where 21.8% and 13.33% of the study population could not associate malaria with mosquito bites<sup>15,17</sup>. The high knowledge of malaria among the respondents could be as a result of the high proportion of literate women in this study. This high knowledge could be exploited in awareness campaigns towards a more effective use of the various prophylaxes against malaria.

In spite of the high knowledge of malaria seen in this study, it did not reflect in the use of malaria prophylaxes as up to 28.5% of the study population did not use any prophylaxis in the first half of pregnancy and prior to

antenatal registration. This finding is similar to the report from Ile-Ife where a greater proportion of the women studied did not use any malaria prophylaxis prior to booking<sup>19</sup>. It is difficult to explain the health seeking behavior of these women were such high level of awareness of the mode of transmission of malaria and effects of malaria in pregnancy is not followed by a wider use of malaria prophylaxes than is reported here. It is possible that some of the respondents perceive some of these prophylaxes as harmful to pregnancy and so avoid utilizing them in pregnancy.

This study showed that just 28% of women who had anti-malarial prior to registration while over 60% of them had commenced haematinics prior to antenatal registration. Similarly low proportion of women had anti-malaria prior to registration in a study done at Ile-Ife<sup>15</sup>. The wide difference between the use of anti-malarial chemoprophylaxis and haematinics among the respondents could be explained by two factors. The increased promotion of haematinics as food supplements in the mass media and the fear of a possibility of fetal loss and safety issues with ingestion of anti-malaria in early pregnancy.

Of the women that used chemoprophylaxis, only 31.1% used sulphadoxine-pyrimethamine (SP), which is the recommended drug for IPT, during pregnancy. It is possible that majority of the other anti-malarial drugs were given for the treatment of malaria rather than for malaria chemoprophylaxis in pregnancy. The use of these known WHO interventions for prevention of malaria in pregnancy would have prevented the malaria attacks, thereby preventing the use of some of the anti-malarial formulations, especially those that may have adverse effects in pregnancy.

Majority of the respondents had never used ITN and almost all the women (99%) did not use ITNs the night before booking. This is surprising considering the campaign on the benefits of ITN use in pregnant women and children in the Niger delta region. A study in

the Niger delta region on use and misuse of mass-distribution of free insecticide-treated nets in a semi-urban community in Rivers state of Nigeria identified that the distribution of free ITNs has resulted in universal household ownership, but the use of these nets is still very poor<sup>18</sup>. Some reasons for poor use of the ITN in that study were the nets were rather hung on the windows instead of over the beds; hot nights restricted the use of the ITN and perceived periods of low mosquito activity also restricted the use of ITNs.

This study therefore shows that a great proportion of the pregnant women in our environment register late for antenatal care. It also demonstrates the poor use of ITNs by the pregnant women and a low uptake of malaria chemoprophylaxis prior to booking. Prenatal clinic and early booking for antenatal care could reverse some of these findings.

Prenatal counseling and antenatal classes could reiterate the benefits of the ITNs and improve compliance to its use early in pregnancy. In the same vein, malaria chemoprophylaxis could be administered timely as when due to pregnant women who registered early for antenatal care.

## CONCLUSION

Many women register late for antenatal care. The attitude of these pregnant women towards malaria prevention prior to registration for antenatal care is poor even though they have adequate knowledge of the cause and prevention of malaria. We recommend greater public health education encouraging women within the reproductive age to consistently use the ITNs. We also recommend prenatal counseling and early antenatal registration to improve the use of ITNs and proper malaria chemoprophylaxis.

## REFERENCES

1. The Roll Back Malaria Partnership Working Group on Malaria in Pregnancy. Federal Ministry of Health, Abuja, Nigeria. Technical Report on National malaria control programme (NCMP). 2006
2. National Population Commission. Federal Republic of Nigeria Abuja, Nigeria. Nigeria demographic and health survey. 2008. 187-196
3. Shulman CE, Dorman EK, Importance and Prevention of Malaria in Pregnancy. Transactions of the Royal Society of Tropical medicine and Hygiene 2003; 97(1): 30-35.
4. Valley A, Valley L, Changalucha J, Greenwood B, Chandramohan D, Intermittent Preventive Treatment of Malaria in Pregnancy in Africa: What's new, what's needed? Malaria Journal 2007, 6(16): 1-13.
5. World Health Organization (WHO). A Strategic Framework for Malaria Prevention and Control during Pregnancy in the African Region. Geneva: World Health Organization 2004; AFR/MAL.
6. Idowu OA, Mafiana CF, Sotiloye D, Traditional Birth Home Attendance and its implications for Malaria Control During Pregnancy in Nigeria. Transactions of the Royal Society of Tropical medicine and Hygiene (2008)102, 679-684.
7. Mc Gregor I.A. Epidemiology, Malaria and Pregnancy. AM J Trop Med Hyg. 1984; 33: 517-25.
8. Enato EF, Okhamefe AO, Okpere EE, Oseji FI. Prevalence of Malaria during Pregnancy and Antimalarial Intervention in an Urban Secondary Health Care Facility in Southern Nigeria. Med. Princ Pract. 2007; 16(3): 240-3.
9. Nwagha UI, Ugwu VO, Nwagha TU, Anyaechie BO, Asymptomatic Plasmodium Parasitaemia in Pregnant Nigerian Women: Almost a Decade after Roll Back Malaria. Transactions of the Royal Society of Tropical Medicine and Hygiene. (2009) 103; 16-20.
10. Chukwura EI, Okpala EE, Ani IQ. The Prevalence of Malaria Parasite in Pregnant Women and other patients in

- Awka, Anambra State. *J Biomed Invest.* 2003;I: 48-52.
11. Anorlu RI, Odum CU, Essien EE. Asymptomatic Malaria Parasitaemia in Pregnant women at Booking in a Primary Health Care Facility in a Peri-urban Community in Lagos, Nigeria. *Afri J Med Sci.* 2001; 30: 39-41.
  12. Bouyou-Akotet MK, Lonete-Collard DE, Mabiaka-Manfoumbi M, Kendjo E, Matsiegui PB, Mavoungou E et al. Prevalence of Plasmodium Falciparum infection in pregnant women in Gabon. *Malara J.* 2003; 2:18
  13. Wokoma FS, John CT, Enyindah CE. The Prevalence and Pattern of non Obstetric Medical Disorders in Nigeria Antenatal Population. *Trop J Obstet Gynaecol,* 1998; 15: 48-57.
  14. Araoye MO. Subjects Selection. In: Araoye MO (ed). *Research Methodology with statistics for Health and Social Sciences.* Nathadex Publishers. 2003; 115-129.
  15. Kuti O, Owolabi AT, Makinde ON. Perception of malaria and utilization of malaria prophylaxis among pregnant Nigerian women at booking. *Trop J Obstet Gynaecol* 2006; 23(2): 125-127.
  16. Van Eijk AM, Ayisi JG, Ter Kuile FD, Slutsker L, Otieno JA, Misore AO et al. Implementation of intermittent preventive treatment with sulphadoxine pyrimethamine for control of malaria in pregnancy in Kisumu, Western Kenya. *Trop Med Int Health* 2004; 9(5): 630-637. [6 authors then et al]
  17. Okwa OO. The status of malaria among pregnant women: a study in Lagos, Nigeria. *Afr J Reprod Health* 2003; 7(3): 77-83.
  18. Ordinioha B. The use and misuse of mass distributed free insecticide-treated bed nets in a semi-urban community in Rivers State, Nigeria. *Ann Afr Med.* 2012 11 (3): 163-8