International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2020; 4(5): 173-177
Received: 28-07-2020
Accepted: 30-08-2020

Charles Njoku
1. Department of Obstetrics & Gynecology, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River, Nigeria
2. Department of Obstetrics and Gynaecology, University of Calabar, Nigeria

Cajethan Emechebe
1. Department of Obstetrics & Gynecology, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River, Nigeria
2. Department of Obstetrics and Gynaecology, University of Calabar, Nigeria

Andrew Okpe
Department of Obstetrics & Gynecology, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River, Nigeria

Amarachukwu Njoku
Department of Obstetrics & Gynecology, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River, Nigeria

Nzeadibe Jessica Tochukwu
Department of Paediatrics, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River, Nigeria

Corresponding Author:
Charles Njoku
1. Department of Obstetrics & Gynecology, University of Calabar Teaching Hospital (UCTH), Calabar, Cross River, Nigeria
2. Department of Obstetrics and Gynaecology, University of Calabar, Nigeria

Impact of antenatal booking on knowledge and practice of malaria prevention among Parturients in South-South, Nigeria

Charles Njoku, Cajethan Emechebe, Andrew Okpe, Amarachukwu Njoku and Nzeadibe Jessica Tochukwu

DOI: https://doi.org/10.33545/gynae.2020.v4.i5c.701

Abstract
Background and objective: Malaria in pregnancy contributes hugely to feto-maternal morbidity and mortality in Nigeria. Risk of suffering from complications of malaria in pregnancy is lower among parturient that practice preventive measures. To determine the knowledge and practice of malaria prevention among pregnant women in rural and urban areas and barriers to utilization of maternal health services among unbooked women in Cross River State.
Material and method: This was a prospective analysis of 440 pregnant women in rural and urban settings on the knowledge, effects and prevention practices.
Result: Total of 56.4% urban respondent had good knowledge of causes of malaria while rural respondents were only 49.5%. Booked pregnant women exhibited significant higher knowledge of causes and effect of malaria in pregnancy than their unbooked counterparts in both urban and rural areas. The practice of use of insecticide treated nets was higher among urban women (62.8%) than the rural women (33.2%).
Conclusion: There is high prevalence of poor knowledge and practice of malaria preventive measures among pregnant women mostly in rural area and unbooked women. Cost of transportation and previous unpleasant hospital experience were the commonest barriers to utilization of maternal health services among unbooked urban and rural respondents.

Keywords: Malaria in pregnancy, malaria prevention, preventive practices, antenatal care

Introduction
Malaria is a key contributor to maternal morbidity and mortality especially in sub-Saharan Africa where the disease is endemic [1, 2]. The risk of occurrence and severity of malaria is increased during pregnancy, with wide variation in the global pattern and associated feto-maternal morbidities [3]. In Nigeria, the prevalence of malaria in pregnancy appears to be increasing [4, 5, 6].
Van Eijk *et al.* reported high prevalence of poor knowledge and practice of malaria prevention measures among pregnant women in sub-Saharan Africa, with about 21.4 million malaria-exposed births in 2010 [7]. Similarly, a study from south eastern Nigeria found that 92% of antenatal attendees have malaria parasitemia and 49.3% were anaemic [5].
Malaria is a killer disease among vulnerable groups, including pregnant women [3]. Its untoward health and socioeconomic effects on mother, child include anemia and fetal growth restriction which leads to low birth weight, increased risk of high infant blood pressure that may continue in adulthood, and adverse effects on childhood neurodevelopment [8, 9].
Unfortunately, malaria vector control especially in sub-Saharan Africa has been quite difficult perhaps due to relative favorability of the humid climatic conditions to breeding and poor prevention practices [10]. Therefore, there is need to study the level of knowledge and practice of malaria prevention practices among pregnant women in Cross River State. It is expected that the study will help to formulate strategies to improve prevention of malaria and reduce the burden of malaria especially among pregnant women in rural areas.

Materials and Method
Study area
This prospective study was carried out over a four-month period, from 1st April 2017 to 31st July

2017, among booked and unbooked parturients in UCTH Calabar (urban study site), and General Hospital, Akamkpa (rural study site), both in southern senatorial district of Cross River state. Calabar, the capital city of Cross River state is a rainforest region with high annual rainfall and humidity.

Inclusion and exclusion criteria

Inclusion criteria consists of booked and unbooked pregnant women admitted to the labor ward in UCTH, Calabar, and labour ward in General hospital, Akamkpa in Cross River State. Pregnant women who are unstable clinically and those who refused to participate in the study were excluded. Ethical approval for the study was obtained from University of Calabar Teaching Hospital Research and Ethics Committee (UCTH/HREC/Chairman vol.1/2015-057) and Ministry of Health Cross River State (CRS/MH/HREC/015/Vol.V/191) before the commencement of the study.

Data collection

Interviewer assisted administration structured questionnaire consisting of four sections were used to obtain data from subjects. The first section obtained information on the socio-demographic and obstetric characteristics of subjects. Of the 440 samples collected in both urban and rural sites, 220 samples of parturient were collected in urban site in UCTH of which 110 participants were booked while 110 were unbooked. Also, a total of 220 samples of parturient were collected in rural site in Akamkpa general hospital of which 110 participants were booked while 110 were unbooked. Participants were selected using systematic random sampling.

Statistical Analysis

Data obtained from subjects was entered and analyzed using SPSS version 26.0 (SPSS Inc. Chicago, USA).

Results and Discussion

The modal age group was 20-29 years, with 241 participants. Most participants were Para 0 and 1, with 142 and 138 respondents, respectively. More respondents in the urban area had tertiary level of education (59.5%) while lower levels of education had more respondents in the rural area. Single women that participated in the study were more in the rural area (63.2%) and all the divorced respondents were from the urban area. Most civil servants (62.0%) and students (75.7%) were from the urban area while majority of the farmers (87.7%) were from the rural area. Most Muslims (76.9%) were urban dwellers while majority traditional religion worshippers (87.5%) were rural dwellers.

Table 1: Socio-demographic characteristics of the respondents

Variables	Frequency		
	Total (%)	Urban (%)	Rural (%)
Age (years)			
15-19	29	23 (79.3)	6 (20.7)
20-29	241	108 (44.8)	133 (55.2)
30-39	151	76 (50.3)	75 (49.7)
40-49	19	13 (68.4)	6 (31.6)
Parity			
0	138	69 (50.0)	69 (50.0)
1	142	71 (50.0)	71 (50.0)
2	98	49 (50.0)	49 (50.0)
3	48	24 (50.0)	24 (50.0)
≥4	14	7 (50.0)	7 (50.0)
Educational status			
No formal education	44	18 (40.9)	26 (59.1)
Primary	94	44 (46.8)	50 (53.2)
Secondary	181	86 (47.5)	95 (52.5)
Tertiary	121	72 (59.5)	49 (40.5)
Marital status			
Married	349	184 (52.7)	165 (47.3)
Single	87	32 (36.8)	55 (63.2)
Divorced	4	4 (100.0)	0 (0.0)
Occupation			
Civil servant	100	62 (62.0)	38 (38.0)
Trader	107	56 (52.3)	51 (47.7)
Artisans	21	8 (38.1)	13 (61.9)
Student	37	28 (75.7)	9 (24.3)
Farmer	81	10 (12.3)	71 (87.7)
Housewife	94	56 (59.6)	38 (40.4)
Religion			
Christian	419	209(49.9)	210(50.1)
Muslim	13	10(76.9)	3(23.1)
Traditional religion	8	1(12.5)	7(87.5)

Table 2 illustrates that more booked pregnant women had good knowledge of causes of malaria for both urban (58.1%) and rural (56.9%) respondents as compared to their unbooked counterparts and the difference was statistically significant (p=0.007) and (p=0.043), respectively. Seventy-nine-point three percent of unbooked pregnant women in urban area had poor knowledge of malaria in pregnancy compared to (20.7%) booked respondents (p<0.001). With regards to prevention of malaria during pregnancy, more unbooked pregnant women 76.9% (urban) and 67.9% (rural) had poor knowledge and the difference is statistically significant (p=0.045) and (p=0.043), respectively.

Table 2: Knowledge of malaria among pregnant women

Variables	Frequency (percentage)							
	Urban				Rural			
	Total	Booked	Unbooked	p-value	Total	Booked	Unbooked	p-value
Causes of malaria				X^2=7.39				X^2=4.09
Good knowledge	124	72 (58.1)	52 (41.9)	Df = 1	109	62 (56.9)	47 (43.1)	Df = 1
Poor knowledge	96	38 (39.6)	58 (60.4)	P = 0.007*	111	48 (43.2)	63 (56.8)	P = 0.043*
Effect of malaria in pregnancy				X^2=11.48				X^2=1.74
Good knowledge	191	104 (54.5)	87 (45.5)	Df = 1	153	81 (52.9)	72 (47.1)	Df = 1
Poor knowledge	29	6 (20.7)	23 (79.3)	P<0.001*	67	29 (43.3)	38 (56.7)	P = 0.187
Prevention of malaria during pregnancy				X^2=4.01				X^2=4.09
Good knowledge	207	107(51.7)	100 (48.3)	Df = 1	192	101 (52.6)	91 (47.4)	Df = 1
Poor knowledge	13	3 (23.1)	10 (76.9)	P = 0.045*	28	9 (32.1)	19 (67.9)	P = 0.043*
Signs and symptoms during pregnancy				X^2=2.74				X^2=2.99
Good knowledge	214	109 (50.9)	105 (49.1)	Df = 1	196	102 (52.0)	94 (48.0)	Df = 1
Poor knowledge	6	1 (16.7)	5 (83.3)	P = 0.098	24	8 (33.3)	16 (66.7)	P = 0.084

*Significant at *P*<0.05

As shown in Table 3, more unbooked pregnant womenin urban (86.5%) and rural (67.1%) did not receive IPTp in present pregnancy(p=0.045) and (p=0.043), respectively. Majority of unbooked respondents in urban (86.5%) and rural (67.1%) received one dose of anti-malaria therapy (*p*< 0.001) and (p=0.005), respectively. Compared to booked respondents, more unbooked pregnant women in urban (95.6%) and rural (92.9%) did not take heamatinics (*p*<0.001) and (*p*< 0.001), respectively. More unbooked urban respondents (59.8%) did not use insecticides treated nets (ITN) in prevention of malaria during pregnancy (p=0.026). Significant proportion of unbooked urban respondents (65.4%) never sprayed insecticide spray in their house (p=0.026).Higher proportion of unbooked urban respondents (71.4%) had uncleared bushes around or within their house (*p*< 0.001).

Table 3: Practices of malaria prevention among pregnant women

Variables	Frequency (percentage)							
	Urban				Rural			
	Total	Booked	Unbooked	p-value	Total	Booked	Unbooked	p-value
Took any IPTp in present pregnancy				X^2=23.68				X^2=16.12
Yes	183	105(57.3)	78(42.7)	Df = 1	135	82(60.7)	53(39.3)	Df = 1
No	37	5 (13.5)	32(86.5)	P<0.001*	85	28(32.9)	57(67.1)	P<0.001*
Number of doses of anti-malaria drug								
One	46	8 (17.4)	38 (82.6)	X^2=61.7	32	3 (9.4)	29 (90.6)	X^2=60.15
Two	36	14(38.9)	22 (61.1)	Df = 3	39	21(53.9)	18 (46.1)	Df = 3
Three	84	67(79.8)	17 (20.2)	P<0.001*	53	48(90.6)	5 (9.4)	P= 0.005*
Four	17	16 (94.1)	1 (5.9)		11	10 (90.9)	1(9.1)	
Took hematinics during pregnancy								X^2=99.83
Yes	151	107(70.9)	44 (29.1)	X^2=83.81	136	104(76.5)	32(23.5)	Df = 1
No	69	3 (4.4)	66 (95.6)	Df = 1 P<0.001*	84	6 (7.1)	78 (92.9)	P<0.001*
Windows in the house are netted				X^2=2.22				X^2=5.03
Yes	99	55 (55.6)	44 (44.4)	Df = 1	80	48(60.0)	32(40.0)	Df = 1
No	121	55 (45.5)	66 (34.5)	P= 0.136	140	62(44.3)	78 (55.7)	P= 0.025*
Used ITNp				X^2=4.98				X^2=1.0
Yes	138	77(55.8)	61(44.2)	Df = 1	73	40(54.8)	33(45.2)	Df = 1
No	82	33(40.2)	49(59.8)	P= 0.026*	147	70(47.6)	77(52.4)	P= 0.316
Frequency of using insecticide spray in the house								X^2=2.90
Always	44	28(63.6)	16(36.4)	X^2=8.32	24	14(58.3)	10 (41.7)	Df = 2
Sometimes	124	64(51.6)	60(48.4)	Df = 2	144	66(45.8)	78(54.2)	P= 0.235
Never	52	18(34.6)	34(65.4)	P= 0.016*	52	30(57.7)	22(42.3)	
Wear long-sleeved shirts & trouser in the evening								
Yes	156	82(52.6)	74(47.4)	X^2=1.41	145	77(53.1)	68(46.9)	X^2=1.64
No	64	28(43.8)	36(56.2)	Df = 1 Pvalue=0.235	75	33(44.0)	42(56.0)	Df = 1 P=0.201
Presence of uncleared bushes around or within the house				X^2=41.9				X^2=0.18
Yes	112	32(28.6)	80 (71.4)	Df = 1	141	69(48.9)	72(51.1)	Df = 1
No	108	78(72.2)	30 (27.8)	P<0.001*	79	41(51.9)	38(48.1)	P= 0.673

*Significant at *P*< 0.05
ITN- Insecticide treated nets
IPTp- Intermittent preventive therapy for malaria in pregnancy

Table 4 shows reasons for not booking for antenatal care. Similar proportion of urban and rural respondents (11.1% vs 11%) did not booked for antenatal care; they feel there no need for it. More rural respondents compared to urban respondents

(23.0% vs 12.5%) were already receiving care in TBA. Higher proportion of urban respondentssaid they had bad experiences from previous hospital visits (28.2%) and heard bad experience by someone who went to hospital (11.9%). Similar proportion of urban and rural respondents said hospital is too far from home (15.6% vs 18.5%) and cost of transportation and hospital treatment were high (20.7% vs 25.0%). Twelve (6.0%) unbooked rural respondents had spouse disapproval as their reason compare to none among unbooked urban respondents.

Table 4: Reasons for not booking for antenatal care among unbooked women

Variables	Urban N=135 (%)	Rural N=200 (%)
There was no need for it	15 (11.1)	22 (11.0)
Was already receiving care from a TBA	17 (12.5)	46 (23.0)
Had a bad experience in previous hospital visit (s)	38(28.2)	18 (9.0)
Heard of bad experience by someone who went to the hospital	16 (11.9)	15 (7.5)
hospital is too far from home	21 (15.6)	37 (18.5)
Cost of transport fare to and return from the hospital and treatment	28 (20.7)	50 (25.0)
Spousal disapproval	0 (0.0)	12 (6.0)

TBA- Traditional birth attendant

Discussion

There is a high prevalence of malaria in pregnancy in sub-Saharan Africa and it is associated with anaemia in pregnancy, miscarriage, preterm labour, low birth weight, congenital malaria and even maternal and perinatal mortality [2]. Therefore, the knowledge of malaria, its effects in pregnancy and preventive strategies against malaria among pregnant women is important in order effectively control this disease.

In present study, booked pregnant women had better knowledge of the aetiology and prevention of malaria during pregnancy than their unbooked counterparts. Previous studies reported similar findings [11, 14]. The reason is that booked women are given health talk during antenatal care visits on common diseases in pregnancy, including malaria in pregnancy.

Significant proportion of unbooked pregnant women received no intermittent preventive treatment for malaria (IPT) and hematinic or received fewer doses of IPT compared booked clients in this study. The findings agree with results of previous studies [15, 16]. Intermittent preventive treatment for malaria (IPT) with sulphadoxine/pyrimethamine given every four weeks from second trimester to delivery and daily hematinic are routine practices during antenatal care in our environment for clients with no contraindication for such therapy; IPT is effective in preventing malaria [17].

Preventive strategies against malaria such as use of insecticide-treated nets (ITNs), frequent spraying of insecticide around the house and clearing bushes around the house are practiced by significant proportion of booked women in the urban areas. Aluko *et al*. in Ibadan, Nigeria, reported that 20.9% of antenatal attendees used ITNs [14]. This could be due to that people in the urban area have access to these tools for prevention of malaria and they have less need for bushes around their houses; people in the rural areas usually require the bushes for agricultural purposes. However, in the present study, significant number antenatal clients in the rural environment used window nets as a preventive strategy.

Unbooked women in the urban areas cited previous bad experience in the hospital, high cost of transportation to the hospital and long distance of hospital from home as the commonest reasons for not booking for antenatal care in a health facility. Unbooked women in the rural environment reported that receiving care from a traditional birth attendant, high transport fare to health facility and far distance of hospital from home are the main reasons for registering for antenatal care. Fagbamigbe *et al.* in Nigerian National Survey of antenatal care services non-users, reported that the major barriers for utilization of health facilities for antenatal care were lack of funds for medical treatment, unfair attitude of health personnel and unavailability of transportation services [1].

From the findings of this study, it is recommended that pregnant women should be encouraged to book for antenatal care services through health education, provision of accessible and affordable reproductive health facilities in rural and urban areas and provision of efficient and affordable means of transportation. Malaria prevention tools such as insecticide treat nets (ITNs) and insecticide spray should be made available in the rural areas to aid malaria prevention in pregnancy in the rural communities.

Conclusion

Malaria in pregnancy is a major public health problem in Nigeria. There is poor knowledge and practice of preventive strategies against malaria among unbooked pregnant women in our environment. Barrier against utilization of health facilities for antenatal care are still prevalent among both urban and rural dwellers. Provision of accessible and affordable reproductive health facilities will effectively prevent malaria in pregnancy and its attendant complications.

This study discovers the possible link between poor practice of malaria prevention in pregnancy and poor antenatal booking due to inadequate reproductive health facilities and poor transportation to existing ones. This study will help to uncover how provision of these basic amenities will increase pregnant women's participation in antenatal care and will reduce the burden of malaria in pregnancy and its associated complications. Thus, a new theory on using increase participation in antenatal care services to prevent malaria in pregnancy may be arrived at.

Conflict of Interests

The authors declare that there was no conflict of interests regarding the publication of this paper.

References

1. Fagbamigbe AF, Idemudia ES. Barriers to antenatal care use in Nigeria: evidences from non-users and implications for maternal health programming. BMC pregnancy and childbirth. 2015; 15:95-95. DOI: 10.1186/s12884-015-0527-y.
2. Takem EN, D'Alessandro U. Malaria in pregnancy. Mediterr J Hematol Infect Dis. 2013; 5:e2013010-e2013010. 2013/01/02. DOI: 10.4084/MJHID.2013.010.
3. Sappenfield E, Jamieson DJ, Kourtis AP. Pregnancy and susceptibility to infectious diseases. Infectious diseases in obstetrics and gynecology. 2013; 2013:752852-752852. 2013/07/07. DOI: 10.1155/2013/752852.

4. Amuta E, Houmsou R, Wama E, Ameh M. Malarial Infection among Antenatal and Maternity Clinics Attendees at the Federal Medical Centre, Makurdi, Benue State, Nigeria. Infectious disease reports. 2014; 6:5050-5050. DOI: 10.4081/idr.2014.5050.
5. Ugwu EO, Dim CC, Uzochukwu BS, Iloghalu EI, Ugwu AO. Malaria and anaemia in pregnancy: a cross-sectional study of pregnant women in rural communities of Southeastern Nigeria. International Health. 2014; 6:130-137. DOI: 10.1093/inthealth/ihu009%J International Health.
6. Agan TU, Ekabua JE, Iklaki CU, Oyo–Ita A, Ibanga I. Prevalence of asymptomatic malaria parasitaemia. Asian Pacific Journal of Tropical Medicine. 2010; 3:51-54. DOI: https://doi.org/10.1016/S1995-7645(10)60032-6.
7. Van Eijk AM, Hill J, Larsen DA, Webster J, Steketee RW, Eisele TP *et al.* Coverage of intermittent preventive treatment and insecticide-treated nets for the control of malaria during pregnancy in sub-Saharan Africa: a synthesis and meta-analysis of national survey data, 2009–11. The Lancet Infectious Diseases. 2013; 13:1029-1042. DOI: https://doi.org/10.1016/S1473-3099(13)70199-3.
8. Hartman TK, Rogerson SJ, Fischer PR. The impact of maternal malaria on newborns. Annals of Tropical Paediatrics. 2010; 30:271-282. DOI: 10.1179/146532810X12858955921032.
9. Ayoola OO, Gemmell I, Omotade OO, Adeyanju OA, Cruickshank JK, Clayton PE *et al.* Maternal malaria, birth size and blood pressure in Nigerian newborns: insights into the developmental origins of hypertension from the Ibadan growth cohort. PLoS One. 2011; 6:e24548-e24548. 2011/09/13. DOI: 10.1371/journal.pone.0024548.
10. Tonnang HEZ, Kangalawe RYM, Yanda PZ. Predicting and mapping malaria under climate change scenarios: the potential redistribution of malaria vectors in Africa. Malar J. 2010; 9:111-111. DOI: 10.1186/1475-2875-9-111.
11. Sabin LL, Rizal A, Brooks MI, Singh MP, Tuchman J, Wylie BJ *et al.* Attitudes, knowledge, and practices regarding malaria prevention and treatment among pregnant women in Eastern India. Am J Trop Med Hyg. 2010; 82:1010-1016. DOI: 10.4269/ajtmh.2010.09-0339.
12. Andrew EVW, Pell C, Angwin A, Auwun A, Daniels J, Mueller I *et al.* Knowledge, attitudes, and practices concerning malaria in pregnancy: results from a qualitative study in Madang, Papua New Guinea. PLoS One. 10: e0119077. DOI: 10.1371/journal.pone.0119077.
13. Adebayo AM, Akinyemi OO, Cadmus EO. Knowledge of malaria prevention among pregnant women and female caregivers of under-five children in rural southwest Nigeria. Peer J. 2015; 3:e792-e792. DOI: 10.7717/peerj.792.
14. Aluko JO, Oluwatosin AO. Utilization of insecticide treated nets during pregnancy among postpartum women in Ibadan, Nigeria: a cross-sectional study. BMC pregnancy and childbirth. 2012; 12:21-21. DOI: 10.1186/1471-2393-12-21.
15. Akinleye SO, Falade CO, Ajayi IO. Knowledge and utilization of intermittent preventive treatment for malaria among pregnant women attending antenatal clinics in primary health care centers in rural southwest, Nigeria: a cross-sectional study. BMC Pregnancy and Childbirth. 2009; 9:28. DOI: 10.1186/1471-2393-9-28.
16. Roman E, Andrejko K, Wolf K, Henry M, Youll S, Florey L *et al.* Determinants of uptake of intermittent preventive treatment during pregnancy: a review. Malar J. 2019; 18:372. DOI: 10.1186/s12936-019-3004-7.
17. Falade CO, Yusuf BO, Fadero FF, Mokuolu OA, Hamer DH, Salako LA *et al.* Intermittent preventive treatment with sulphadoxine-pyrimethamine is effective in preventing maternal and placental malaria in Ibadan, south-western Nigeria. Malar J. 2007; 6:88-88. DOI: 10.1186/1475-2875-6-88.