

ORIGINAL RESEARCH

Management of malaria in pregnancy by Traditional Birth Attendants in Ogun State, Nigeria

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Abstract

Background: Malaria in pregnancy is a major public health issue in sub-Saharan Africa. Most deliveries in this region are attended by the Traditional Birth Attendants (TBAs).

Objective: To assess the knowledge and practice of prevention and treatment of malaria in pregnancy amongst TBAs in Ogun State, south-west Nigeria.

Methods: This descriptive, cross-sectional study used systematic random sampling to select 200 registered TBAs within the state. Pre-tested, semi-structured interviewer-based questionnaires were used to obtain relevant data.

Results: The mean age of respondents was 37.7 ± 2.2 years. Most of the respondents had secondary school education (82.0%) and were females (89.0%). The majority (68.0%) had good knowledge of malaria during pregnancy; 83.0% used blood test for the diagnosis of malaria while 62.2% of these used Malaria Rapid Diagnostic Test kits. A third of the respondents (33.0%) used Artemisinin-Combination Therapy for treatment while 13.0% used Chloroquine. The majority (85.5%) of the respondents did not practice directly observed therapy in intermittent preventive treatment for malaria using Sulphadoxine-Pyrimethamine (SP). The age of the respondents was significantly associated with their level of knowledge ($p = 0.019$).

Conclusion: The TBAs had high level of knowledge and good practice of the management of malaria in pregnancy. However, some still treated malaria with Chloroquine and were not conversant with the use of SP for the prevention of malaria. It is recommended that capacity building sessions for the TBAs be instituted to improve the quality of care they provide.

Keywords: Antenatal care; Artemisinin-Combination Therapy; Malaria, Pregnancy; Traditional Birth Attendants.

Introduction

Malaria in pregnancy is a major public health issue in Sub-Saharan Africa. ^[1] The pathological effects of malaria adversely alter the maternal and foetal physiology

during pregnancy. Most cases of malaria in pregnancy are caused by the *Plasmodium falciparum* species. ^[2, 3] The adverse effects of malaria in pregnancy include maternal anaemia, foetal loss, preterm delivery and intrauterine growth

restriction. Globally, 125 million women are at risk of malaria yearly, and the impact is most prominent in the Sub-Saharan region of Africa, where an estimated 10,000 cases of malaria-related deaths in pregnancy have been reported. [4]

It is also estimated that between 75,000 and 200,000 infants die annually, as a result of malaria infection during pregnancy. [4] The prevention of malaria in pregnancy reduces severe maternal anaemia by 38%, low birth weight by 43% and perinatal mortality by 27%. [4] In a study done in Port Harcourt, south-south Nigeria, the prevalence of placental malaria was 65.2%. [5] Of the 2069 pregnant women examined for malaria in Enugu, south-east Nigeria, over 99 % tested positive for malaria parasitaemia. [6]

The poor accessibility of healthcare in several parts of Sub-Saharan Africa, as a result of the high level of poverty and the associated vices, contribute to maternal mortality. [7, 8] Campaigns on the use of Insecticide-Treated Nets and combination therapies have been embarked upon to alleviate the burden of malaria. [9]

To further bridge the gap in the accessibility of healthcare, Traditional Birth Attendants (TBAs) have been used over the past few decades, to improve maternal care in pregnancy and reduce maternal mortality with regards to malaria and other causes of perinatal mortality. [10-12] A Traditional Birth Attendant is defined by the World Health Organization (WHO) as "a person who assists the mother during childbirth and initially acquired her skills by delivering babies herself or through apprenticeship

to other TBAs." [13] Synonymous with TBAs are 'traditional midwives', 'community midwives' and 'lay midwives' as their functions are the same viz- to provide care for pregnant women and young children in non-health care facility settings. [14, 15] TBAs are found in most communities in the world. Although their nature and functions vary considerably, their major role is to assist with taking deliveries within the community. [16] It is estimated that over 70% of births in developing countries are still being attended to by TBAs. [17-20]

Most TBAs do not focus on diagnosis within the scope of management of diseases as they often lack the skills and facilities required. Studies have shown that TBAs are largely unable to prevent or treat most life-threatening obstetric complications. [18, 21] Nevertheless, the essential nature of TBAs to healthcare delivery in developing countries is universally acknowledged. The Nigerian National Guidelines and Strategies for Malaria Prevention and Control During Pregnancy stipulates that the TBAs at the community level, mobilise and sensitise the community on Intermittent Preventive Therapy for malaria as well as other essential malaria care. [22] However, TBAs are to ensure prompt referral of pregnant women to appropriate level of care if severely ill. [22]

In Nigeria, the management and control of malaria in pregnancy is impaired by the unavailability of local prevalence statistics. [23] Therefore, this study was carried out to describe the pattern of management of malaria in pregnancy among the Traditional Birth Attendants in Ogun state, south-west Nigeria.

Methods

The study location was Ogun state, Nigeria. Ogun State is one of the thirty-six states of Nigeria, located in the south-western part of the country. The 2006 National Census recorded a total population of 3,728,098 across the twenty Local Government Areas which make up the state. [24]

The study population comprised 417 registered Traditional Birth Attendants with their distribution spanning through all the Local Government Areas within the State. The secretariat of the TBAs is located at Abeokuta, the state capital where their bi-monthly meetings take place.

This study used a descriptive, cross-sectional design. The minimum sample size was calculated using the formula: $N = z^2 pq / d^2$ where N is the required minimum sample size; d is the margin of error (0.05); p is knowledge of health care providers on malaria in pregnancy = 64.7% [25]; q = 1-p; z is the standard normal deviation corresponding to 95% confidence interval = 1.96. This figure was then corrected for population < 10,000. The final minimum sample size calculation was 190. Two hundred TBAs were then selected from the total of 417 registered TBAs in the state. Systematic random sampling technique was used with the record of the TBAs serving as the sampling frame. The list of TBAs was based on local government area of practice.

Only registered TBAs practising in Ogun state were enlisted for this study.

Ethical approval for the study was obtained from the Health Research and Ethics Committee of the Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu, Ogun state. Written informed consent was obtained from the Association of Traditional Birth Attendants while verbal informed consent was obtained from individual Traditional Birth Attendants.

A semi-structured interviewer-based questionnaire was used for data collection. The tool had sections on biodata, respondents' knowledge and practice on the prevention, treatment and follow-up management of malaria in pregnancy. The questionnaire was pre-tested at Ikorodu Local Government Area of neighbouring Lagos State. Corrections were made to the questionnaire to ensure the validity of the tool. Data were collected during one of the regular state meetings of TBAs held at Abeokuta, the State capital between October and December 2015. The 417 members of the association were adequately represented in the session (the few who were absent sent representatives to the meeting). The list of the TBAs served as the sample frame arranged in order of Local Government Areas. The sampling interval was calculated by dividing the total number of TBAs on the list (417) by the sample size (200) which gave a sampling interval of 2.

Determination and classification of knowledge scores

A total of ten questions covering preventive, curative and follow-up management of pregnant clients were asked. The items included; sources of information, transmission of malaria,

common symptoms of malaria, complications of malaria in pregnancy, common breeding sites for the vector that transmits malaria, methods of making diagnosis of malaria in pregnancy, awareness of malaria rapid diagnostic tests, follow-up measures after treatment and intermittent preventive therapy and other preventive methods in malaria. The questions were mainly close-ended in the “yes or no” format. The questions were graded and scored as follows; 5 to 10 correct responses indicated good knowledge while less than five correct responses connoted poor knowledge.

Data analysis

The data obtained from the study were categorised, coded and processed using SPSS version 17.0. Chi-square test was used to find the associations between categorical variables. A *P* value < 0.05 was taken as statistically significant. The knowledge of the respondents on malaria in pregnancy was graded and scored. Scores < 50% were regarded as poor knowledge while scores ≥50% were considered as good knowledge.

Results

Demographic characteristics

Two hundred TBAs were studied. The mean age of the respondents was 37.7 ± 2.2 years while the age ranged between 22 and 62 years. Most of the respondents were females (89.0%); 82.0% had at least secondary school education while the majority (68.5%) had at least five years of practice (Table I).

Assessment of knowledge about malaria

The majority (136; 68.0%) had good knowledge on malaria in pregnancy while the remaining 64 (32.0%) had poor knowledge. The age of the respondents had statistically significant relationship with their level of knowledge ($X^2 = 9.995$; $p = 0.019$) (Table II). The other variables were not statistically significant.

Preventive measures against malaria in pregnancy

Most of the respondents were aware of the use of Insecticide-Treated-Nets (ITNs) (49.0%) and Sulphadoxine-Pyrimethamine (41.5%) as methods of preventing malaria in pregnancy (Table III).

General knowledge about malaria in pregnancy

Most (89.5%) of the respondents got their information about malaria in pregnancy from health professionals while 92.6% knew that malaria is transmitted through mosquito bites (Table IV). Interestingly, 3.1% of the respondents felt malaria is caused by supernatural forces such as witches/wizards and bad food. Also, 73.5% of the respondents recognised fever as a common symptom of malaria.

Management of malaria in pregnancy

Most of the respondents (83.0%) used blood test for the diagnosis of malaria in pregnancy as stipulated in the National Guidelines. The other methods of diagnosis used by the TBAs included urine test (12.0%), observing scleral discolouration (3.0%) and paleness of the palm (2.0%) (Table V). Among those that used blood test for diagnosis, 62.2% made use of Malaria Rapid Diagnostic Test (MRDT) while the others used the option of microscopy.

Table I: Socio-demographic characteristics of respondents

Variables	Frequency (%)	Variables	Frequency (%)	Variables	Frequency (%)
Age (years)		Marital status		Level of education	
<25	32 (16.0)	Married	149 (74.5)	Primary	14 (7.0)
26 - 35	52 (26.0)	Single	36 (18.0)	Secondary	164 (82.0)
36 - 45	50 (25.0)	Divorced	4 (2.0)	Tertiary	20 (10.0)
>45	66 (33.0)	Widow/widower	11 (5.5)	Others	2 (1.0)
Sex		Religion		Years of practice	
Male	22 (11.0)	Christianity	157 (78.5)	0 - 2 years	26 (13.0)
Female	178 (89.0)	Islam	33 (16.5)	2 - 5 years	37 (18.5)
		Traditional	10 (5.0)	5 - 10 years	58 (29.0)
				>10 years	79 (39.5)

Table II: Relationship between age, sex and knowledge

		Poor Knowledge (n = 64)	Good Knowledge (n = 136)	X ²	P value
Age	<25	13 (20.3)	20 (14.7)	9.995	0.019
	26-35	25 (39.1)	30 (22.1)		
	36-45	13 (20.3)	35 (25.7)		
	>45	13 (20.3)	51 (37.5)		
Sex	Male	7 (10.9)	15 (11.1)	0.000	0.985
	Female	57 (89.1)	121 (88.9)		

Figures in the parentheses are percentages of the total in the respective column.

About one-third of the respondents (33.0%) used Artemisinin-Combination Therapy (ACT) for the treatment of malaria in pregnancy while 13.0% still used Chloroquine. Some of the respondents (15.1%) prescribed Sulphadoxine-Pyrimethamine to pregnant women with malaria during the first trimester. The majority of the TBAs (85.5%) did not practice directly observed therapy in the intermittent preventive treatment using Sulphadoxine-Pyrimethamine.

Discussion

A majority of the Traditional Birth attendants demonstrated high level of knowledge and good practice on issues concerning the management of malaria in pregnancy. Though, gaps were observed in the care rendered with regards to malaria.

The mean age of the respondents was 37.7 ± 2.2 years. Most (89.0%) of them were females, and 60.5% had been practising as Traditional Birth Attendants (TBAs) for up to 10 years. Previous studies have also reported that most TBAs are females.^[12,14]

This higher percentage of females could be because all their clients are females, and most females, for religious, cultural

and personal beliefs, prefer to be attended to by females at delivery. [17]

Table III: Preventive measures in malaria identified by the respondents

	Frequency (%)
Preventive measures for malaria in pregnancy	
Use of ITNs	98 (49.0)
Sulphadoxine-pyrimethamine	83 (41.5)
Herbs	11 (5.5)
Chloroquine	8 (4.0)
Access to ITNs by respondents	
Yes	117 (58.5)
No	83 (41.5)
Distribution of the ITNs by respondents to the pregnant women	
Yes	88 (75.2)
No	29 (24.8)
Sources of ITNs	
Ministry of Health	61 (52.1)
PHC	53 (45.3)
NGOs	3 (2.6)

In the prevention of malaria in pregnancy, 41.5% of the TBAs were aware of the use of Sulphadoxine-Pyrimethamine. This finding was similar to a study carried out by Adeniran and others in Lagos [26] where most (67.7%) of the TBAs were not aware of intermittent preventive therapy. Also, 73.5% of the TBAs recognised that fever is a common symptom of malaria and 89.5% of them got their information from health professionals. This finding was similar to the report from Lagos [26] where 64.2% of respondents recognised fever as a common symptom of malaria and 81.8% of them sourced their information from health professionals.

Most of the respondents (68.0%) had good knowledge on malaria in pregnancy. This observation was similar to the finding in a study conducted by Sikambale and others in Zambia, [25] where over sixty percent of

the health care providers for pregnant women had good knowledge on malaria in pregnancy. This good level of knowledge of malaria in pregnancy could be as a result of regular training on the care for malaria during pregnancy by the State Ministry of Health. Health professionals from the Ministry, often organise seminars to educate the TBAs on how to be effective in their practices in a bid to reduce maternal morbidity and mortality. [27]

Most of the TBAs in the present study (83.0%) used blood tests to make the diagnosis of malaria in pregnancy, and 62.2% of these use the RDT kit. The other blood test used was microscopy as blood samples obtained from their clients were sent to commercial laboratories for microscopy.

Table IV: Knowledge of respondents on malaria in pregnancy

Variables		Frequency (%)
Sources of information	Health professionals	179 (89.5)
	Newspaper	1 (0.5)
	Television	9 (4.5)
	Radio	3 (1.5)
	Others	8 (4.0)
Mode of transmission of malaria	Mosquito bites	151 (92.6)
	Housefly	3 (1.8)
	Bad water	4 (2.5)
	Bad food	2 (1.3)
	Witches/wizards	3 (1.8)
Complications of malaria in pregnancy	Abortion	57 (28.5)
	Yellow fever	49 (24.5)
	Stroke	21 (10.5)
	Anaemia	57 (28.5)
	Death	16 (8.0)
Common symptoms of malaria	Fever	147 (73.5)
	Headache	50 (25.0)
	Don't know	3 (1.5)
Common breeding sites for the vector that transmits malaria	Standing dirty water	105 (52.5)
	Running dirty water	56 (28.0)
	Bushes	17 (8.5)
	Standing clean water	10 (5.0)
	Garbage/Trash	8 (4.0)
	All of the above	4 (2.0)

This high level of utilisation of blood tests in the diagnosis of malaria could also be as a result of the education and training provided by the Ministry of Health. With regards to the management of malaria in pregnancy, only 33.0% of the TBAs in the present study used ACT as the first-line drug.

This observation suggested that majority of the respondents were yet to adopt the recommendations of the WHO on the strategy for treating uncomplicated malaria in pregnancy. Interestingly, 15.5% of the TBAs prescribed Sulphadoxine-Pyrimethamine to pregnant women during the first trimester while 44.0% of them used Sulphadoxine-Pyrimethamine

as the first line drug for the treatment of malaria in pregnancy. This observation was contrary to the provisions in the National Guideline on Intermittent Preventive Therapy for malaria in pregnancy.^[28] Sulphadoxine-Pyrimethamine is traditionally reserved for preventive purposes rather than for treatment of malaria, but this drug is not safe in the first trimester of pregnancy.^[22] Only 28.5% of the TBAs in the present study, administered Sulphadoxine-Pyrimethamine monthly during pregnancy as has been recommended by the WHO.^[29] However, most of the respondents did not observe the pregnant women swallow the Sulphadoxine-

Pyrimethamine tablets as recommended. This observation could be due to low level of knowledge on the importance of the Directly Observed Therapy (DOT) aspect of Intermittent Preventive Therapy with

Sulphadoxine-Pyrimethamine. This could contribute to the persistence of morbidity and mortality recorded for malaria in pregnancy in Nigeria.

Table V: Practice of the respondents on management of malaria in pregnancy

		Frequency (%)
Methods used to make diagnosis of MIP	Looking at the eyes	6 (3.0)
	Urine Test	24 (12.0)
	Blood test	166 (83.0)
	Looking at the palm	4 (2.0)
Utilisation of the MRDT to make diagnosis of MIP	Yes	102 (62.2)
	No	64 (37.8)
Drugs used by respondents as the first line in treatment of Malaria in Pregnancy	Herbal	20 (10.0)
	Sulphadoxine-pyrimethamine	88 (44.0)
	Chloroquine	26 (13.0)
	ACT	66 (33.0)
Time that Sulphadoxine-pyrimethamine was commenced	First trimester	31 (15.5)
	Second trimester	117 (58.5)
	Third trimester	40 (20.0)
	Anytime	12 (6.0)
Interval between the doses of Sulphadoxine-pyrimethamine	2 weeks	36 (18.0)
	4 weeks	57 (28.5)
	6 weeks	27 (13.5)
	3 Months	80 (40.0)
Respondents' practice of Directly Observed Therapy for Sulphadoxine-pyrimethamine	Yes	29 (4.5)
	No	171 (85.5)

MIP - Malaria in Pregnancy

Although 79.0% of the TBAs promoted the use of ITNs during pregnancy, only 58.5% of them had access to ITNs. ITNs are distributed free by the Government in Nigeria. In some cases, people may not have the ITNs due to central non-availability of the materials.^[30]

The older TBAs had better knowledge on malaria in pregnancy. TBAs usually obtain their training through experience.^[13] Thus, it is expected that the more

elderly TBAs would have gained more knowledge during their numerous years of practice. Also, the TBAs with at least secondary education had more knowledge on malaria in pregnancy in the present study. This could be because the higher level of education of the respondents facilitated their understanding and retention of knowledge acquired during training sessions.^[20]

This study showed gaps in the knowledge and practice of prevention and treatment of malaria in pregnancy among some of the primary caregivers (TBAs) in Ogun state, Nigeria. The cross-sectional design of the study raised some hypothesis that will require further interventional studies.

Conclusion

Most of the Traditional Birth Attendants in Ogun State had a high level of knowledge as well as good practice concerning the management of malaria in pregnancy. However, some of the TBAs still used Chloroquine to treat malaria in pregnancy contrary to national recommendations. They were not conversant with the use of Sulphadoxine-Pyrimethamine as a preventive measure for malaria in pregnancy. A larger percentage of the respondents were aware of the use of rapid diagnostic kit in diagnosing malaria in pregnancy, but accessibility of the test kits was a major limiting factor. It is important to embark on a sensitisation drive on the prevention and treatment of malaria in pregnancy using the guidelines provided by the Ministry of Health. Further interventional studies are desired to elucidate the findings in the present study further.

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participated in study design, data collection, data management and manuscript drafting. JOA participated in data collection, data management and manuscript drafting. TIR participated in data collection, data management and manuscript drafting.

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