

Intermittent Preventive Treatment and Long-Lasting Insecticide Nets use among pregnant women attending Traditional Birth Homes in Ibadan, Nigeria

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ABSTRACT

Introduction: Malaria in pregnancy remains a huge public health problem. Studies have shown that majority of women still receive antenatal care from unorthodox centers including Traditional Birth Homes (TBH) where malaria preventive practices are suboptimal. This study assessed the use of malaria preventive methods among women attending TBHs in Ibadan. **Methods:** A cross-sectional study was conducted among 318 women attending TBHs using mixed- methods of data collection. Data were collected using an interviewer-administered questionnaire as well as through focus group discussions (FGD). Frequencies and proportions were generated for knowledge and use of Intermittent Preventive Therapy (IPTsp) and Long-Lasting Insecticide Nets (LLIN). Bivariate and multivariate analysis was done to identify determinants and predictors of IPTsp uptake/ LLIN use at $p < 0.05$. Thematic analysis was done for qualitative data. **Results:** Respondents' mean age was 27 ± 5.5 years. Of those that had LLIN (267/318), 77.5% (207) use it and determinants of LLIN use were attending other hospitals, increasing age, being employed, and having good knowledge of LLIN. About one-fourth (125/318) were aware of IPT and only 28.2% of them had received IPTsp from TBHs. Attending other hospitals and LLIN use were associated with uptake of IPTsp ($p < 0.05$). Knowledge of LLIN [OR: 5.3, 95%CI: 1.6-16.6] and attending hospitals [OR: 7.8, 95%CI: 2.4-25.1] were independent predictors of LLIN use and IPTsp uptake, respectively. **Conclusion:** Use of malaria preventives in TBHs is low compared to the targets set for the control of malaria in pregnancy. Traditional birth attendants need to be trained on the importance of malaria prevention in pregnancy and be empowered to provide malaria-preventive practices.

KEYWORDS: malaria-in-pregnancy, traditional birth attendants, malaria prevention practices

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Introduction

Malaria exerts a huge public health problem in Nigeria, especially among under-five and pregnant women [1]. Generally, pregnant women are four times more likely than other adults to be infected with malaria, and are twice more likely to die from malaria [2]. Malaria in pregnancy is linked to adverse outcomes like stillbirth, preterm delivery, spontaneous abortion, low birth weight, maternal death and anemia. It accounts for 11% of maternal deaths and poses substantial risk to the mother and the fetus/newborn [1]. For prevention and control of malaria in pregnancy, the WHO in 2016 recommended a 3-pronged package comprising intermittent preventive treatment in pregnancy (IPT) with Sulphadoxine-Pyrimethamine (SP), use of long-lasting insecticide-treated nets (LLINs), and effective case management of clinical malaria [3]. The effectiveness of this approach is corroborated by several studies, one of which was done in Cameroon, in which pregnant women using IPT+ITN had a lower chance of developing malaria relative to pregnant women using no IPT/ITN [4]. Long lasting insecticide nets have replaced insecticide nets and have the added advantage of retaining effective insecticide levels for 3 years and up to 20 washings and thus reducing the need for re-treatment. This reduces the cost of re-treatment and frequent replacements of these nets in low- and middle-income countries including Nigeria. Intermittent Preventive treatment requires directly observed intake of Sulphadoxine-Pyrimethamine at every scheduled antenatal visit from the beginning of the second trimester until the time of delivery. The doses are to be given at least one month apart [3].

Increasing skilled antenatal care is somewhat difficult in low-resource countries like Nigeria because of the dearth and disproportionate distribution of healthcare personnel. It is therefore not unexpected that in Nigeria, only 35.2% of births are attended by skilled health personnel [5]. The remaining majority receives antenatal, delivery, and post-natal care from unorthodox caregivers including traditional birth attendants, faith-based birth attendants, and village voluntary health workers. In Nigeria, though about one percent of women who received antenatal care had it in a traditional birth home, 23.2% were assisted by a traditional birth attendant (TBA) during delivery [6]. However, in Oyo State, south western, Nigeria, about two percent had antenatal care in a traditional birth home (TBH) while 4.3% of the pregnant women were assisted by a TBA during delivery [6].

Studies have reported the prevalence of malaria infection among pregnant women who attend TBH as between 62.4% and 78.9% [7-9]. These values are significantly higher when compared to the prevalence of malaria which complicates 8.4% to 58.1% of pregnancies in Nigeria [10]. This gap may be as a result of non-availability of malaria preventives and poor knowledge of TBA on the issues of preventing malaria in pregnancy. This study therefore set out to identify current level of uptake of malaria preventives (IPTsp/ITN) and determinants of IPT/LLIN use among women attending TBH in Ibadan North Local Government Area (LGA) of Oyo State, south western Nigeria in order to provide information for the

involvement of TBAs in the scale up of malaria prevention.

Methods

A cross-sectional study using mixed method of data collection was conducted among 318 women attending traditional birth homes from September to November 2017 in Ibadan, North Local Government Area of Oyo State, south western Nigeria. The study was done in registered TBHs, though there are 56 registered traditional birth attendants only 32 have structured antenatal care in Ibadan North LGA. It was conducted during antenatal clinics in TBHs which are spaces owned or rented by traditional birth attendants. The clinics usually hold every week and are coordinated by the birth attendant or a delegated assistant. The number of women that attend the clinic differs from one traditional birth home to another, but usually between four and ten women. Most of the clinics are held in the morning. Services rendered include health education, general examination (which sometimes involves checking of the client's blood pressure using a digital sphygmomanometer), and palpation of the abdomen. Also, the attendant listens to the client's complaint, and often gives them haematinics. A semi-structured interviewer-administered questionnaire was used to collect information from pregnant women (in the second and third trimester) consecutively recruited on the day of the visit. Data was collected over a period of three months (September - November, 2017). Verbal informed consent was obtained from the participants. The questionnaire contained sections on knowledge of malaria, the use of long-lasting insecticides and intermittent preventive treatment. Also, ten focused group discussion (FGD) sessions were conducted among pregnant women. The FGD sessions were tape-recorded. A total of 318 women were recruited for the study following a sample size calculation using the sample size formula for single proportions and a prevalence of 37% of IPT use among pregnant women as reported in the 2015 Nigerian Malaria Indicator Survey (MIS) after correction for the finite population of pregnant women attending TBHs in Oyo State.

Data was entered, cleaned and analyzed using SPSS. Frequency tables were generated for knowledge and use of IPT and LLIN. Bivariate analysis using chi square test was done to identify factors associated with IPT and LLIN use. A binary logistic regression model was set up to identify predictors of IPT and LLIN use. All statistical tests were set at 5% level of significance. Content analysis was used to extract and summarize the responses from the Focus Group Discussions. Ethical approval was obtained from the Oyo State Research Ethical Review Committee. All information collected were kept confidential. The data were entered into a password-secured laptop and used only for research purposes.

Results

Socio-demographic and Obstetric Characteristics of Respondents

In all, 318 pregnant women were sampled in 32 traditional birth homes. Mean age of respondents was 27.0 ± 5.5 years. Ninety percent of respondents were married. Among the respondents, 77.7% were Yoruba, 13.2% Ibo, 3.8% were Hausas. A higher proportion, 48.1% completed secondary school, 30% of respondents were educated up to tertiary level with only 7% of respondents not attending any formal school. Fifty-three percent of respondents were Christians. Sixty-three percent of the respondents were self-employed, mostly as traders, vendors, fashion designers, hairdressers with majority in the low-income socio-economic group (73.6%) [Table 1](#).

Thirty-two percent of the women have never received antenatal care. The mean gestational age of respondents was 6.0 ± 1.4 months. Forty percent of respondents reported history of illness in current pregnancy while 20% reported a history of previous abortion or pregnancy loss. Forty-four percent (44%) reported that they receive care in a hospital aside the traditional birth home. Common services sought at the hospitals included laboratory investigation, abdomino-pelvic ultrasound scan and treatments.

Knowledge and Attitude of Respondents to Malaria

About 95% of the respondents knew that malaria is transmitted through mosquito bites and that dirty environment encourage malaria transmission while 91.5% knew malaria transmission is encouraged by presence of bush around the house.

Seventy-three percent of respondents knew that malaria affects all ages while 97% of respondents knew that pregnant women can have malaria. However, about half of the women didn't know malaria could cause more danger for pregnant women than non-pregnant women and only 38.7% knew that pregnant women are more at risk of developing malaria compared to non-pregnant women [Figure 1](#).

[Figure 2](#) shows the various possible ways for malaria prevention identified by the respondents. The various ways included sleeping under insecticide nets (88.4%), cutting bush around the house (84.3%), spraying of insecticide in the home (46.5%), use of malaria preventive drug (38.7%), use of herbs (44.7%), and about seventy percent reported that malaria could be prevented by praying.

Findings from the qualitative study shows that malaria was regarded as a common illness among pregnant women. Some respondents considered it to be inevitable in pregnancy. This also reflected in a response during one FGD session. As stated below;

"Every pregnant woman will have malaria, it is not usually serious except in those who neglect it or refuse to take care of their body." 31-year-old FGD participant

Possible symptoms of malaria identified include high body temperature, vomiting, weakness and cold. Other symptoms mentioned include yellowness of the eyes, passage of red urine. Participants' responses are stated below;

"Malaria makes someone to be cold weak and dizzy. It can also make a person especially pregnant women to faint because she won't be able to eat." 27-year-old FGD participant

"The eyes may also be yellow, and the urine may be red." 28-year-old FGD participant

Many of the women said malaria is particularly dangerous in pregnancy because of the harms it can cause the baby. The common dangers mentioned include weakness of the baby, stillbirth, premature delivery and yellowness of the baby's eyes. Participant's response is stated below;

"If someone has malaria and does not treat it, it can affect the baby. Some say if untreated, the baby's eyes may be yellow, and the child may not grow as expected or the child may die." 25-year-old FGD participant.

There were those who said malaria is difficult to prevent, but most women asserted that eating good food, avoiding stress and hot sun reduce the chance of having malaria. Other ways mentioned include cutting of bush around the house, general cleanliness and the use of mosquito nets. Participants' responses are stated below;

"Malaria is difficult to prevent, because mosquito is everywhere, especially when the weather is hot". 26-year-old FGD participant

"I think the most important thing is to cut the bush around the house and make sure the environment is clean. Cleanliness prevents many diseases." 25-year-old FGD participant

Knowledge and Use of Long-Lasting Insecticide Nets (LLIN) and Intermittent Preventive Treatment (IPT) Three hundred and three (95.3%) respondents were aware of insecticide treated nets, however only 28.7% had good knowledge of correct use of ITNs. Eighty-eight percent of the respondents have LLIN/ITN at home, while 77.5% of them reported they use insecticide treated nets. Of those that use insecticide treated nets, 67.6% reported that they sleep under it every day. Forty-five percent of those who have ITN received it during distribution campaign, and only 4% received it from the traditional birth home ([Table 2](#)). Common reasons for not sleeping under net every day included concerns about safety, and side effects like heat and rash.

During the FGD sessions, the respondents reported being aware of insecticide nets. Many of them also possessed the nets. The nets were considered effective and some use it regularly. Participants' responses are stated below;

"I have several nets at home, I have given out some though. I use it every day and I also use it on my windows and doors" 35-year-old FGD participant

"The nets are good, and those that distributed it did well because many of my friends and neighbours have nets. I use mine every day and the rate of malaria has reduced especially for my child." 28-year-old FGD participant

Others considered not using nets due to heat, concerns about skin rash. Some also complained that the nets are not convenient for their husband. A participant stated it this way;

"...my husband cannot sleep under it (insecticide net), he will just be sweating profusely." 30-year-old FGD participant

Table 2 also shows that one hundred and twenty-five (39.3%) respondents had heard of intermittent preventive treatment, out of which 57 (45.6%) got to know in hospital while 21(16.8%) heard of IPT from a traditional birth attendant. Seventy-one (56.8%) identified Fansidar® as the drug of choice for IPT, while 19 (15.2%) still identified chloroquine as the drug of choice for IPT. Of all, only 6.3% knew the correct dosage and timing of IPT use Of those aware, eighty-five (68.0%) reportedly have used IPT in current pregnancy out of which 24(28.2%) received it from the traditional birth homes. **Table 2** Over half (57.6%) used sulphadoxine -pyrimethamine for intermittent preventive treatment and only 4.7% of all respondents reported using the drug under direct observation.

Many of the FGD participants were not aware of intermittent preventive treatment of malaria in pregnancy. Those aware knew of pyrimethamine (Daraprim or Sunday-Sunday tablets). Concerns about the efficacy and safety of the drug were expressed.

Participants' responses are stated below;

"I have heard of daraprim, used once a week after the first trimester." 30-year-old FGD participant *"I also know of Sunday tablets but I don't think it works."* 30-year-old FGD participant *"There were also those who used antimalarial drugs (artemeter-lumefantrine) in the absence of symptoms to protect the baby from malaria."* 25-year-old FGD respondent

"I use antimalarial when I reach 6 months and also when I reach 8 months even if I am not sick. The drug will reach the baby and protect it from malaria." Other ways considered protective include taking of immunization and use of antenatal drugs *"Taking immunization will also help the body against malaria."* 30-year-old FGD participant

Determinants of Malarial Prevention Practice of Respondents

Use of ITN/LLIN, was found to be higher with increasing maternal age (OR:16.7, C.I: 2.1-132.2), routine antenatal care in previous pregnancies (OR:1.9, C.I:1.1-3.6) and respondents who were employed by private/government establishments (OR:6.4, C.I:1.8-21.9) also had a significantly higher proportion who used LLIN (P<0.05). In addition, those who used both hospital and TBH were about three times more likely to have used ITN/LLIN compared to those who used only TBHs (OR: 2.6, CI: 1.1-3.5) **Table 3**.

Respondents with good knowledge of malaria and malaria preventive practices were about two times more likely to use ITN/LLIN (uOR: 2.1, CI: 1.1-4.2) and (uOR: 2.3, CI:1.2-43) respectively. In addition, respondents with good knowledge of ITN were about 5 times more likely to use ITN/LLIN (uOR: 4.9, CI: 2.0-11.9). However, on multivariate regression analysis, only the knowledge on ITN remained a significant predictor variable for use of ITN/LLIN among women attending traditional birth homes (aOR: 5.3, CI:1.6-16.6)

Regarding the use of intermittent preventive therapy (IPTsp), there was a significant association between using other hospital asides TBHs, and IPT use. Respondents who used other hospital were about 5 times more likely to use IPT in the current pregnancy (uOR: 5.4, CI: 2.4-12.2). In addition, use of ITNs was significantly associated with use of IPT among respondents (uOR: 4.1, CI: 1.2-13.8). Furthermore, there was no significant association between respondent's knowledge of ITN, knowledge of malaria, knowledge of malaria preventive practices and the use of IPT **Table 4**.

The significant predictor of IPT use was respondents who visited other hospitals apart from using TBHs; they were 7.8 times more likely to use IPT compared to those who used only traditional birth homes (aOR 7.8, CI: 2.4-25.1) **Table 4**.

Discussion

Like many health interventions, the use of malaria preventives may depend on availability as well as the knowledge, attitude and perception of people towards the health state and the intervention.

Almost all respondents knew that pregnant women could have malaria, however more than half didn't know that pregnant women were more at risk of having malaria and it causes more danger for pregnant women. Titiloye et al reported a similar finding where three-fifth of the pregnant women knew the effect of malaria in pregnancy [11]. Our findings revealed that close to half of these pregnant women did not know how dangerous malaria could be during pregnancy. This reflects a knowledge gap in antenatal care services which may account for a poor attitude to malaria prevention in pregnancy. Thus, many pregnant women may see no reason to specially protect themselves when pregnant. It is thus important for the birth attendants to further educate women on the risks and dangers of malaria in pregnancy.

The awareness of long-lasting insecticide nets is high among the women attending traditional birth homes as almost all were aware of it. This is higher than the one-third level of awareness reported in a cross-sectional study by Musa et al among women attending antenatal care clinics in Northern Nigeria [12]. This might be due to differences in locations of the studies. More intervention programs are domiciled in the southwestern part of Nigeria.

Furthermore, four out of five women had nets at home. This level of ownership of nets is high and this might be a reflection of the success of programs executed to distribute long-lasting insecticide nets. The ownership level is also

higher than the report of the National Demographic Health Survey (NDHS) 2018 where sixty percent of all households had at least one ITN [6]. This could be due to the fact that the NDHS reported ownership across all households irrespective of presence of a pregnant woman in the household. Of those who owned nets, a little below half got it during LLIN distribution campaigns within their communities. The conduct of regular rounds of distribution campaigns may help to achieve a hundred percent ownership of LLIN nets in Nigeria. It is also necessary to equip health facilities including traditional birth homes to serve as a continuous source of distribution of long-lasting insecticide nets.

However, this study highlights the fact that LLIN ownership does not translate to use. Seventy percent of net owners reported they sleep under it daily. The reported use is higher compared to the findings of Titiloye et al among pregnant women residing in army barracks in Ibadan, Oyo State, Nigeria [11]. It is also higher than the report of the NDHS 2018 where fifty-eight percent utilization was reported. Some other studies reported a lower prevalence of LLIN utilization [4,12]. These reportedly high utilization rate among these respondents could be a result of use of other hospitals in support of care received at traditional birth homes where they could have received further information from other health care professionals. However, LLIN/ITN use in this study is lower than the target enumerated in the national malaria strategic plan that envisages that at least eighty percent of pregnant women should sleep under LLIN by 2025. Reasons commonly given for not using nets regularly include concerns about safety, side effects like heat and rash. Musa et al also reported excessive sweating, heat, and fear of the negative effect of the chemical on the net as reasons why respondents didn't use LLIN.

Other factors associated with use of LLINs were higher maternal age, higher level of education and prior history of antenatal. This is possibly because of prior exposure to information on malaria in previous antenatal period and in the past. These findings are similar to report from other studies that identified age amongst other factors as significant determinants of LLIN use [13].

Intermittent preventive treatment (IPTsp) during pregnancy is a specific prevention method for malaria in pregnancy, however only two-fifth of all respondents in this study were aware of IPTsp treatment. Studies by Iliyasu et al in a study in primary health centres in Kano State, Northern, Nigeria and Akinleye et al among women attending antenatal clinics in primary health centers in rural South Western Nigeria reported higher prevalence of IPTsp awareness. [14-16]. However, a similar study conducted among women attending traditional birth homes in rural Lagos reported a lower proportion of awareness of IPTsp. [17]. This is however, not unexpected as women receiving antenatal care at orthodox settings receive regular health education including sessions on methods on prevention of malaria in pregnancy though this also varies by location. These services, if at all present are not the norm in most traditional birth homes.

Despite the fact that about seventy percent of the women that were aware of IPTsp have used it in this pregnancy,

only 28.2% of all the women attending traditional birth homes alone had used it in this pregnancy. The prevalence of uptake of IPTsp in this study is however lower than the report in other studies [14,18]. It is nevertheless, not in line with the national malaria strategic plan (NMSP 2014-2020) target that all pregnant women should receive at least 3 doses of IPTsp in pregnancy by 2020. This finding is disheartening especially because non-use of IPTsp may have a deleterious impact on pregnancy outcomes, maternal morbidity, and mortality if the woman develops malaria during pregnancy.

In addition, this study revealed that most of those who used IPTsp bought the drug, so it is possible that besides low awareness and availability at traditional birth homes, the cost may be a limitation to the use of IPTsp. This is supported by a study done by Klein et al., 2016 in Mali where cost was identified as a barrier to the use of IPTsp [19]. Efforts to improve the uptake of IPTsp may be hindered by cost, so it is necessary that government subsidize the drugs or make them readily available at unorthodox centers like traditional birth homes.

Antenatal care attendance at both orthodox hospitals and traditional birth homes shows an improvement in the uptake of malaria preventives among these group of women. This is, however, not unexpected because these women are exposed to more health information, access to health interventions including the availability of LLINs and stock of IPTsp.

Our findings also reveal that the use of LLINs is suboptimal among women attending traditional birth homes alone, while IPTsp uptake is very low when compared to national targets. Traditional birth homes should be empowered to provide malaria preventive practices including supply of LLINs and Intermittent preventive therapy. The traditional birth attendants should also be trained in the delivery of appropriate health education during antenatal care visits.

This was a cross-sectional study, and the outcome variables were self-reported. Social desirability bias couldn't be excluded but the researchers ensured adequate probing as to the practices of the malaria preventive methods. In addition, the qualitative component helped to give some contextual interpretations of findings.

Conclusion

The use of malaria preventives among pregnant women using traditional birth homes is lower than the National Malaria Strategic Plan 2014-2020 targets. There is a significant gap that needs to be filled if the targets were to be met. Traditional birth homes need to be linked with government health centers to provide easy access to malaria preventives for pregnant women attending these homes.

What is known about this topic

- Intermittent preventive therapy and long lasting insecticide treated net have been used in the prevention of malaria in pregnancy

- There is a high prevalence of malaria infection among pregnant women attending traditional birth homes

What this study adds

- Women attending traditional birth homes are not given intermittent preventive therapy routinely
- Women who attend traditional birth homes also visit other health facilities but deliver in the traditional birth homes

Competing interests

Authors declare no competing interests.

Authors' contributions

All authors contributed to the conceptualization, design and conduct of this study. AAO was involved in development of the proposal, literature search and data acquisition. AAO and BEA contributed to the data analysis and interpretation. All authors contributed to the manuscript preparation and editing. MMS and IA reviewed the final manuscript before submission.

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Tables and figures

Table 1: Sociodemographic and selected obstetric history of women attending traditional birth homes

Table 2: Long Lasting Insecticide Treated Nets and Intermittent Preventive Treatment use among women attending traditional birth homes

Table 3: Determinants and Predictors of Insecticide Treated Net Use among women attending traditional birth homes in Ibadan North local government.

Table 4: Determinants and Predictors of Intermittent Preventive Treatment Use among women attending traditional birth home

Figure 1: Knowledge of Malaria transmission methods among the respondents

Figure 2: Knowledge of Malaria Preventive Practices among the respondents

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Table 1: Socio-demographic and selected obstetric history of women attending traditional birth homes		
Selected characteristics	Frequency	Percentage
Age in years		
Less than 24	88	27.7
25-34	192	60.4
35 years and above	38	11.9
Marital Status		
Single	28	8.8
Married	288	90.6
Separated	2	0.6
Ethnicity		
Yoruba	247	77.7
Ibo	42	13.2
Hausa	12	3.8
Others	17	5.3
Religion		
Christianity	169	53.1
Islam	143	45.0
Traditional	6	0.9
Level of Education		
No formal Education	16	5.0
Primary only	47	14.8
Secondary only	154	48.4
Tertiary	95	29.9
Others	6	1.9
Employment status		
Unemployed	57	17.9
Employed by private/ government	58	18.3
Self-employed	203	63.8
Income Class*		
Low	234	73.6
Middle	14	4.4
High	2	0.6
History of Previous ANC		
Yes	216	67.9
No	102	32.1
History of illness in this pregnancy		
Yes	129	40.6
No	189	59.4
History of previous abortion		
Yes	61	19.2
No	257	80.8

Table 2: Long Lasting Insecticide Treated Nets and Intermittent Preventive Treatment use among women attending traditional birth homes

Selected Characteristics	Frequency	Percentage
Ever Heard of Insecticide Treated Nets/LLIN(n=318)		
Yes	303	95.3
No	15	4.7
Ownership of Insecticide Treated Nets/LLIN(n=303)		
Yes	267	88.1
No	36	11.9
Knowledge of correct use of ITN(n=303)		
Yes	87	28.7
No	216	71.3
Source of Insecticide Treated Nets/LLIN(n=303)		
Health Center	76	28.6
Local government	32	12.0
Traditional Birth Homes	11	4.1
Distribution Campaign	120	45.1
Others	27	10.2
Sleep under Insecticide Treated Nets/LLIN (n=267)		
Yes	207	77.5
No	60	22.5
How often is Insecticide Treated Nets used(n=207)		
Everyday	140	67.6
Few times a week	42	20.3
Few times a month	19	9.2
Rarely	6	2.9
Ever Heard of Intermittent Preventive Treatment (n=318)		
Yes	125	39.3
No	193	60.7
Source of information on IPT(n=125)		
Hospital	57	45.6
Friends	35	28.0
Traditional birth attendant	21	16.8
Radio/television	11	8.8
Husband	1	0.8
Used Intermittent Preventive Treatment (n=125)		
Yes	85	68.0
No	40	32.0
Received IPT from Traditional Birth Homes (n=85)		
Yes	24	28.2
No	61	71.8

Table 3: Determinants and Predictors of Insecticide Treated Net Use among women attending traditional birth homes in Ibadan North local government.

Variables	Insecticide Treated Net Use		Unadjusted OR	95% C.I	Adjusted OR	95% C.I
	Yes n(%)	No n(%)				
Age group (years)						
Less than 24	37(64.9)	20(35.1)	1		1	
25-34	139(78.1)	39(21.9)	1.96	1.0-3.6*	1.2	0.5-3.2
35 years and above	31(96.9)	1(3.1)	16.7	2.1-132.0*	7.9	0.7-74.4
History of ANC attendance						
No	47(68.1)	22(31.9)	1		1	
Yes	160(80.8)	38(19.2)	1.97	1.1-3.6*	1.5	0.6-3.9
Occupation						
Unemployed	23(65.7)	12(34.3)	1		1	
Self Employed	132(75.0)	44(25.0)	1.56	0.7-3.4	0.8	0.3-2.2
Employed (Private/Government)	49(92.5)	4(7.5)	6.39	1.8-21.9*	1.2	0.4-7.9
Level of education						
No formal Education	8(66.7)	4(33.3)	1		1	
At least Secondary	120(72.3)	46(27.7)	1.3	0.4-4.5	2.0	0.5-8.5
At least Tertiary	79(88.8)	10(11.2)	3.9	1.0-15.5*	3.4	0.7-17.3
Hospital use						
No	101(72.1)	39(27.9)	1		1	
Yes	106(83.5)	21(16.5)	2.6	1.1-3.5*	1.5	0.7-3.3
Knowledge of malaria						
Poor	88(73.3)	32(26.7)	1		1	
Good	89(85.6)	15(14.4)	2.1	1.1-4.2*	1.1	0.4-2.7
Knowledge of malaria Preventive practices						
Poor	94(70.1)	40(29.9)	1		1	
Good	93(84.5)	17(15.5)	2.3	1.2-4.3*	1.7	0.7-4.2
Knowledge of ITN						
Poor	134(71.3)	54(28.7)	1		1	
Good	73(92.4)	6(7.6)	4.9	2.0-11.9*	5.3	1.6-16.6*

*Statistically significant at $p < 0.05$

Table 4: Determinants and Predictors of Intermittent Preventive Treatment Use among women attending traditional birth home						
Selected Characteristics	Intermittent Preventive Treatment Use		Crude OR	95% C. I	Adjusted OR	95% C. I
	Yes n(%)	No n(%)				
Age group(years)						
Less than 24	7(35.0)	13(65.0)	1		1	
25-34	27(32.9)	55(67.1)	1.1	0.4-3.0	1.8	0.3-11.0
35 years and above	6(26.1)	17(73.9)	1.5	0.4-5.6	4.1	0.4-40.5
History of ANC attendance						
No	9(32.1)	19(67.9)	1			
Yes	31(32.0)	66(68.0)	2.1	0.4-2.4		
Occupation						
Unemployed	6(50.0)	6(50.0)	1		1	
Self Employed	25(36.3)	44(63.8)	1.7	0.5-6.0	2.7	0.6-12.7
Employed (Private/Government)	8(19.0)	34(81.0)	4.2	1.1-16.7	3.1	0.6-15.7
Hospital use						
No	25(55.6)	20(44.4)	1		1	
Yes	15(18.8)	65(81.3)	5.4	2.4-12.2*	7.8	2.4-25.1*
Knowledge of malaria						
Poor	15(32.6)	31(67.4)	1		1	
Good	21(30.0)	49(70.0)	1.1	0.5-2.5	0.4	0.1-1.3
Knowledge of malaria preventive practices						
Poor	18(45.0)	22(55.0)	1		1	
Good	22(27.8)	57(72.2)	2.1	0.9-4.6	2.6	0.8-8.0
Knowledge of IPT						
Poor	23(31.1)	51(68.9)	1		1	
Good	17(33.3)	34(66.7)	0.9	0.4-1.9	0.8	0.2-2.1
ITN use						
No	5(38.5)	8(61.5)	1		1	
Yes	76(72.4)	29(27.6)	4.1	1.2-13.8*	3.6	0.7-18.0

*Statistically significant at p<0.05

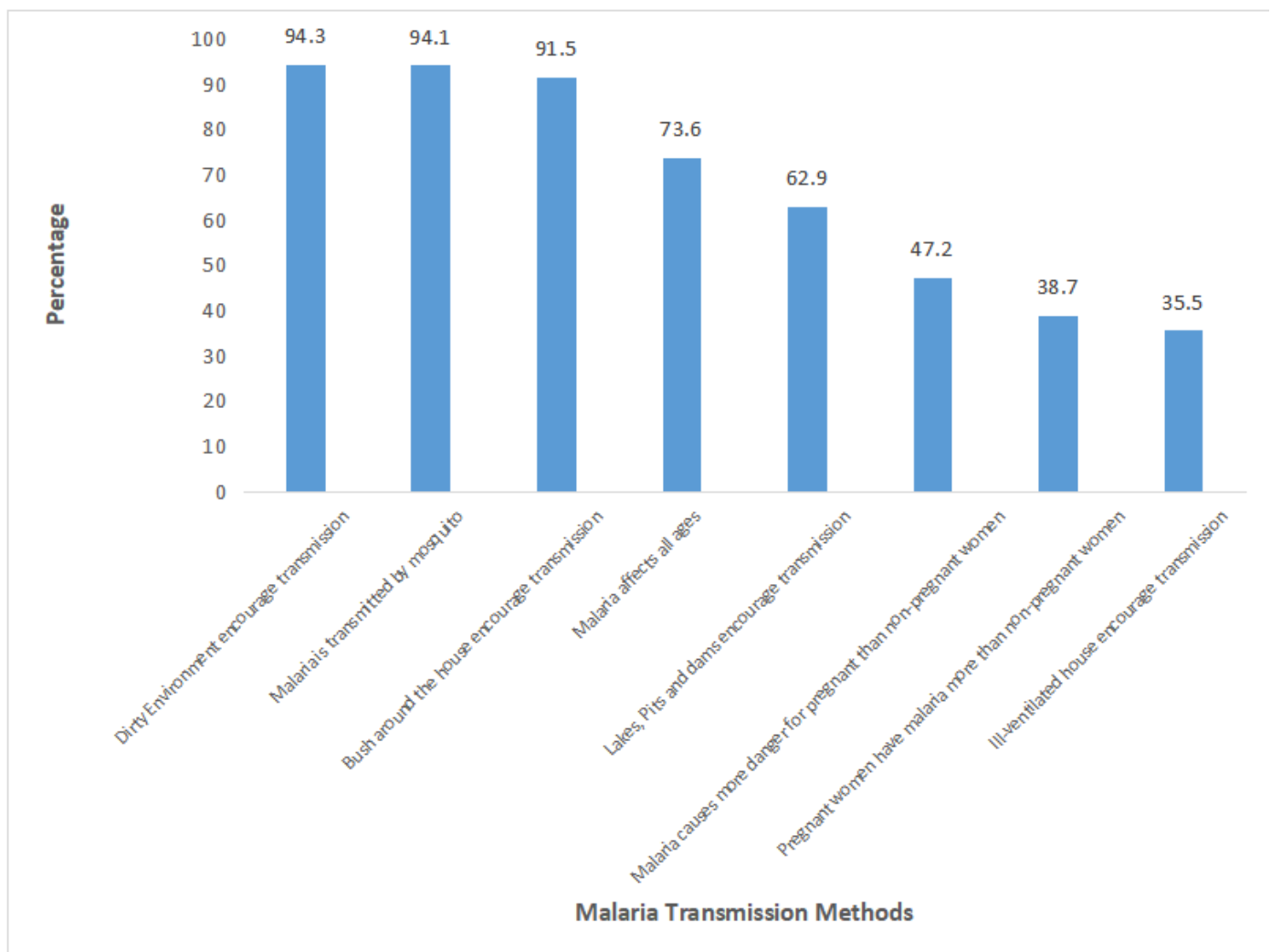


Figure 1: Knowledge of Malaria transmission methods among the respondents

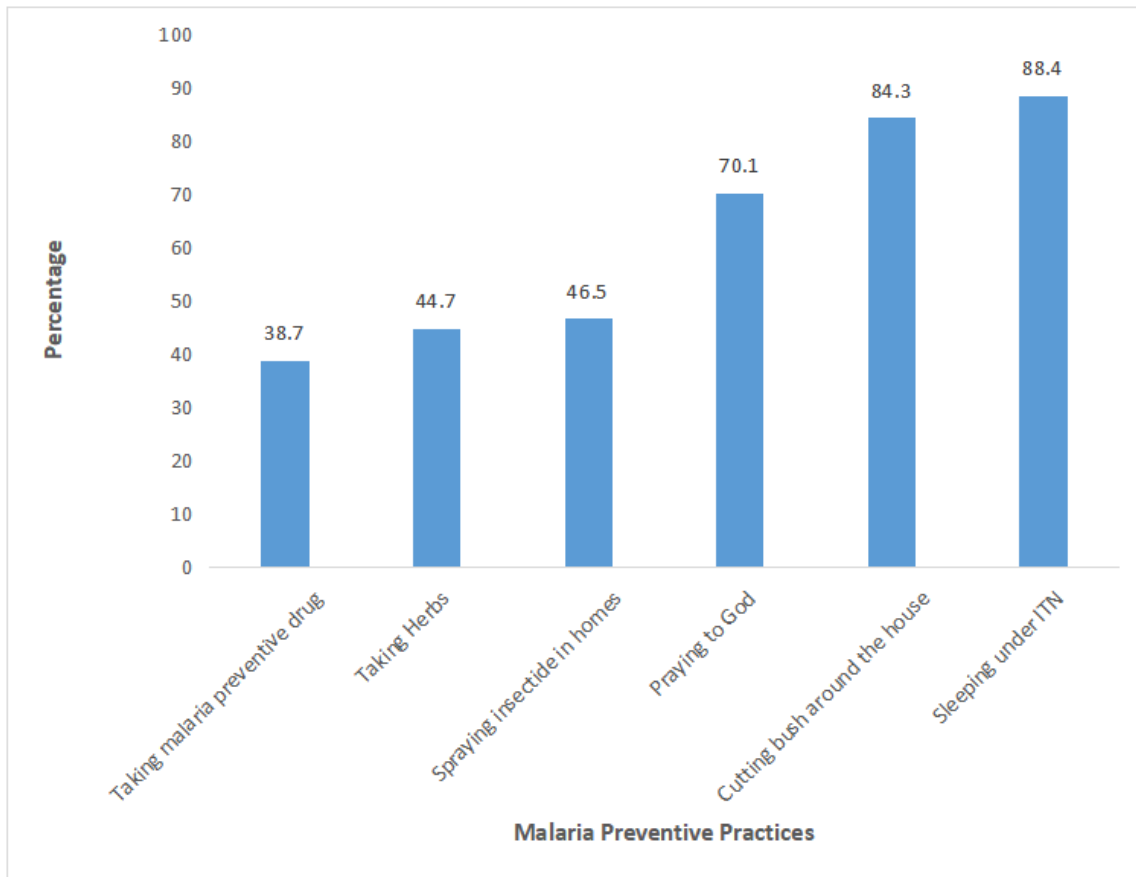


Figure 2: Knowledge of Malaria Preventive Practices among the respondents