

Utilization of Insecticide Treated Net and Intermittent Preventive Treatment among Pregnant Women in Ogoja Local Government Area, Cross River State, Nigeria

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Abstract

Malaria in pregnancy is a major public health problem in Nigeria. Available data indicates that malaria parasitemia is highly responsible for 70.5% morbidity in pregnancy and 11% of maternal related-deaths. This study was aimed at assessing the level of utilization of insecticide treated net (ITN) and intermittent preventive treatment (IPT) among pregnant women in Ogoja Local Government Area, Cross River State, Nigeria. A cross-sectional descriptive study design was used. A semi-structured questionnaire was designed to generate data from 422 respondents who were selected using simple and systematic sampling techniques; out of which 403 questionnaires were considered valid for analysis. This study was carried out from February to May, 2013. Data generated were analyzed using Statistical Package for Social Sciences (SPSS version 20.0) and results were presented in tables. Findings from this study shows that all respondents 403 (100%) reported to have been told about ITN out of which 222 (55.1%) respondents have used insecticide treated net. Based on frequency of ITN use, only 98 (24.3%) respondents use Insecticide treated net always, 124 (30.7%) use ITNs sometimes and 181 (44.9%) had never used insecticide treated net before. Reasons for inconsistency or non-usage were largely because it causes heat 136 (46.4%) and inhalation of poisonous chemicals used in treating the net 78 (26.6%). Only 79 (19.6%) respondents were aware of intermittent preventive treatment (IPT) and 75 (94.9%) indicated antenatal clinic as their main source of information. Sulphadoxine-Pyrimethamine was identified by 64 (81.0%) respondents as the drug recommended for IPT use. A few respondents 57 (14.1%) reported to have received IPT drug during antenatal clinic while 346 (85.9%) have not received any IPT drug before since their coming to the ANC center. Community-based interventions on malaria control should be intensified to increase awareness and use of malaria preventive measures in rural settings especially among the vulnerable population.

Keywords: Malaria, Insecticide Treated Net, Intermittent Preventive Treatment, pregnant women.

1. Introduction

Malaria is one of the major public health problems in most developing countries which has contributed substantially to disease morbidity and mortality in malaria endemic regions (World Malaria Report, 2015). This is linked to the fact that when an individual is infected with malaria parasite, it suppresses the immune system increasing the individuals' susceptibility to other infections. Consequently, if prompt attention is not given, the individual dies from the infection. Malaria is responsible for 50% hospital consultation and 35% of hospital admission (Federal Ministry of Health, 2005). Over 90% of malaria incidence and mortality occurs in Sub-Saharan Africa (World Malaria Report, 2015). In Nigeria, available data indicates that malaria parasitemia is highly responsible for 70.5% morbidity in pregnancy and 11% of maternal related-mortalities (Aumta, Houmsou, Wama & Ameh, 2014). A cross-sectional study carried out in Calabar revealed that malaria prevalence among pregnant women was as high as 70.1% (Okafor, Akpan & Usanga, 2012). Ogoja Local Government Area, a rural setting, is perceived to be a high malaria endemic region where high risk groups (pregnant women and children) are substantially at risk of being infected.

Malaria in pregnancy can lead to spontaneous abortion, still births, low birth weight, maternal anemia, congenital infection and even death (Stephen, Elena, Abara, Eyob, Valentino & Malcolm, 2003; Adeyemi, Adekunle & Akinota, 2007). The prevention of malaria in pregnancy has been the core for most malaria control programmes and interventions. Several strategies have been recommended to protect pregnant women from regular malaria bouts. Two of such strategies are the use of Insecticide Treated Net (ITNs) and chemoprophylaxis such as Intermittent Preventive Treatment (IPT)-Sulphadoxine-Pyrimethamine (SP). These two strategies have been confirmed to effectively reduce malaria infection among pregnant women (Obol, Ononye & Orach, 2013; WHO, 2010; Falade, Yusuf, Fadero, Mokolu, Hamer, & Salako, 2007).

Ample evidence have shown that pregnant women recorded a high awareness level of ITN but its usage was reportedly poor (Obol et al, 2013; Ugwu, Ezechukwu, Obi, Ugwu, & Okeke, 2013; Ibrahim, Umar, Garba, Isa, Usman & Bako, 2014). Likewise for IPT, evidence-based Nigerian studies have established that

IPT awareness level and its usage were poorly reported (Tobin-West, et al, 2013; Iliyasu et al, 2012). Hence, since Cross River State is a malaria endemic region and Ogoja Local Government Area is a rural area with high malaria transmission, assessing the awareness level and utilization of ITN and IPT among pregnant women became very essential.

2. Methodology

The study was carried out in Ogoja Local Government Area which is situated in the Northern Senatorial District of Cross River State, Nigeria. It has 10 political wards and covers a land mass of about 972km² (375sq kilometer). Most occupants of the area are mainly farmers, petty traders and civil servants (Osonwa & Eko, 2015a). Christianity is the most widely practiced religion (Osonwa & Eko, 2015b). A cross-sectional descriptive study design was adopted and used in this study. Simple random sampling technique was used in the selection of four wards and systematic random sampling techniques was used to select eight health care facilities (i.e. two health facilities per selected ward) from which 422 pregnant women were selected during ANC visit to the health facilities. A semi-structured questionnaire was interviewer-administered to the respondents who presented at the health care facilities and showed enthusiasm to participate in the study via verbal consent. Data obtained were entered and analysed using Statistical Package for Social Sciences (SPSS version, 20.0). Results obtained were expressed in percentages, frequency and presented in Tables. Authorization to carry out the study was obtained from Cross River State Ethics Research Committee, Ministry of Health. Anonymity and confidentiality of information provided by the respondents were maintained.

3. Results

Socio-demographic characteristics of the respondents

Out of 422 questionnaires that were administered, 403 completed questionnaires were returned and analyzed giving a response rate of 95.5%. The result of this study showed that 139 (34.5%) respondents were between the age group of 25-29 years, 135 (33.5%) respondents were between the age group of 30-34 years and 69 (17.1%) were between the age group of 20-24 years. While majority of the respondents were Christians 370 (91.8%) and married 397 (98.5%), only 6 (1.5%) reported to be co-habiting with a partner. About one hundred and seventy-one (42.2%) reported to have undergone secondary level of education. Respondents who had attained primary and tertiary education were about 142 (35.2%) and 74 (18.4%) respectively. Major occupations as reported by the respondents were trading 106 (26.3%), farming 93 (23.1%), civil service 62 (15.4%) and 10 (2.5%) were unemployed. With regards to monthly income level, 145 (35.9%) earned less than N5,000, 94 (23.3%) respondents earn between N10,000 to N20,000 and about 78 (19.4%) respondents earned N30,000 to N40,000 monthly (Table 1).

Awareness and use of Insecticide Treated Net among respondents

All respondents 403 (100%) confirmed that they have been told about Insecticide Treated Net (ITN). Most respondents 249 (61.8%) indicated that ITN is used for preventing mosquito bite, 100 (24.8%) felt ITN is used for preventing malaria and 54 (13.4%) felt ITN is used for treating malaria. More than half of the respondents 222 (55.1%) reported to have used ITN, while 181 (44.9%) have not used ITN before. Based on consistency of ITN use, only 98 (24.3%) reported to have been using ITN always, 124 (30.7%) use ITN sometimes and 181 (44.9%) have never used ITN before. Reasons for inconsistency or non-usage were largely because it causes heat 136 (46.4%) and contains inhalable poisonous chemical 78 (26.6%). A substantial proportion of the respondents 260 (64.5%) admitted that they did not use an insecticide treated net last night before the survey and two-third of the respondents 272 (67.5%) were aware that ITN were given freely at the health facility (Table 2).

Knowledge and use of Intermittent Preventive Treatment among respondents

Out of 403 respondents, 79 (19.6%) confirmed that they have been told about Intermittent Preventive Treatment (IPT). A greater proportion of the respondents 358 (88.8%) indicated that they have been told about the drugs used for the prevention of malaria in pregnancy of which, chloroquine 129 (36.0%), ACT 67 (18.7%) and Quinine 54 (15.1%) were the most highlighted. Antenatal clinic visit was identified by 75 (94.9%) as the main source of information on IPT. Out of 79 respondents, 67 (84.8%) acknowledged that they knew the meaning of IPT and 64 (81.0%) identified Sulphadoxine-pyrimethamine as the drug recommended for IPT use. More than half of the respondents 50 (63.3%) who were aware of IPT indicated that IPT doses are recommended for use between the 4th-6th month of pregnancy while 12 (15.2%) felt IPT should be taken between the 7th-9th month of pregnancy (Table 3). Out of 403 study participants, 57 (14.1%) reported to have used IPT drug before in the clinic and 27 (47.4%) respondents were supervised while taking the drug (Table 4).

Table 1: Socio-demographic characteristics of the respondents (n=403)

Variables	n (%)
Age in years	
15-19	11 (2.7)
20-24	69 (17.1)
25-29	139 (34.5)
30-34	135 (33.5)
35-39	27 (6.7)
40-44	13 (3.2)
45-49	9 (2.2)
Religion	
Christianity	370 (91.8)
Islam	9 (2.2)
Traditional Religion	24 (6.0)
Marital Status	
Married	397 (98.5)
Co-habiting	6 (1.5)
Level of Education	
No formal Education	16 (4.0)
Primary Education	142 (35.2)
Secondary Education	171 (42.4)
Tertiary Education	74 (18.4)
Occupation	
Farmer	93 (23.1)
Trader	106 (26.3)
Civil Servant	62 (15.4)
Housewife	90 (22.3)
Student	35 (8.7)
Unemployed	10 (2.5)
Others	7 (1.7)
Monthly income level	
Less than ₦5,000	145 (35.9)
₦10,000-20,000	94 (23.3)
₦30,000-40,000	78 (19.4)
₦50,000-60,000	49 (12.1)
₦70,000-80,000	24 (5.9)
Greater than ₦80,000	13 (3.2)

Table 2: Awareness and use of insecticide treated net among pregnant women

Variables	n (%)
Ever been told about insecticide treated net (n=403)	
Yes	403 (100)
No	0 (0.0)
Uses of insecticide treated net (n=403)	
Used for treating malaria	54 (13.4)
Used for preventing mosquito bite	249 (61.8)
Used for preventing malaria	100 (24.8)
Ever used an insecticide treated net (n=403)	
Yes	222 (55.1)
No	181 (44.9)
Frequency of using insecticide treated net (n=403)	
Always	98 (24.3)
Sometimes	124 (30.7)
Never used it	181 (44.9)
Reasons for inconsistency or non-usage of insecticide treated net (n=293)	
It causes heat	136 (46.4)
It contains poisonous chemical	78 (26.6)
I don't have it	44 (15.0)
I don't know how to use it	12 (4.1)
No reason	23 (7.8)
Total	293
Sleep under any treated net last night before the survey (n=403)	
Yes	143 (35.5)
No	260 (64.5)
Insecticide treated net given in this health facility (n=403)	
Yes	272 (67.5)
No	87 (21.6)
Not sure	44 (10.9)
Given free or bought (n=272)	
Free	272 (100)
Bought	0 (0.0)

Table 3: Knowledge of Intermittent Preventive Treatment among respondents

Variables	n (%)
Ever been told about IPT (n=403)	
Yes	79 (19.6)
No	324 (80.4)
Ever been told of drugs used for prevention of malaria during pregnancy (n=403)	
Yes	358 (88.8)
No	45 (11.2)
Type of drug recommended for malaria prevention during pregnancy (n=358)	
Chloroquine	129 (36.0)
Quinine	54 (15.1)
Sulphadoxine-pyrimethamine	31 (8.7)
Atermisinin combination Therapy	67 (18.7)
Aspirin	19 (5.3)
Malareich	31 (8.7)
Amalar	27 (7.5)
Source of information on IPT (n=79)	
Husband	4 (5.1)
Antenatal clinic	75 (94.9)
Knowledge of the meaning of IPT (n=79)	
Have knowledge	67 (84.8)
Do not have knowledge	12 (15.2)
Drugs recommended for IPT use (n=79)	
Chloroquine	8 (10.1)
Malareich	3 (3.8)
Sulphadoxine-pyrimethamine	64 (81.0)
Does not know	4 (5.1)
Period IPT doses are usually recommended to be used during pregnancy (n=79)	
1 st -3 rd month	6 (7.6)
4 th -6 th month	50 (63.3)
7 th -9 th month	12 (15.2)
2 nd -4 th month	11 (13.9)

Table 4: Utilisation of Intermittent Preventive Treatment among respondents

Variables	n (%)
Ever received IPT drug before (n=403)	
Yes	57 (14.1)
No	346 (85.9)
Place where the drug was taken (n=57)	
At home	0 (0.0)
In the clinic	57 (100)
Outside the clinic	0 (0.0)
Any supervision when taking the drug (n=57)	
Yes	27 (47.4)
No	30 (52.6)

4. Discussion

All 403 (100%) respondents reported to have been told about Insecticide treated net majorly by a health worker during ANC visit. This finding is similarly reported by Oche, Ameh, Umar, Gana & Njoku (2010) where 91% of the respondents reported to have heard of ITNs mainly through hospital sources. This results clearly validates the effectiveness of maternal education on malaria prevention during pregnancy at ANC. The health care providers are considered as the most reliable sources of health information especially as it concerns malaria prevention with ITN. They teach their patients on when and how to use ITN. Aside the health care providers, regular advertisement of malaria messages on the mass and print media as well as personal effort of accessing factual health information could also account for high awareness level of ITN. Aluko & Oluwatosin (2012) believed that the spread of malaria preventive messages is a vital strategy to combat malaria in endemic settings. More than

half of the respondents (55.1%) reported to have used ITNs before but 44.9% reported that they have never used an insecticide treated net in their lifetime. This finding contradicts several other findings carried out in Nigeria where ITN use was reported low especially in places such as Ibadan (32%), Sokoto (30%) and Benin City (45.3%) (Okoye & Isara, 2011; Aluko & Oluwatosin, 2012; Isah & Nwobodo, 2009). The level of awareness about ITN effectiveness, accessibility and ownership may likely influence the utilization of ITN. This means that the 44.9% respondents who

had never used an ITN before may never have owned an ITN before or lack the knowledge on how to use it.

Based on the frequency or adherence to ITN use, only 98 (24.3%) pregnant women claimed to have always used ITN, 124 (30.7%) use ITN sometimes and 181 (44.9%) reported not to have used an ITN before. This report corroborates with a study carried out by Aluko *et al* (2012), where compliance rate to ITN use was reported to be 19%. Low coverage may be responsible for low ITN use among pregnant women. Hence, distribution of ITNs at various ANC centers should be intensified. Reasons for inconsistency or non-usage of ITNs given by pregnant women were due to the fact that it causes heat (46.4%) and contains poisonous chemical (26.6%). This finding is consistent with that of Isah *et al* (2009) where non-availability of nets and inconvenience were the major reasons for non-usage of ITN. Since these misconceptions have no scientific basis, maternal health education on malaria prevention should be used as a strategy to debunk such misconceptions. Demonstration of ITN use during ANC should be incorporated as a strategy to increase ITN use among pregnant women. Two hundred and seventy-two (67.5%) pregnant women claimed to be aware of free distribution of ITN at the health facility they patronize. Increased supply of ITNs, education on ITN use and constant reminder of its importance were suggestions given by respondents to increase the uptake of ITN.

This study revealed that ITN utilization and compliance rates were 55.1% and 24.3% respectively. Insecticide treated nets which are an important part of Malaria Action Plan strategy are reported to be the most efficacious of all currently feasible malaria control programmes (Lengeler, 2000). According to Cottrel *et al* (2005), ITNs use is prioritized for pregnant women in their first trimester while Intermittent Preventive Treatment (IPT) is not recommended due to contraindications. Existing literature have revealed that the correct use of ITN have a beneficial effect in mitigating the rate of maternal and child related-morbidity and mortality (Kiwuwa & Mufubenga, 2008).

A reasonable proportion of the respondents 324 (80.4%) acknowledged that they have heard of intermittent preventive treatment while only 79 (19.6%) reported to have been told about IPT with antenatal clinic (94.9%) being their major source of information. A higher percentage was reported in studies carried out in Uyo and Ekiti where 40.8% and 52.2% of the respondents respectively had heard of IPT (Abasiattai, Etukumana & Umoyoho, 2009; Akinyele, Falade and Ajayi, 2009). The low awareness level of IPT in the current study could be attributed to low capacity of health workers who lack adequate knowledge about IPT. Hence, health workers in all health facilities should be trained on IPT strategy. Questions were asked if pregnant women have been told about drugs used for prevention of malaria during pregnancy since most of them indicated that they have not heard of IPT. About 358 (88.8%) reported to have been informed of drugs used for prevention of malaria during pregnancy. Chloroquine (36.0%) was the well-known drug recommended followed by Atermisinin Combination Therapy (18.7%). Only 15.1% respondents reported to be aware of Sulphadoxine-Pyrimethamine. This clearly shows that Chloroquine and Atermisinin Combination Therapy seems to be the most widely advertised and used malaria drugs among pregnant women. The few women who knew about Sulphadoxine-Pyrimethamine could be attributed to regular ANC visit and personal relationship with health care providers. Women whose spouse are health care workers may exert the advantage of being knowledgeable about IPT than their counterparts.

Among those who admitted that they knew the meaning of IPT (84.8%), a considerable proportion gave a fairly acceptable definition of IPT that "it involves taking of drugs or tablets to prevent malaria attack". Sulphadoxine-pyrimethamine was recognized by 81% respondents as the drug recommended for IPT use and 63.3% indicated that IPT is usually recommended to be used during 4th-6th months of pregnancy. Out of 79 (19.6%) respondents who were aware of IPT, only 57 (14.1%) pregnant women reported to have received IPT drug-sulphadoxine-pyrimethamine in the clinic. Utilization of IPT among respondents in this study is very low despite that fact that most study participants were in their second and third trimester of pregnancies. This result is similarly reported in other studies (Enato, Okhamafe, Okepere & Oseji, 2001; Guyatt, Noor, Ochola & Snow, 2004; Mubyazi, Bloch, Kamugisha, Kitua & Ijumba, 2005). Low awareness level and non-availability of drugs could largely account for the low use of IPT. Among the 57 (14.1%) pregnant women who reported to have received IPT drug, only 27 (47.4%) admitted that they were supervised by a health worker. This finding is comparable to that of Akinleye *et al* (2009); though the percentage reported in the latter study was comparatively low. This obviously reveals that health workers lack knowledge of the appropriate policy in implementing IPT strategy.

5. Conclusion

Malaria in pregnancy is still a reality in Nigeria especially in rural areas where the most vulnerable groups such as pregnant women and children are at high risk of malaria attack intermittently. Even with the emergence of divergent strategies to curb malaria transmission, malaria still threatens the health of the larger population. Findings in this study showed that the awareness level and utilization of ITN was considerable high whereas that of IPT was low. Hence, prioritising malaria prevention measures such as ITN and IPT during malaria campaigns, symposia, ANC outlets and trainings would effectively improve awareness and curb malaria in pregnancy. Manufacturing company producing ITN should ensure that an improved and well-ventilated ITN products be produced to encourage regular usage especially in poor resource setting since discomfort and heat were the major reasons for poor uptake of ITN. Concerted effort should be made by all relevant stakeholders to improve the uptake of IPT in all ANC outlets via availability of drugs, awareness and utilization according to the WHO IPT strategic guidelines.

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