

UTILIZATION OF INSECTICIDE TREATED NET AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN ETSAKO EAST LOCAL GOVERNMENT AREA OF EDO STATE.

*OGBEIDE A.O., *ARUOTURE I., *WAGBATSOMA V.A.

ABSTRACT

Objective: To assess the knowledge on malaria, ownership and utilization of ITN among pregnant women attending antenatal clinic in Etsako East LGA, Edo State.

Methodology: A descriptive cross-sectional study was carried out using a structured interviewers' administered pre-tested questionnaire among 305 consenting pregnant women attending antenatal clinic in Etsako West LGA of Edo State. Data collected were analyzed using SPSS version 16.0.

Results: A total of 305 pregnant women with a mean age of 28.7 ± 6.5 years participated in the study. Majority 265 (86.9%) of the respondents had good knowledge on how malaria is transmitted, although a substantial proportion 200 (65.6%) had a poor knowledge on its effect on pregnancy. ITN ownership was low, as only 80 (26.2%) owned an ITN and among those that had one utilisation was equally low 17 (21.3%).

Conclusion: The study revealed a relatively good knowledge on transmission of malaria among respondents'. However ownership and utilization was low majorly due to unavailability of ITNs.

INTRODUCTION

Malaria is a global health priority.¹ At present, about 99 countries in the world are considered malarious, almost half of which are in Sub-saharan Africa. Approximately 3 billion of the world's population are at risk of malaria infection. In 2010, there was an estimated 219 million cases of malaria (range 154–289 million), and 660 000 malaria deaths globally (range 490 000–836 000). In Nigeria, there were approximately 4,306,945 suspected cases of malaria with 3,392,234 confirmed cases.¹

Approximately 80% of malaria cases and 90% of deaths resulting from malaria are estimated to occur in WHO African Region, with children under five years of age and pregnant women most severely affected.¹ Malaria directly accounts for about 11% of all maternal deaths, and indirectly contributes to additional 11% of maternal deaths mainly by being a leading cause of anaemia in pregnancy.² Plasmodium falciparum is the most common malaria species in Africa responsible for the burden of malaria infection in pregnancy. During pregnancy P. falciparum infection is estimated to cause as many as 10,000 maternal deaths each year, 8% to 14% of all low weight babies, and 3% to 8% of all infant deaths.³⁻⁵ Malaria infection during pregnancy results in enormous adverse effects on both mother and fetus ranging from maternal anemia, fetal loss, premature delivery, intrauterine growth retardation, and delivery of low birth weight

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*Ogbeide A.O., *Aruoture I., *Wagbatsoma V.A.

*Department of Community Health,
University of Benin Teaching Hospital,
Benin-City.

*Correspondence

Ogbeide AO.

Email address: ogbeideamenze@yahoo.com

Telephone number: + 234 803 404 4799

infants (< 2.5kg or 5.5 pounds)

For the prevention and control of malaria during pregnancy in Sub-Saharan Africa, the WHO currently recommends a three pronged approach to preventing the adverse effects of malaria in pregnancy in areas with high levels of transmission of Plasmodium falciparum malaria. They are: use of insecticide- treated bed net (ITN); intermittent preventive treatment (IPT) with anti-malarial drugs and febrile malaria case management. This has been adopted by Nigeria.^{6,7}

Following the Abuja malaria summit in 2000, the Nigerian government set a mid-term target to have 65% of the population at risk, pregnant women and children under five years sleep under insecticide treated nets (ITN) by the end of 2005. This led to the initiation of the ITN massive promotion and awareness campaign (IMPAC) in 2002 with the aim of promoting awareness and improving availability and utilization of ITNs through distribution of nets to pregnant women attending antenatal clinics and mothers of children under five years old who have completed their routine immunization free of charge. Since 2003, the Federal Government through IMPAC has supplied ITNs to various local governments' Primary Health Care (PHC) departments through the State Ministries of Health.

Every year, an estimated 150 million ITNs are needed to protect all populations at risk of malaria in Sub-Saharan Africa. Several randomised control trials have demonstrated that the consistent use of ITN in pregnancy brings about beneficial maternal and infant outcome.^{3,5,8} To curtail the increasing prevalence of malaria, Nigeria adopted the WHO recommendation to provide ITNs free of charge at the point of distribution to all persons at risk for malaria. According to the Household survey conducted in Nigeria in 2010 it was reported that 23% of the population in urban areas and 30% in the

rural areas had access to ITN in their household, of these only 16% and 25% urban and rural areas respectively of the population actually utilised the ITN the previous night. The indices are equally poor among pregnant women who are the adult group most vulnerable to malaria infection, as only 16% in the urban area and 39% in the rural areas actually utilised the ITN the previous night.⁹ This study intends to ascertain the perceptions of pregnant women towards ITN as this is a determining factor of their usage. Evidence based information gotten from this study which will give more insight into the reasons for poor ITNs usage among pregnant women. This will be utilised by policy makers in making policies that will improve ITN usage and ultimately reduce the incidence of malaria among pregnant women.

The objectives of the study are: to assess the knowledge of pregnant women attending ANC on malaria and assess their ownership and utilisation of ITN.

METHODS

A cross-sectional descriptive study was carried out among 335 pregnant women (15-49 years) attending antenatal clinic in Etsako East Local Government Area of Edo state from March to December, 2009. Only 305 pregnant women gave their verbal consent to partake in the study (91% response rate). Participants were selected using a proportionate simple random sampling technique based on average monthly attendance at 17 public and private health facilities rendering ANC services.

Ethical approval to undertake the survey was gotten from the University of Benin Teaching Hospital ethical committee. Verbal consent was obtained from all respondents after giving them detailed information on the study. The respondents were also assured of

confidentiality. At the end of the study, respondents were given a feedback, and they were educated on malaria control measures. Data was collected using researcher administered structured pre-tested questionnaires and analyzed with Statistical Package for Scientific Solutions (SPSS) version 16. Results were expressed as either mean values (standard deviation) or proportions, and associations for statistical significance at 95% confidence limit.

Composite scoring for knowledge on effect of malaria in pregnancy

One mark was given for each correct answer and zero mark for incorrect answer. The total score was then converted to percentage and classified:

Poor knowledge less than 49.9%;

Fair knowledge 50% to less than 69.9%

Good Knowledge 70% and above.

RESULTS

A total number of 305 respondents were studied, ranging from 15 to 49 years. The mean age of respondents was 28.7 years with a standard deviation of 6.5. Majority of the respondents (80.3%) were married and living together with their spouse. Respondents were mainly traders (41.3%) followed by 22.3% who were civil servants. Majority (83.3%) of the respondents had a family size of less than four. (Table 1)

Majority (86.9%) of the respondents mentioned mosquito bites as the mode of transmission of malaria. Others mentioned working under the sun (19.3%); drinking dirty water (18.4%); presence of waste (7.5%) and curse from the gods (3.3%) as modes of transmission of malaria. One percent (1.0%) had no idea of the mode of transmission of malaria. Composite score for knowledge of effect of malaria on pregnancy revealed that 65.6% of the respondents had poor knowledge; 29.8% had fair knowledge and only 4.6% had good knowledge. (Table 2)

Majority (71.4%) of the respondents did not know the cost of purchase of an ITN, however 23.2% felt it was expensive. The preventive measures for malaria cited by respondents were as follows: use of ITN (26.2%); insecticide spray (21.3%); use of drugs (11.1%); netting of windows and doors (6.6%); use of mosquito coil (5.2%); drinking of clean water (4.3%); clearing of the bushes (1.3%); use of naphthalene (1.0%); proper waste disposal and traditional remedies (1.0%). (Table 2)

Figure 1 shows the perceived derivable benefits from ITN among respondents. Majority (84.3%) of the respondents perceived that ITN prevented malaria, 71.8% said that it prevents mosquito bites, 27.5% said it prevents bites from other insects, while 4.6% said it created warmth.

Figure 2 shows the perceived derivable harm from ITN use among respondents. Majority (78.0%) said it brings about insufficient air, 49.1% said that it causes heat, 33.9% said it causes difficulty in getting up at night, 10.2% said mosquitoes can still pass through and bite, 8.5% said the chemicals used are harmful, 5.1% said it had a bad smell and 1.7% said it caused cough.

Only 26.2% of the respondents owned a net. Of which 72.5% were long lasting ITN and 27.5% short acting ITN. Only 21.2% of the respondents used the net every night while 58.8% used it occasionally and 20.0% rarely used it. (Table 3)

Figure 3 shows respondents reasons for non ownership of ITN. A higher proportion (43.1%) of the respondents said that the ITN was not readily available, 11.6% said their spouse did not approve of its use, 10.7% did not like it, 9.3% said it was too expensive, 8.4% claimed that poor ventilation prevents its usage, 5.8% said it caused itching and

RESULTS

Table 1. Socio-demographic characteristics of respondents

Characteristics (n = 305)	Frequency (%)
Age group (years)	
15-19	16 (5.2)
20-24	70 (23.0)
25-29	80 (26.2)
30-34	71 (23.3)
35-39	46 (15.1)
40-44	17 (5.6)
45-49	5 (1.6)
Religion	
Christian	223 (73.1)
Islam	80 (26.2)
ATR	2 (0.7)
Marital status	
Single	27 (8.9)
Married and living together	245 (80.3)
Married but living apart	23 (7.5)
Divorced	4 (1.3)
Widowed	1 (0.3)
Co-habiting	5 (1.6)
Level of education	
None	24 (7.9)
Primary attempted	26 (8.5)
Primary completed	54 (17.7)
Secondary attempted	48 (15.7)
Secondary completed	95 (31.1)
Tertiary	58 (7.9)
Occupation	
Traders	126 (41.3)
Farmer	43 (14.1)
Civil servants	68 (22.3)
Unemployed	64 (21.0)
Others (tailors, hair dressers)	4 (1.3)
Size of family	
≤ 4	245 (83.3)
>4	60 (16.7)

Mean age = 28.7 (SD = 6.5) years

Table 2. Respondents' knowledge on malaria, perception on cost of ITN and preventive measures used against malaria.

Variable (n=305)	Frequency (%)
Mode of transmission*	
Mosquito bite	265 (86.9)
Working under the sun	59 (19.3)
Drinking dirty water	56 (18.4)
Presence of waste	23 (7.5)
A curse from the gods	10 (3.3)
Don't know	3 (1.0)
Effect of malaria on pregnancy	
Good	14 (4.6)
Fair	91 (29.8)
Poor	200 (65.6)
Perception on cost of ITNs	
Do not know	218 (71.4)
Expensive	71 (23.2)
Not expensive	26 (8.4)
Preventive measures *	
Use of ITN	80 (26.2)
None	67 (22.0)
Insecticide spray	65 (21.3)
Use of drugs (sulphadoxine-pyrimethamine)	34 (11.1)
Netting of windows and doors	20 (6.6)
Use of mosquito coil	16 (5.2)
Drinking clean water	13 (4.3)
Clearing bushes	4 (1.3)
Use of naphthalene	3 (1.0)
Others**	3 (1.0)

*Multiple response

**Others –proper waste disposal and traditional remedies (Agbo)

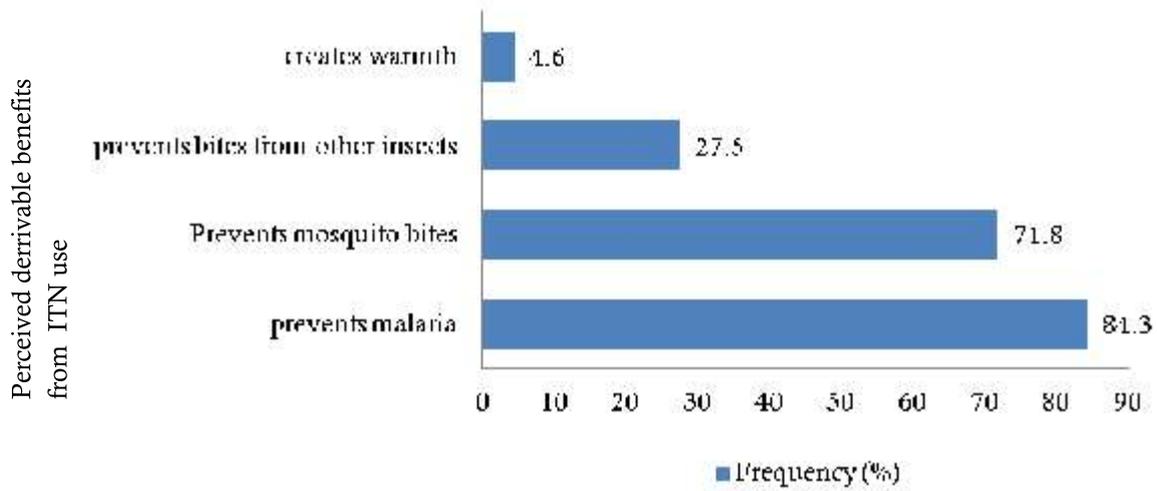


Figure 1. Respondents' perceived derivable benefits from ITN use

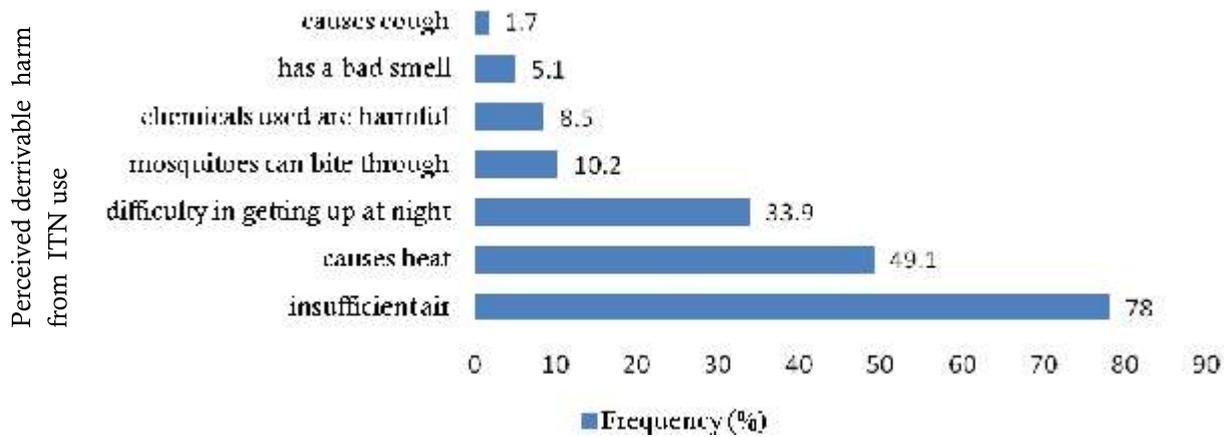


Figure 2. Respondents' perceived derivable harm from ITN use

Table 3. ITN ownership and usage among respondents

Variable	Frequency (%)
Ownership of ITN	
yes	80 (26.2)
No	225 (73.8)
Type of net owned	
Short duration ITN	22 (27.5)
Long lasting ITN	58 (72.5)
Number of net owned per household	
1	60 (75.0)
2	18 (22.5)
3	2 (2.5)
Utilization of ITN	
Every night	17 (21.2)
Occasionally	47 (58.8)
Rarely	16 (20.0)

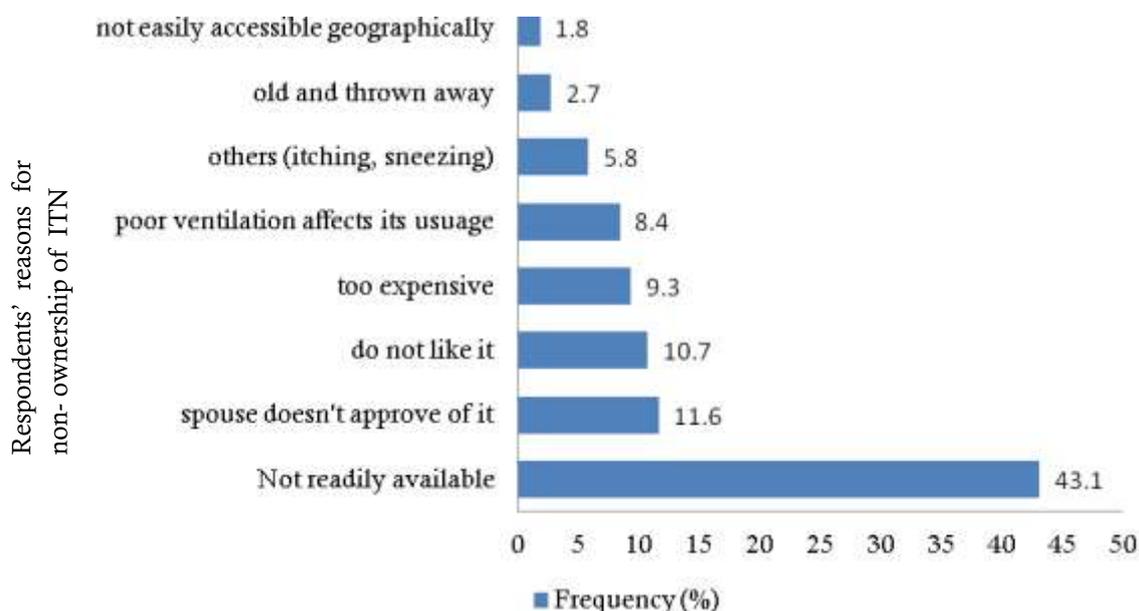


Figure 3. Respondents' reasons for non- ownership of ITN

Table 4. Educational status and awareness of ITN among respondents.

	Frequency (%)		Total	p-value
	Awareness of ITN			
	Yes	No		
Educational status				
No formal education	11 (45.8)	13 (54.2)	24 (100.0)	<0.005
Primary attempted	17 (65.4)	9 (34.6)	26 (100.0)	
Primary completed	36 (66.7)	18 (33.3)	54 (100.0)	
Secondary attempted	39 (81.2)	9 (18.8)	48 (100.0)	
Secondary completed	61 (64.2)	34 (35.8)	95 (100.0)	
Tertiary	47 (81.0)	11 (19.0)	58 (100.0)	
Total	211 (69.2)	94 (30.8)	305 (100.0)	

Chi-squared value = 14.67; df = 5

Table 5. Perception on the benefits of ITN and ownership of ITN among respondents.

	Frequency (%)		Total	p-value (fisher's exact)
	Ownership of ITN			
	Yes	No		
Perception on the benefits of ITN				
Beneficial	72 (34.1)	139 (65.8)	211 (100.0)	<0.005
Not beneficial	1 (11.1)	8 (88.9)	9 (100.0)	
Indifferent	7 (82.3)	78 (91.7)	85 (100.0)	
Total	80 (26.2)	225 (73.8)	305 (100.0)	

sneezing, 2.7% said theirs was old and has been thrown away and 1.8% said it was not easily accessible geographically.

Table 4 shows the association between educational status of respondents and awareness of ITN. Majority of the respondents with higher educational level were aware of ITN and this association was found to be statistically significant ($p < 0.005$).

Association between perceived benefit of ITN use and ownership of an ITN was also statistically significant ($p < 0.005$) as majority (88.9%) of the respondents who did not own a net perceived the ITN as not being beneficial. (Table 5)

DISCUSSION

The mean age of respondents was 28.7 (SD=6.5) years. It is expected as the study utilised only women of child bearing age (15-49 years). More than three-quarter of the respondents had family size less than four which is in compliance with the Federal government recommendation in Nigeria as at 1990. However, less than one-fifth still had more than four children probably with the aim of having enough children to help in the farm work. But from this study, the scenario was different as it was observed that majority of the respondents were traders. The large number of children may invariably become a burden to the families, as it becomes difficult to meet the needs of the children. This inturn makes the use of ITN difficult as smaller family size encourage the use of ITN compared to large ones.¹⁰

Majority of the respondents identified mosquito bites as what transmits malaria. Similar findings was also seen in a study carried out among pregnant women in Etsako West LGA which revealed that 269 (69.9%) of the respondents had good knowledge of the cause of malaria.¹¹ This is not surprising

as they were all pregnant women attending ANC and would have probably been educated on issues relating to malaria in view of the risk malaria poses in pregnancy. Several studies have linked good knowledge of malaria among pregnant women attending ANC to health education rendered at the clinic.^{12, 13} This should therefore be encouraged and sustained. Despite the good knowledge on malaria transmission majority of the respondents were unaware of the effects of malaria on pregnancy. This was also the case in Etsako West,¹¹ this is not surprising as these communities are close to each other so what applies to one may also apply to the other. Poor knowledge of the effect of malaria on pregnancy may translate to poor motivation regarding actions towards prevention and control of malaria infection. There is thus, the need for more intense health education on malaria in antenatal clinics regarding the effects of malaria on pregnancy as it is a good avenue to disseminate information.

Various preventive methods used by respondents to prevent malaria in their homes were mentioned. A higher proportion of the respondents used ITNs which was closely followed by 22.0% who used no preventive measures against malaria. Insecticide spray was used by 21.3 % of the respondents. This shows that a substantial number of pregnant women are at risk of the effect of malaria in pregnancy since they do not see malaria as threat, and as such do nothing to prevent it.

More than three-quarter of the respondents were aware of the derivable benefits associated with use of ITN as majority said it prevents malaria infection. Similar findings were seen in others studies carried out in various states in Nigeria, in which majority of the respondents were aware of ITN use in pregnancy.¹⁴⁻¹⁷ This was in contrast to findings done in Northern part of Nigeria and Oshogbo in which awareness levels was

low.^{18, 19} Again, the high level of awareness on ITN seen in this study is probably due to health education which takes place at ANC clinics.

Less than half of the respondents owned a net, with majority being long lasting ITN. Among those with ITN only 26.2% used it daily while 58.8% used it occasionally. Of note is that efficacy of the ITN is guaranteed only with consistent use.^{3,8} Similar findings were seen in a study carried out in Anambra State, Nigeria (Ukibe et al). This was in contrast to findings from previous studies which revealed low level of ownership and use of ITNs.^{16,19,20} The case was different in the neighboring community were although ownership of an ITN was low, utilisation was high among those that owned one.¹¹ Based on the findings from this study one can infer that ownership of an ITN does not translate to its use. Majority of the respondents attributed non-ownership of the ITN to it not been readily available. This was closely followed by spouse disapproval of its use. This is surprising because in Nigeria ITNs are given free during mass campaigns. This infers that the ITNs available are unable to meet the needs of the general populace. Meaning that there is a problem with ITN accessibility. More investment is therefore needed on the part of the government to ensure the availability of sufficient ITNs to cater for the needs of the general populace. Low utilisation of ITNs among those owning one also emphasizes the need for behavioural change interventions that will address community perceptions and misconceptions concerning ITN use so as to improve its utilisation.

Association between educational status of respondents and awareness of ITN revealed that the higher the educational status the more likely to be aware of an ITN ($p < 0.005$). Knowledge and ownership of an ITN were also directly associated. ($p =$

< 0.005) This may be attributed to the additional knowledge attained by education. Of note is that this does not also translate to use. This emphasizes the need for girl child education as part of the means of attaining women empowerment. Ownership of an ITN can also be linked to perceived cost of ITN being expensive expressed by 23.3% of the respondents. Although majority of the respondents still did not know if ITN were expensive or not. Indicating that majority of pregnant women needing ITN are not even aware that it is distributed free. This perceived cost can also be a limiting factor to ITN ownership among respondents.

It is necessary to note that majority of the women perceived ITN as being harmful, as over 78 % of the women said it was a cause of insufficient air followed by 46.1% who said it was a source of heat. Similar findings were seen in a study carried out among post natal women in Ibadan.²¹ This could be attributed to the poor electric power supply observed in the country such that most of the time the lights are out and no fans and air conditioner for ventilation. So the entire environment appeared hot compounded with the use of the net.

CONCLUSION

Ownership and utilization of ITNs is low in Etsako East LGA despite the government policy of free ITN distribution to vulnerable groups. Therefore, more intense efforts have to be put in place to make the nets readily available to the vulnerable groups and also to improve its utilization. This will in the long run help reduce the incidence of malaria which is inline with achieving MDG 7.

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