Awareness and utilisation of insecticide treated nets among pregnant women attending antenatal clinic at a tertiary health facility in Nnewi, Nigeria

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Abstract

The effectiveness of insecticide-treated bed nets (ITNs) as a tool for malaria control has been proved even in areas with high, year round transmission. This study was therefore conducted to assess the awareness and utilization of ITNs among pregnant women attending antenatal care clinic at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Nigeria. This discriptive cross-sectional survey was conducted from January to June 2012 among 380 pregnant women attending antenatal clinic at the Nnamdi Azikiwe University Teaching Hospital, Nnewi. A pre-tested structured interviewer administered questionnaire was the study instruments employed for data collection. Three hundred and fifty (92.1 %) of the respondents were aware of insecticide treated nets (ITNs), while 7.9 % were not aware of ITNs. Most of the respondents acquired the information about ITNs from the mass media (46.8 %), while 39.5 %, 10.3 % and 3.4 % of them acquired the information about ITNs from the hospital, their relatives and the church respectively. Two hundred and seventy-eight (73.2 %) of the respondents reported ownership of ITNs, and only 35.0 % of the respondents slept under their nets daily. The most reported reason for non-utilization or occasional utilization of ITNs among the respondents was that ITNs generate excessive heat in hot weather (95.9 %), while the use of sleeping mat was the least reported reason (0.7 %). Despite the high level of awareness and reported ownership of ITNs among pregnant women attending antenatal clinic in this study, far less than half of them slept under ITNs daily.

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Introduction

Malaria remains a major public health problem particularly among pregnant women in sub-Saharan Africa. [1,2] In many African countries where malaria is holo-endemic, non-pregnant female adults eventually achieve a significant level of immunity against malaria. However during pregnancy, these women experience considerable decline in their levels of immunity to malaria. Each year, about 19-25 million women in malaria endemic areas of Africa become pregnant and become at risk of malaria in pregnancy.[3] Over 1.5 million pregnant women in sub-Saharan Africa suffer from malaria in pregnancy and it's attending complications which include anaemia in pregnancy, abortion, low birth

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weight, intra-uterine growth restriction amongst others.[3] Malaria is also estimated to cause as many as 10,000 maternal deaths each year[4], 14% of all low birth weight babies and 3-8% of all infant death.[5] One of the specific targets of malaria control under the Roll Back Malaria (RBM) initiative which was re-affirmed by leaders of 44 African Countries in Abuja, Nigeria states that "At least 60% of people at risk of malaria especially young children and pregnant women should benefit from ITNs and a minimum of 60% of pregnant women would have access to effective preventive treatment for malaria.[6] The effectiveness of insecticide-treated bed nets as a tool for malaria control has been proved even in areas with high, year round transmission. Insecticide treated nets (ITN) are estimated to be two times as effective as untreated nets[7] and offer greater than 70% protection compared with no net. [7] In developing countries like Nigeria, where a good majority of pregnant women are illiterate and live below the poverty line, the government through the aid of non-governmental organizations provides ITNs for pregnant women nationwide at many antenatal centers. Despite these massive efforts, corruption, un-availability and high cost of chemicals for treatment of ITNs have played a synergistic role in drowning these efforts and leaving malaria as a major public health problem. The prevalence of illiteracy and poverty amongst pregnant women has also contributed immensely to the problems of malaria control in sub-Saharan Africa. This limits their knowledge of and their ability to utilize ITNs. All these factors put together enhance each other in making the goals of RBM in sub-Saharan Africa still elusive or at least far from sight. [3]This study was therefore conducted to assess the awareness and utilization of ITNs among pregnant women attending antenatal clinic at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Nigeria

Subjects and methods

This cross-sectional survey was conducted from January to June 2012 among pregnant women attending antenatal clinic at the Nnamdi Azikiwe University Teaching Hospital, Nnewi. Nnewi is the second largest city in Anambra state in South-eastern Nigeria, and falls within the tropical rainforest region of Nigeria.

A minimum sample of 174 was obtained using the Fischer's formula and a prevalence of 13.0 % for ITNs utilization from a previous study.[8]

Although the computed minimum sample size was 174, a systematic random sample of 380 pregnant women attending the antenatal clinic at the Nnamdi Azikiwe University Teaching Hospital was selected for the study. A pre-tested structured interviewer administered questionnaire was the study instruments employed. The questionnaire elicited information on the socio-demographic profile of the respondents, their knowledge and utilization pattern of insecticide treated bed nets. Data generated were analysed using SPSS version 16.0 statistical software. A simple descriptive analysis using tables and proportions; and bivariate analysis using the chi-square test was carried out. Statistical significant was set at $p < 0.05$. Ethical approval for this study was obtained from the Ethics and Research Committee of the Nnamdi Azikiwe University Teaching Hospital, Nnewi.

Results

The socio-demographic characteristics of the respondents are shown in Table 1. Majority of the respondents (48.7 %) were in the age group 25-30 years, while 34.5 %, 16.3 % and 0.5 % of them were in the age group greater than 30 years, 19-24 years and less than or equal to 18 years respectively. Well over four fifth (95.0 %) of the respondents were married. Majority (47.9 %) of the respondents had secondary education, while 41.8 % and 10.3 % of them had tertiary and primary education respectively.

Awareness, source of information and reported ownership of ITNs among the respondents are shown in Table 2. Over four fifth (92.1 %) of the respondents were aware of ITNs, while 8.9 % of them were not aware of ITNs. The major source of information among the respondents was the mass media (46.8 %), while 39.5 %, 10.3 % and 3.4 % got information about ITNs from the hospital, relatives and the church respectively. Over two third (73.2 %) of the respondents reported

ownership of an ITN, with 35.0 % of them sleeping under their nets daily; 26.8 %, 19.8 % and 18.4 % of the respondents did not own an ITN, owned but did not sleep under their nets or slept under their nets occasionally respectively. The most reported reason for non-utilization or occasional utilization of ITNs among the respondents was that ITNs generate excessive heat in hot weather (95.9 %), while dust trapping by net, use of door and window net, absence of hanging stand for net, fear of suffocation, large size of bed; and the use of sleeping mat accounted for 15.9 %, 9.0 %, 7.6 %, 5.5 %, 4.8 % and 0.7 % of the reported reasons for non-utilization or occasional utilization of ITNs among the respondents.

Reported change in episodes of malaria following utilization of ITNs in the study population is shown in Table 3. A statistically significant association ($p < 0.05$) was observed between the reported utilization of insecticide treated bed net and reported change in the episodes of malaria among users of ITNs in the study population.

Discussion:

Insecticide treated bed net (ITN) is currently being promoted as a tool for malaria control and it is believed to be the most efficacious of all the currently feasible interventions for malaria control in Africa.[9] This study revealed a high level of awareness about insecticide treated bed nets among the study population. This observation is consistent with the findings of previous researchers in Sokoto [8] and Kenya[10] who also reported a high level of awareness about insecticide treated bed net among pregnant women. Over two-third of the study population had an insecticide treated bed net. While this observation is comparable to the finding from a similar study in Kenya[10] in which 75.4 % of pregnant women attending antenatal care were reported to own an insecticide treated bed net; it contrast with the finding from similar studies in Sokoto[8] and Edo State[11] where it was observed that 13.0 % and 8.0 % of pregnant women reported ownership of an insecticide treated bed net respectively. Despite the high prevalence of ownership of insecticide treated bed net, far less than half of the study population owned and slept under ITNs daily. Additionally, a sizeable proportion of the study population who owned an insecticide treated bed net; either slept under them occasionally or did not sleep under them respectively. This is a disappointing trend as evidence has shown that the insecticide treated bed net is most effective as a tool for malaria control when properly deployed and utilized daily by owners. The net is said to have been properly deployed when it is tucked under the sleeping mat (or mattress) or made to touch the ground all round. Proper deployment and utilization of ITNs by users daily minimizes the contact between mosquitoes and the potentially infective hosts or the susceptible hosts.

The most reported reason for non-utilization or occasional utilization of ITNs among the study population was that ITNs generate excessive heat in hot weather (95.9 %), while the use of sleeping mat was the least reported reason (0.7 %). Evidence from studies has revealed that high night temperature is associated with non-deployment of ITNs among householders.[12-14] Studies have also revealed that the proper deployment or utilization of ITNs is poorer when users had to sleep on mats or other temporary sleeping materials.[12,13]

In this study, a statistically significant association ($p < 0.05$) was observed between the reported utilization of insecticide treated bed net and reported change in the episodes of malaria among users of ITNs in the study population. This observation further gives credence to efficacy of ITNs as an effective tool in controlling malaria among pregnant women.[9]

In conclusion this study brings to the fore that despite the high level of awareness and reported ownership of ITNs among pregnant women attending antenatal clinic in this study, far less than half of them slept under ITNs daily. There is need therefore to shift emphasis from solo efforts to meeting coverage targets to evolving measures to solving problems militating against the utilization of ITNs by pregnant women if the potentials of the nets in controlling malaria are to be fully harnessed. This will no doubt require the vital role of well crafted health education programmes.

References

1. Okonofua FE. Malaria in pregnancy: A review. The Resident Doctor, 2001; 5 (1): 1-5
2. Mabaso MLH, Sharp B, Lengeler C. Historical review of malarial control in Southern Africa with emphasis on the use of indoor residual house-spraying. Trop Med Int Health, 2004; 9 (8): 846-856
3. World Health Organization. World Malaria Report, 2011. Available at www.rbm.who.int
4. World Health Organization. World Malaria Situation, 1994. Weekly epidemiological record
5. World Health Organization/United Nation Children Fund. The African Malaria Report, 2003: 9-29
6. Federal Ministry of Health (FMOH). The Abuja declaration on roll back malaria in Africa; extract from Africa summit on roll backs malaria. World Health Organization (WHO) fact sheet, 2000: 2- 12.
7. Hawley WA, Ter Kuile FO, Steketlee RS et al. Implications of the Western Kenya permethrin-treated bed net study for policy, program implementation and future research. Am J Trop Med Hyg, 2003; 68 (suppl 4): 168-173
8. Isah AY, Nwobodo EI. Awareness and utilization of ITNs among pregnant women at a tertiary institution in North Western Nigeria. Niger J Med, 2009; 18(2): 175-178
9. Lengeler C. Insecticide treated bed net and curtains for preventing malaria (Cochrane Review) Cochrane Database syst. Rev. 2004; 2
10. Njoroge FK, Kumani VN, Ougore D, Akwale WS. Use of ITNs among pregnant women in Killifi district of Kenya. East-Afr Med Journal, 2009: 314-322
11. Wagbatsoma VA, Aigbe EE. ITN utilization among pregnant women attending ANC in Etsaka West LGA, Edo State, Nigeria. Niger J Chin Pract., 2010; 13(2): 144-148
12. Ordinioha B. The use of insecticide-treated bed net in a semi-urban community in south-south, Nigeria. Niger J Med, 2007; 16 (3): 223-226
13. Alaii JA, Hawley WA, Kolczak MS, et al. Factors affecting use of permethrin-treated bed nets during a randomized controlled trial in western Kenya. Am J Trop Med Hyg, 2003; 68 (suppl 4): 137-149
14. Binka FN, Adongo P. Acceptability and use of insecticide treated bed nets in northern Ghana. Trop Med. Int Health, 1995; 5: 499-507

Table 1: Socio-demographic characteristics of the study population

Age group (years)	Frequency	Percent (%)
< 18	2	0.5
19 – 24	62	16.3
25 – 30	185	48.7
>30	131	34.5
Total	380	
Marital status		
Single	17	4.7
Married	361	95.0
Separated	2	0.3
Total	380	
Educational status		
Primary education	39	10.3
Secondary education	182	47.9
Tertiary education	159	41.8
Total	380	

Table 2: Awareness, source of information and reported ownership of ITNs among the study population

Variables	No. Ex	Frequency	Percent (%)
Aware of ITN			
Yes	380	350	92.1
No	380	30	7.9
Source of information			
Hospital	380	150	39.5
Church	380	13	3.4
Relative	380	39	10.3
Mass media	380	178	46.8
Reported ownership of ITNs			
Yes	380	278	73.2
No	380	102	26.8
Pattern of utilization of ITNs			
Did not own an ITN	380	102	26.8
Owned an ITN but did not sleep under it	380	75	19.8
Owned an ITN but slept under it occasionally	380	70	18.4
Owned an ITN and slept under it every night	380	133	35.0
Reasons for non-utilization of ITN or occasional utilization of ITN			
Causes excessive heat	145	139	95.9
Fear of suffocation	145	8	5.5
Large size of bed	145	7	4.8
Use of sleeping mats	145	1	0.7
Use of door and window nets	145	13	9.0
Absence of hanging stand for net	145	11	7.6
Dust trapping by net	145	23	15.9

Table 3: Reported change in episodes of malaria following utilization of ITNs

Frequency of useage of ITNs	Change in episodes of malaria Yes	No	Total
Daily	125	8	133
Occasionally	28	42	70
Total	**153**	**50**	**203**
Chi-square	$X^2 = 72.0$; df = 1; P = 0.00000001		