

Knowledge and Use of Insecticide Treated Bed Net Among Pregnant Women in Comprehensive Primary Health Centre Nwaorieubi, Mbaitoli Local Government Area (L.G.A.) Imo State, Nigeria

Vincent CCN

Department of Nursing Science, Imo State University, Owerri, Imo State, Nigeria

Corresponding Author: Vincent CCN, Department of Nursing Science, Imo State University, Owerri, Imo State, Nigeria.
E-mail: chyvin72@yahoo.com

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Abstract

Background: The use of insecticide treated bed nets has proven to be an effective method of reducing malaria attack and mortality associated with it. Malaria in pregnancy has been proven to be one of the major causes of maternal deaths in Nigeria and sub-Saharan Africa, despite all the efforts and measures taken to put a stop to it. It is very important to comprehensively understand knowledge and various factors that affect utilization of ITBNs among pregnant women so that respective programs are implemented more effectively, though studies have been conducted in the past on this subject in some areas but outside Mbaitoli L.G.A., Imo State.

Methods: This cross-sectional research study was carried out to assess knowledge and use of insecticide treated bed net among pregnant women in Comprehensive Primary Health Centre Nwaorieubi Mbaitoli, L.G.A., Imo State, Nigeria. The target population was 1358 registered pregnant women who attended ante natal care during the six months of the study (June – November 2019). A sample size of three hundred and nine (309) was gotten through use of Taro Yamane sample size determination. The study sample size was thus drawn by using simple random sampling technique. A self-constructed and structured questionnaire was used to collect data. Reliability of the instrument was achieved through a test re-test method which yielded a high positive correlation coefficient of 0.93. The data collected were analyzed using frequencies, percentages and chi-square test and were presented in tables.

Findings: The result showed that 65.4% of the respondents had adequate knowledge of insecticide treated bed nets (ITBNs). Majority (73.8%) of the respondents claimed that they had own insecticide treated bed nets but very few (33.3%) of them use it with a few (15.5%) using it always. Major factors that hindered the use of insecticide treated bed nets were inconvenience (exercise heat, chemical irritation), nonchalant behaviour, not having enough insecticide treated bed nets and problem hanging the net. Age of the respondents, level of education, number of pregnancies, age of pregnancies and knowledge of insecticide treated bed nets significantly influence the use of insecticide treated bed nets among the respondents. There is also significant relationship between the level of education of respondents and knowledge of insecticide treated bed nets. Also, use of insecticide treated bed nets is significantly associated with age, level of education, number of pregnancies, and age of pregnancy.

Conclusion: Although there is increased knowledge of insecticide treated bed nets but it is still below expectation of about 98%. Also few utilize it which was hindered by some factors.

Recommendation: To make insecticide treated bed nets accessible, both the government and health workers need to increase the insecticide treated bed nets' knowledge and usage campaign via health education at all the levels of educational system.

Keywords

Knowledge; Use; Insecticide Treated Bed Nets; Pregnant Women

Introduction

Malaria is a completely preventable disease; however, about 3.4 billion people are at risk of the disease globally with 1.2 billion people at high risk¹. In 2012, malaria was responsible for the death of approximately 482,000 under-five children even though an estimated 136 million Insecticide Treated

Nets (ITNs) were distributed to endemic countries the same year [1]. Thus, malaria is still a major public health concern particularly in sub-Saharan Africa and other parts of the developing world [2, 3]. Together, the Democratic Republic of the Congo and Nigeria account for over 40% of the estimated total of malaria deaths globally [4].

In Nigeria, malaria is responsible for around 60% of the out-patient visits to health facilities, 30% of childhood death, 25% of death in children under one year and 11% of maternal deaths [5, 6]. Similarly, about 70% of pregnant women suffer from malaria, which contributes to maternal anemia, low birth weight, still births, abortions and other pregnancy-related complications [7]. The financial loss due to malaria is estimated to be about 132 billion Naira annually in form of treatment costs, prevention costs and loss of man-hours [5, 4]. Recent data from Imo State indicate that total loss due to malaria in pregnancy within a six month period was estimated at 5.8 million naira. The study has confirmed that the burden of malaria in pregnant women in Imo State, Nigeria was high [8].

The use of insecticide treated nets is one of the core vector controls method for malaria prevention and has been shown to reduce malaria incidence by 50% in several malaria endemic countries [9]. ITNs are estimated to reduce child mortality by 17% and uncomplicated plasmodium falciparum episodes in areas of stable transmission by 50% compared to no nets [10]. Appropriate use of ITN is shown to reduce malaria transmission of about 90% during pregnancy. It is shown to reduce miscarriages and still birth by 33% [11]. ITNs have a mean protective efficacy against malaria episodes of approximately 50% in highly endemic areas of Africa and have also been found to reduce overall mortality among children by 63% in villages using impregnated net [12]. Despite the known health benefit of ITN in preventing malaria in pregnancy in sub-Saharan Africa, the use is still very low [13]. The low utilization of ITNs is attributed to perceived cost, inability to adjust to size of bed and poor ventilation [14]. The cost of ITNs, followed by the non-availability was major constraints to use of ITBNs [15].

The use of insecticide treated net has been accredited as a cost effective methods in prevention against malaria and has been found to significantly decrease morbidity and mortality amongst pregnant women and children under five [16].

Record from the Comprehensive Health Care Centre Nwaorieubi indicates that the health centre is experiencing high malaria prevalence. The researcher also observed during her normal visits and supervision of her students during their professional/clinical posting at Nwaorieubi found out that pregnant women come to antenatal clinic with severe signs and symptoms of malaria in pregnancy which can be detrimental to the health of the fetus and mother thereby increasing the rate of morbidity and mortality. It is against this background that the researcher sought to assess the knowledge and use of insecticide treated bed net among pregnant women in Comprehensive Primary Health Centre, Nwaorieubi Mbaitoli L.G.A, and Imo State, Nigeria.

Materials and Methods

They study adopted a cross sectional descriptive survey design. The study was conducted in Comprehensive Primary Health Centre, Nwaorieubi, Mbaitoli Local Government Area, Imo State. The Health Centre is situated at the heart of Mbaitoli, about 7km away from Owerri Capital, Imo State. The State is bounded by Enugu State eastwards, Delta State

westwards, Rivers State Southwards and Anambra State Northwards. The health centre holds antenatal clinics on Tuesdays and Thursdays for all pregnant women within the locality/environ. The target population was 1358 pregnant women that attended antenatal clinic in Comprehensive Primary Health Centre Nwaorieubi within the period of 6 months (June to November 2019) at various gestational stages.

A sample of 309 were determined by Taro Yamane which is

$$n = \frac{N}{1 + N(0.05)^2}$$

Where n is the sample size, N is the target population, 1 is constant, and 0.05 is the level of significance. The sample size was selected through a simple random sampling technique. A self-developed close ended questionnaire was used which gave a reliability index of 0.93. The copies (309) of the questionnaire were administered on face to face basis by the researcher and were adequately filled and retrieved thereafter. The data were analyzed using frequency distribution and percentages and were presented using tables. The respondents gave verbal/oral approval before the questionnaire was given.

Table 1. Demographic Characteristics of the Respondents (N = 309)

Variable	Category	Frequency (f)	Percentage (%)
Age	20-29 years	89	28.8
	30-39 years	171	55.3
	40-49 years	47	15.2
	50 years and above	2	0.7
Level of Education	No Formal Education	0	0.0
	Primary Education	33	10.7
	Secondary Education	177	57.3
	Tertiary Education	99	32.0
Number of Pregnancies	1-2	114	36.9
	3-4	160	51.8
	5 and above	35	11.3
Age of Pregnancy	First Trimester	95	30.7
	Second Trimester	113	36.6
	Third Trimester	101	32.7

Table 2. Overall knowledge of ITBNs among the Respondents (n = 309)

Knowledge of ITBNs	Frequency (f)	Percentage (%)
Concept of ITBNs	253	81.9
Duration of treating ITBN	106	34.3
Benefits of ITBNs	248	80.3
Grand Total	607	
Average/Mean	202	65.4

Table 2 above revealed that 65.4% of the respondents have an overall knowledge of Insecticide Treated Bed Nets (ITBNs). Majority of them (81.9% and 80.3%) have knowledge of the concept of ITBNs and benefits of ITBNs respectively. Very few (34.3%) have knowledge of how ITBNs should be treated.

Table 3. Utilization of Itbns among the Respondents (n = 309)

Concept	Options	Frequency (f)	Percentage (%)
Use of ITBNs	Yes	103	33.3
Extent of use of ITBNs	Always	16	15.5
	Sometimes	38	36.9
	Rarely	49	47.6
Ownership of ITBNs	Yes	228	73.8
Source of acquiring ITBNs	Free from hospital/ Government distribution	183	80.3
	Gift from a friend/relationship	9	3.9
	Purchase from the market	36	15.8

Table 3 revealed that only 33.3% use ITBNs with just few (15.5%) claiming that they always use it. Majority (73.8%) claimed that they own ITBNs, among them, majority (80.3%) acquire the ITBNs free from the hospital/government distribution.

Table 4. Factors Affecting Non Usage of Itbns among the Respondents (n = 206)

Options	Frequency (f)	Percentage (%)
No specific reasons		
Problem of hanging the net	187	90.8
Do not have enough for all to use in the house	170	82.5
Inconvenience (excessive heat, chemical irritation)	181	87.9
Lack of awareness of its benefits	201	97.6
	41	19.9

NB: Multiple Responses

Results

Out of 206 pregnant women that do not use ITBNs, majority (97.6%, 90.8%, 87.9% and 82.5%) noted that factors that hindering them from using the ITBNs were inconvenience of the net (excessive heat, chemical irritation), no specific reasons, inadequate for family use and problem hanging the net respectively.

Discussion

The mean age of respondents was 32.7 years with more than half having secondary level of education and one third had tertiary level of education. Also, more than three-quarter of the respondents had family size of less than four which is in compliance with the Federal government recommendation in Nigeria as at 1990. However, more than 11% still had more than four children, the large number of children may invariably become a burden to the families, as it becomes difficult to meet the needs of the children/entire family thus their affirmation that large family size was a factor that hindered their use of ITBNs. This in turn is in line of some studies that the use of ITBNs is difficult as smaller family size encourage the use of ITN compared to large ones [17, 11, 16].

The findings in this study shows that there is 65.4% overall knowledge of insecticide Treated Bed nets (ITBNs) among pregnant women in this study. This is in keeping with other similar studies conducted in African [18, 19, 20]. Similar studies conducted in South West geopolitical zone of Nigeria precisely Osun and Lagos states reported 41.1% and 91% as ITBNs awareness level respectively [13, 21]. Other previous studies documented awareness levels of ITBNs as 91%, 88.6% and 36% in South-East, South-South and Northern Zones of Nigeria respectively [18, 22, 23]. The discrepancies in these findings could be ascribed to the sample size studied, geographical variation, level of education and inclusion criteria used for sample selection. With the increasing efforts of both government and private organizations on the disseminations of information about the uses and importance of insecticide Treated Bed nets during pregnancy, one would have expected that the awareness level should have reached 98%.

With regards to utilization of ITBNs by the participants, despite the fact that 73.8% own ITBNs but only 33.3% use it with 15.5% using it always. This finding corresponds with other similar studies [16, 13, 14]. More than 80% of the participants indicated that their non-utilization of ITBNs were because of inconvenience (excessive heat, chemical irritation), no specific reasons (nonchalant behaviour), insufficient ITBNs for the family, and problem of hanging the net. This is in conformity with the finding of similar studies [11, 16, 22]. The study also revealed significant association between age, level of education, number of pregnancies, age of pregnancy and use of ITBNs among pregnant women among pregnant women in Comprehensive Primary Health Centre Nwaorieubi Mbaitoli, L.G.A, and Imo State, Nigeria.

Conclusion

Although there is increased knowledge of ITBNs but it is still below expectation of about 98%. Also few utilize it which were hindered by some factors. To make ITBNs accessible, both the government and health workers need to increase the ITBNs knowledge and usage campaign via health education at all the levels of educational system.

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Table 5. Association between Demographic Variables of the Respondents and Use of Itbns (n = 309)

Variables	Use of ITBNs (%)	Nonuse of ITBNs (%)	Chi-square (χ^2) value @ 0.05	Decision
Age (Years)				
20 – 29	22 (24.7)	67 (75.3)	9.82	Significant
30 – 39	56 (32.7)	115 (67.3)		
40 – 49	24 (51.1)	23 (48.9)		
50 and above	1 (50.0)	1 (50.0)		
Level of Education				
Primary Education	4 (12.1)	29 (87.9)	24.49	Significant
Secondary Education	48 (27.1)	129 (72.9)		
Tertiary Education	51 (51.5)	48 (48.5)		
No. of Pregnancies				
1 – 2	58 (50.9)	56 (49.1)	27.67	Significant
3 – 4	41 (25.6)	119 (74.4)		
5 and above	4 (11.4)	31 (88.6)		
Age of Pregnancy				
1st Trimester	42 (44.2)	53 (55.8)	10.13	Significant
2nd Trimester	38 (33.6)	75 (66.4)		
3rd Trimester	23 (22.8)	78 (77.2)		

Table 6. Association between Knowledge of ITBNs, Use of ITBNs and Respondents' Level of Education (n = 309)

Variables	Knowledge of ITBNs (%)	No Knowledge of ITBNs (%)	Chi-square (χ^2) value @ 0.05	Decision
Level of Education				
Primary Education	10 (30.3)	23 (69.7)	34.09	Highly Significant
Secondary Education	109 (61.6)	68 (38.4)		
Tertiary Education	83 (83.8)	16 (16.2)		
Use of ITBNs				
Use	60 (29.7)	43 (40.2)	3.43	Not Significant
Nonuse	142 (70.3)	64 (59.8)		

References

- World Health Organization (2013) Policy Brief for the implementation of intermittent preventive treatment of malaria in pregnancy using sulfadoxine-pyrimethamine.
- Pluess B, Tanser FC, Lengeler C, et al. (2010) Indoor residual spraying for preventing malaria. *Cochrane Database Syst Rev* 4: 792. [Crossref]
- Pluess B, Mueller I, Levi D, et al. (2009) Malaria-a major health problem within an oil palm plantation around Popondetta, Papua New Guinea. *Malaria Journal* 8: 56-66. [Crossref]
- World Health Organization (2012) Progress & Impact Series; Country Reports Number 4: Focus on Nigeria.
- Noland GS, Graves PM, Sallau A (2014) Malaria prevalence, anemia and baseline intervention coverage prior to mass net distributions in Abia and Plateau States, Nigeria. *BMC Infect. Dis* 14: 168. [Crossref]
- National Population Commission Nigeria and ICF Macro (2008) *Nigeria demographic and health survey*. Abuja, Nigeria. [Crossref]
- Federal Ministry of Health, Abuja (2005) National anti-malarial treatment policy: National malaria and vector control division Abuja, Nigeria.
- Ohalete CN, Dozie INS, Nwachukwu MI, et al. (2011) Epidemiology and Economic consequences of malaria in pregnant women in Imo State, Nigeria. *Afr J MICR Res* 5: 3895-3900.
- Owen N, Chuang TW, Chen YH (2018) Factors associated with insecticide treated net usage among women of child bearing age in Malawi. [Crossref]
- Anne LW, Ramesh CD, Uriel KI, et al. (2014) Benefit of insecticide treated nets, curtains and screening on vector Borne disease in Nigeria. *PLoS Negl Trop Dis* 8: 3228. [Crossref]
- Grace M, Ellen ABK, Lawrence GF, et al. (2017) Low utilization of insecticide treated bed net among pregnant women in the middle belt of Ghana. *Malar Res Treat*. [Crossref]
- Chukwuocha UM, Dozie IN, Onwuliri CO, et al. (2010) Perception on the use of insecticide treated nets in parts of the Imo River Basin Nigeria. *J repr Hlt* 14: 117-128. [Crossref]
- Aina BA, Ayeni FA (2011) Knowledge and use of insecticide treated nets as a malaria preventive tool among

- pregnant women in a local government area of Lagos State, Nigeria. *App Pharm Sci J* 01: 162-166. [Crossref]
14. Odoko JO, Nwose EU, Igumbor EO (2017) Utilization of insecticide treated net against malaria. Among pregnant women in southern Nigeria. *Intl res in med Sci j* 5: 4661-4666.
 15. Asuquo EF, Edet OB, Sampson Akpan, et al. (2017) Utilization of insecticide treated nets among pregnant women and mothers with fewer than five children IKOT OMIN Community, Calabar, Nigeria. *J pure & app Sci* 3: 167-175.
 16. Atechong N, Ozims J, Michheal O, et al. (2016) Attitudes toward utilization of insecticide treated bed-net among pregnant women and care takers of under-five
 17. Wagbatsoma VA, Aigbe EE (2010) ITN utilization among pregnant women attending ANC in Etsako West LGA, Edo State, Nigeria. *Nig J Clin Prac* 13: 144-148.
 18. Ukibe SN, Mbanugo JI, Ukibe NR, et al. (2013) Level of awareness and use of insecticide treated bed nets among pregnant women attending antenatal clinics in Anambra State, South Eastern Nigeria. *J Pub Hlt Epidemiol* 5: 391-396. [Crossref]
 19. Baume CA, Marin MC (2008) Gains in awareness, ownership and use of insecticide treated nets in Nigeria, Senegal, Uganda and Zambia. *Malar J* 7: 153. [Crossref]
 20. Sangare LR, Weis NS, Brentlinger PE, et al. (2012) Determination of use of insecticide treated nets for the prevention of malaria in pregnancy: Jinga Uganda. *Plos One* 7: e39712. [Crossref]
 21. Adeneye AK, Jegede AS, Mafe MA, et al. (2007) A pilot study to evaluate malaria control strategies in Ogun State, Nigeria. *World Health Popul* 9: 83-94. [Crossref]
 22. Okoye CA, Isara AR (2011) Awareness on the use of insecticide treated nets among women attending antenatal clinic in tertiary health in South-South Nigeria. *Nigeria Med Prac J* 52: 67-70. [Crossref]
 23. Oche MO, Ameh IG, Umar AS, et al. (2016) Awareness and use of insecticide treated nets among pregnant women attending antenatal at Usman Dan Fodio University Teaching Hospital Sokoto. *Nigeria J Parasitol* 53: 162-165.