

Awareness, Ownership and Utilization of Treated Nets among Students of Imo State University Owerri Nigeria

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ABSTRACT:

This study evaluated awareness, ownership, and usage of bed nets among Imo State University Students Owerri. A descriptive cross-sectional survey was conducted in three hostels within Imo State University. Awareness on the use of bed nets among the students was 47.1% while ITNs usage level among them was 38.4% although only 39.2% owned ITNs. The most significant reason for not possessing ITNs was inability to afford (43.5%), and unavailability (31.4%). There is an association between education and use of bed nets by the students. Indeed, respondents had high knowledge about bed net (both ITNs and non ITNs). However, poor possession and usage of ITNs among the students was due to affordability and the major causes were heat and culture. Hence, there is need for availability of ITNs, subsidized price or free to targeted groups through social media.

Keywords: Awareness, Ownership, Utilization, Treated Nets, Students, University

INTRODUCTION:

Malaria is a serious public health problem and a deadly condition, especially among endemic populations. Malaria is a horrific disease that causes a worldwide health burden. Malaria is responsible for nearly 110 million documented cases annually in Nigeria, contributing to 60% of outpatient visits at health facilities, 30% of hospital admissions, and 11% of maternal mortality, according to the National Malaria Strategic Plan (2014-2020). Malaria has been the most critical determinant of morbidity and mortality leading to 25% infant deaths, 30% child mortality and causing 11% maternal mortality. In the WHO African region, malaria causes more than 40% of all the malaria mortality estimated globally in Nigeria and Democratic Republic of Congo combined (WHO, 2018). ITNs for malaria bite prevention have been very effective in preventing malaria infections. The data on the public health effects of ITNs used to justify the wide adoption of these preventive measures across Africa has been collected from areas with stable malaria transmission with predominant *Plasmodium falciparum* infection. The current World Health Organization malaria control strategies including the Roll Back Malaria program have focused on the use of insecticide-treated nets as one of the major tools used

in malaria prevention and control methods in Sub-Saharan Africa. The Roll Back Malaria program and African Heads of State (AHS) have set forth the Abuja targets on the 25th of April 2000 which stipulates the use of insecticide-treated nets by 60% of the pregnant mothers (WHO, 2007). As such, the NMCS has been set forth in order to achieve health and development goals including increasing ownership and use of insecticide-treated nets especially Long Lasting Insecticide Nets (LLIN). The effectiveness of LLIN has been shown to reduce the prevalence of malaria by up to 50% as well as reducing the deaths among children by 20%. As such, the promotion of ITNs can be considered as an effective method in reducing malaria morbidity and mortality rates. The objectives of the WHO Roll Back Malaria partnership program by 2015 include the reduction of malaria infections in the world by 75% compared to 2000 levels as well as bringing the mortality rate caused by malaria close to zero using universal access to prevention and treatment programs. WHO recommends the adoption of ITNs, specifically LLINs that have been proven to be cost-effective in reducing malaria incidences by 17% as well as decreasing mortality rates in children below five years of age. Data obtained from the National Demographic and Health Survey (NDHS) in 2008 shows

that 16.9% of Nigerians own at least one type of net; 8% own ITN; 11.9% of children below five years sleep under a mosquito net and 5.5% sleep under an ITN whereas 11.8% of pregnant women slept under a mosquito net and 4.8% slept under an ITN. From the 2013 survey, 55.3% of Nigerians own any type of net; 49.5% own ITN; 18.2% of children below five years sleep under a mosquito net and 16.6% sleep under an ITN whereas 17.8% of pregnant women sleep under a mosquito net and 16.4% under an ITN. The country loses about 132 billion naira yearly. According to statistics provided by the National Malaria Control Program, malarial morbidity results in a great health and economic burden. (FMOH, 2009). It is believed that the insecticide-treated net is the most successful among all available malarial treatments in Nigeria although it is claimed that integrated management of treatment is the best option (Lengeler, 2000). It is, therefore, no wonder that efforts are being made to distribute free insecticide-treated nets among the targeted groups in order to attain the MDGs as well as the Nigerian government's realization of the need to ensure that there are insecticide-treated nets for all vulnerable people in Nigeria (FMOH, 2009). Nevertheless, various studies show that owning a net does not necessarily result in its use due to low mosquito bite rate and warm night that could lead to low usage of 20%. According to the African Malaria report, several countries are still lagging behind in achieving their target of having 60% of Sub-Saharan Africa covered by insecticide-treated nets by 2015 as agreed upon during the meeting of the African Heads of State in Abuja. Finding strategies that would result in wide distribution and use of insecticide-treated nets, especially in rural areas, remains a burning issue in Nigerian commercial sector (Ordinioha et al, 2004). The focus of this study is to assess Imo State University students' awareness, ownership, and use of bed nets. Due to their mobility, university students are an important demographic to examine because they may live in numerous lodgings and travel frequently, potentially exposing them to varied malaria transmission contexts. Understanding this population's bed net knowledge, possession, and usage patterns is critical for creating targeted interventions to prevent malaria transmission.

MATERIALS AND METHODS:

Study Area:

This study was carried out in Imo State University Owerri located in North Local Government Area of Imo State, Nigeria. Imo State University is a tertiary Institution situated in the southeastern region of Nigeria with a population of about 50,000-249,999 inhabitants (NUC estimate). The geographical coordinates approximately lie at a Latitude 5°30'19"N and Longitude 7°2'40"E. Imo State University is a public and fully functional university that operates a faculty system and has 15 faculties. The

faculties are headed by Deans and Faculty Officers. The Faculties have different departments under them. The Departments are headed by the Heads of Departments (HODs) who are under the Dean of the Faculties. The lecturers, the Heads of Departments, and the Deans make up the Faculty board. The campus offers Undergraduate and Postgraduates courses and admits students from different parts of Nigeria irrespective of race, cultural, and religious background with a very large student who live in various hostels like (Merit hostel aladinma, Chidera hostel front gate, Davita hostel back gate) owned by individuals. The university thrives in an environment that fosters competitiveness, unrestrained scientific inquiry, critical thinking, innovation, and creativity.

Ethical approval:

Ethical approval for this study was obtained from the Ethical Review Committee of Imo State University, Owerri, Nigeria. Written informed consent was obtained from all participants before data collection.

Inclusion criteria:

- Registered IMSU students
- Age ≥ 18 years
- Hostel residents
- Willing participants

Exclusion criteria:

- Sick students
- Non-residents
- Students unwilling to participate

Research Design:

The study is a cross-sectional descriptive survey to determine assessment of awareness, ownership and utilization of bed nets among students of Imo State University, where the researchers collected data from a sample of 255 students aged 20-30 years-old from scholars of the study area following informed consent just to get different opinions in IMSU.

Questionnaire Administration:

The researcher employed a structured questionnaire to collect data on the demographics of the students, their ownership, awareness, and use of bed nets. To determine which students owned and used bed nets, physical exams was also performed. Several characteristics were used to classify the knowledge, attitude, and practice (KAP) score. The database contains names, gender, age, faculty/department, level of study, local government of origin, date of birth, religion. Dwellers must be at least eighteen years old to be considered for selection.

Population and sample size:

The study population comprises all scholars in the study area.

The sample size is determined using the formula;

$$N = \frac{Z^2 pa}{d^2}$$

Where:

N= sample size

Z=1.96which is 95% confidence limit

P=0.5which is probability of the event occurring

q=(1-p)=(1-0.207)=0.793which is the probability of the event not occurring.d=0.05which is the acceptable margin of error

Substituting in the formula;

$$= \frac{(1.96)^2 \times 0.207 \times 0.793}{(0.05)^2}$$

=255

For this study, the sample size was rationed to 255.

Sampling Technique and Data Collection:

Multi-stage probability sampling method was employed. This method of sampling was utilized because the sample used in the research was collected by using more than one sampling methods. Simple random sampling method was applied to select Merit hostel, Davita hostel and Chidera hostel. Basic random sampling method was utilized to select 120 students from the Merit Hostel, 80 students from Chidera hostel and 55 students from Davita Hostel. Alternate scholars were recruited to participate in the research until the required sample was obtained. Each selected individual had one interviewee. The tool for data collection included a semi-structured interviewer guided questionnaire, which was used to collect information regarding socio-demographics, awareness, ownership, sources and use of ITNs, sleep pattern and frequency of malaria attacks amongst other pieces of information. There were six parts of the questionnaire, which addressed socio-demographic information, awareness, ownership and use of ITN, and students' usage of ITN.

Respondents' appropriate responses to the questions in the questionnaires were marked by the interviewers and asked in English and the local dialects which respondents could understand.

Data Analysis:

The data were presented in tabular form, frequency tables were generated for relevant variables, and percentages were determined as appropriate. Pearson's chi-square test was used to assess the bivariate association between awareness, ownership, and usage of LLINs with the respondents' Socio-demographic characteristics. P value equal to or less than 0.05was considered as statistically significant.

RESULTS:

Table 1 showed the socio-demographic characteristics of the respondents. A total of 255 respondents were involved in the study. The table showed that more than half (56.7%) of those who use ITNs were females. 118 (46.3%) respondents were aged 21-23 years; 125 (49.0%) and 65 (25.5%) were students of 100 & 200 level. It was observed that majority (72.5%) of the respondents were Christians. Igbo ethnicity ranked highest (50.6%) among the respondents. Table 2 showed the assessment of the level of awareness, and ownership of ITNs among respondents. In Merit hostel, 120 (47.1%) were conversant with ITNs. Hospitals accounted for 61 (24.0%) and the main stream media for 90 (35.3%) of the information on ITNN. Ninety (71.4%) of the 120 (47.1%) respondents who held ITNs in Merit hostel got them from the medical facility. However, 50 (20.0%) purchased their ITNs. Table 3 displays how the respondents used ITNs. Of those who possessed an ITN Merit hostel, 50(20.0%) made use of it, with 85 (33.3%) making frequent use of it. But 83 (33.0%) did not make use of It due to heat. Compared to 11 (4.3%) of Chidera hostel, 16 (6.2%) of Davita hostel reported using ITN Occasionally, indicating a greater usage rate among them. That being said, the alteration was not substantial.

Table 1: Socio Demographic characteristics of respondents

Characteristics	Frequency(%)
Gender	
Male	110(43.1)
Female	145(56.7)
Age group (years)	
18-20	39(15.3)
21-23	118(46.3)
24-26	69(27.1)
27 & above	29(11.4)

Level of Study	
100 Level	125(49.0)
200 Level	65(25.5)
300 Level	41(16.1)
400 Level	24(9.4)
Marital Status	
Single	137(53.7)
Married	108(42.4)
Divorced	10(3.9)
Religion	
Christianity	185(72.5)
Islam	63(24.7)
Traditionalists	7(2.7)
Ethnicity	
Yoruba	15(6.0)
Igbo	225(88.2)
Hausa	5(2.0)
Others	10(4.0)

Table 2: Awareness and Ownership of ITNS among respondents

Variables		Hostels		Total(%)
	Merit	Chidera	Davita	
Awareness				
Yes	70(28.0)	50(20.0)	30(12.0)	150(59.0)
No	45(20.0)	33(13.0)	27(11.0)	105(41.2)
Source of Information				
Mass media	37(15.0)	24(9.4)	29(11.3)	90(35.2)
Books/Magazine	9(4.0)	10(4.1)	9(4.0)	28(11.0)
Hospital	20(8.0)	28(11.0)	13(5.1)	61(24.0)
Internet	6(2.0)	4(1.0)	5(1.2)	15(4.1)
Family/friends	20(8.0)	12(5.0)	13(5.1)	45(18.0)
Not aware	5(2.1)	4(2.0)	7(3.0)	16(6.2)
Source of ITNs				
Health facility	27(11.0)	25(10.0)	38(15.0)	90(35.2)
Government/NGO	5(2.0)	3(1.1)	7(3.0)	15(6.0)
Family/friends	2(1.0)	3(1.1)	2(1.0)	7(3.0)
Others	4(2.0)	6(2.3)	4(2.0)	14(5.4)
Cost				
Purchased	16(6.2)	20(8.0)	14(5.4)	50(20.0)
Free	80(31.3)	68(27.1)	57(22.3)	205(80.3)
Reasons for not using ITNs				

Lack of information	35(14.0)	19(7.4)	26(10.1)	80(31.3)
High cost of LLINs	37(15.0)	41(16.0)	33(13.0)	111(44.0)
Other malaria prevention	25(10.0)	18(7.0)	21(8.2)	64(25.0)

Table 3: Utilization of ITNS by respondents

Variables	Hostels			Total(%)
	Merit	Chidera	Davita	
Bed net Ownership				
Bed net (ITNs or Non ITNs)	50(20.0)	36(14.1)	34(13.3)	120(47.0)
No use of bed net	35(14.0)	43(17.0)	57(22.3)	135(53.0)
Use of ITNs				
Yes	48(30.2)	39(15.2)	30(12.0)	117(46.0)
No	40(38.4)	46(18.0)	52(20.3)	138(54.1)
Method of use				
Hanging over the bed	50(20.0)	45(18.0)	55(22.0)	150(59.0)
On doors and windows	25(10.0)	23(9.0)	22(9.0)	70(27.4)
Using it on the farm	10(4.0)	8(3.1)	12(5.0)	30(12.0)
Frequency of use				
Always	36(14.1)	28(11.1)	21(8.2)	85(33.3)
Occasionally	13(5.0)	11(4.3)	16(6.2)	40(16.0)
Never	50(20.0)	43(17.0)	37(15.0)	130(51.0)
Reasons for non-utilizing of ITNs				
Cause of heat	27(11.0)	36(14.1)	20(8.0)	83(33.0)
Disturbs sleep	22(9.0)	25(10.0)	20(8.0)	67(25.5)
Cultural belief	9(4.0)	12(5.0)	8(3.1)	29(11.4)
ITNs not distributed	19(7.4)	17(7.7)	22(9.0)	58(23.0)
Tacking problem	6(2.3)	5(2.0)	7(3.0)	18(7.1)

DISCUSSION:

Prevention and control of malaria involve mosquito control programs. In considering malaria eradication, the aspect that will have to be addressed is the mosquito vectors. The use of ITNs (WHO, 2003), is one of the vector control methods, and its need should increasingly get consideration to check the spread of malaria. The possibility and potential benefits to public health of ITNs as effective measures of protecting oneself from malaria became reconsidered by many after the use of photosynthetic pyrethroids in the 1980s. The malaria control initiatives put forward by the current WHO, namely the Roll Back Malaria, mainly involve use of ITNs and environmental management as ways of reducing the number of mosquitoes, hence preventing malaria. Of all the approaches proposed by the WHO towards combating malaria in sub-Saharan Africa, the provision and use of ITNs is the most challenging yet promising strategy. ITNs have been considered an important tool for malaria control program. Knowledge, ownership, and utilization of ITN were examined among

the scholars at Imo State University in Owerri southeast Nigeria in this study. The finding shows that over 50% of the subjects are within the age range of 21 – 30 years. Being an extremely active age bracket, a disease such as malaria will have considerable detrimental effect on their productivity in money generation. Since over 75% of the respondents are at the 100-200 level of education, they are adequately literate enough to take in any information regarding health matters that are available to them. Unlike a study done in one of the states located in the northern part of Nigeria where awareness of ITN was 36%, more percentage of respondents had awareness of ITN (Grabowsky et al., 2007). From a study conducted in 2008 about the benefits of having and utilizing ITNs among the residents of four West African countries including Nigeria, Senegal, Uganda and Zambia – Awareness level of ITN improved from 7% to 60% among Nigerians within 4 -6 years of introducing ITN to them (Baume et al 2008). Studies conducted in Edo state and Enugu had awareness of 69% and 80% respectively (Adogu and Ijemba, 2013). From the results of this research, awareness strategies have the highest rate of ownership.

These include mass media (50.6%), hospitals (22.0%), and friends and relatives (18.3%). The ownership rate identified by this research was in line with the 72.6% record found in an Ethiopian investigation (Dressa et al 2011; Deribew et al 2011). In addition, considering that the government was the provider of a greater percentage of the ITNs used by the respondents in this research, the involvement cannot be understated for the increase in coverage rates. However, the current study identified that only 46.0% of the participants owned ITNs, a percentage that contrasts the findings of Anyasodor who identified that only 19.4% had used ITNs in rural Nigeria. The difference might be because of differences in the awareness and knowledge levels of urban populations, as compared to rural people. Also, the two periods were different. There is an agreement that people's awareness increases with time. The factors affecting the utilization and ownership of ITNs included age, sex, socio-economic status, education, residence, culture, healthcare accessibility, and community interaction. For instance, younger learners may find it easier to embrace the campaigns for health education and practice preventive measures while the opposite may be true for older ones who have more control of themselves. The gender norms may influence the degree to which learners may gain access to health information while cultural norms may affect who should be the one to procure the bed nets and put them into use within the hostel. The social economic background may affect access to health information since the higher the economic status of someone, the higher the level of awareness on how to use the bed nets. Education may also have a bearing since higher levels of education may be associated with exposure to health information. Age also plays an important part since age groups in schools vary and with them, their level of financial independence and awareness. Place of stay may affect perception of the risk of contracting malaria thus influencing ownership and utilization of bed nets. Cultural beliefs and practices also influence the perceptions about bed nets.

CONCLUSION:

The findings from this study clearly highlighted the importance of consistent free distribution, consistent education at home and mass media education to the sustained ownership and usage of ITNs within this study population. Within communities where an increase in ITNs ownership and usage has occurred, it would be wrong to give up on the work done so far. There also needs to be some form of guidance provided for individuals who own these ITNs on how to correctly use them. Stakeholders should take the initiative to increase the levels of usage and ownership of ITNs in order to improve their overall health conditions and minimize mortality from malaria cases especially scholars and

children within this institute. Moreover, although it might be difficult to alter the trend of being outdoors during the night period within an African community, it will be possible to enhance awareness on total avoidance of mosquitoes using behavior change communication and long-lasting insecticide-treated nets. Despite the levels of awareness and usage of ITNs being high in this community, there are disparities in the usage of ITNs between different socio-economic classes and therefore, free distribution of ITNs to scholars' ownership could be very helpful.

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Conflict of Interest:

The author declares no conflict of interest.

Author Contribution:

The author solely designed, conducted, analyzed and prepared the manuscript.

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