Awareness And Utilization Of Insecticide-Treated Bednets In Ile-Ife, South-western Nigeria

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SUMMARY

Background: Malaria is a disease of public health significance in Nigeria and one of the leading causes of morbidity and mortality in children and pregnant women. One of the key strategies of the Roll Back Malaria initiative (RBM) is the use of Insecticide-treated bednets (ITNs) as a form of vector control measure. The study set out to assess awareness and utilization of ITNs including factors associated with their use.

Materials and Methods: With the aid of a semi-structured questionnaire, a cross-sectional survey was carried out among 140 respondents, 61 males and 79 females aged 18 years and above selected via a multi-stage sampling technique.

Results: 51.4% of respondents were aware of ITNs. Awareness of ITNs was associated with having had post-secondary education ($p < 0.001$). 2.1% of respondents slept under ITNs while 11.5% slept under ordinary bed nets. Main reason for non-use of ITNs was non-availability; cost was the barrier in 10% of respondents who were aware of ITNs. 31% of respondents expressed very good opinions about ITNs.

Conclusion: There is a moderate awareness of ITNs, but very low utilization largely due to non-availability. For individuals and communities to benefit from the use of ITNs, efforts should be made to increase its awareness and availability. In addition, reduction in the cost of ITNs may increase its utilization.

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KEY WORDS: **Awareness, Utilization, ITNs, South-Western Nigeria.**

INTRODUCTION

Malaria is the most important protozoan disease in the tropics; its health implications cannot be overemphasized. There are over 300 million episodes of acute malaria worldwide every year and more than 80% of these occur in tropical Africa [1]. In Nigeria, 38% and 26% of infant morbidity and mortality respectively, 41% and 30% of under-five morbidity and mortality respectively are attributable to malaria [2]. Nigeria is plagued by a high maternal mortality ratio of 704 deaths per 100,000 live births [3] and Malaria is responsible for 11% of maternal deaths [4]. Malaria is a significant impediment to the social and economic development of the world's poorest people. In addition to the direct cost of treating and preventing malaria illnesses and lost productivity due to it, malaria has been shown to slow the economic growth of African countries by 1.3% each year, creating an ever widening gap in prosperity between malaria endemic and malaria free countries. Thus, the problem of malaria has transcended the health confines to become a developmental issue.

The global awareness of the importance of insecticide-treated bednets (ITNs) in the prevention of malaria was given a boost in April 2000 at Abuja Nigeria during the re-launching of the Roll Back Malaria (RBM) initiative. One of the key strategies of the RBM is the use of ITNs as a form of vector control to prevent malaria.

ITNs are made of a suitable material with a fine mesh to act as a mechanical barrier to the entry of mosquitoes. They are subsequently impregnated with an insecticide, commonly permethrin, a chemical substance that is lethal to mosquitoes but harmless to man. The nets are hung around beds or mats to cover up all available spaces. The ITN serves a dual protective role acting as a mechanical barrier and also killing mosquitoes on contact. A net once installed can be used indefinitely while the insecticide needs to be reapplied every six months. The Nigerian government in striving towards attaining the goal of 80% coverage of vulnerable groups (i.e. pregnant women and under-five children) by the year 2005 by subsidizing the price of ITNs at $5 per net. Therefore, this simple solution to a perennial problem of such magnitude is expected to be affordable, accessible and readily available to individuals and communities.

With growing literature from randomnized trials on the effectiveness of ITNs in protecting against morbidity and mortality due to malaria [5-9], its cost-effectiveness in preventing child mortality [10] and evidence to show that ITNs are a highly cost-effective use of scarce health resources [11], the question is whether people are aware of ITNs and their benefits and whether they are sleeping under ITNs.

This study therefore aimed at ascertaining the awareness, acceptability and utilization of ITNs among adults in Ile-Ife, a peri-urban community in south western Nigeria including factors affecting awareness and utilization.

MATERIALS AND METHODS

Study Location

This descriptive study was conducted in Ile-Ife, the headquarters of Ife Central Local Government in Osun State, south western Nigeria. It is a semi-urban community with a population of approximately 200,000 people (1991 National Census). Obafemi Awolowo University, a federal tertiary institution and its teaching hospital are located in the community. The population is ethnically homogenous being made up of predominantly Yorubas. The main occupations among the indigenous residents are trading and farming. There are civil

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servants and professional who work mainly in the university and teaching hospital.

Ile-Ife is holo-endemic for malaria with stable malaria transmission. There are more cases of malaria in the rainy season (April to October) than in the dry season. Majority of infections are due to *Plasmodium falciparum*, Malaria is an important cause of morbidity and mortality in the study area especially among under-fives and pregnant women. Most houses do not have window nets and there is generally a poor bed-netting culture. Data were collected from individuals eighteen years and above.

Sample size determination

Sample size was determined using the Epi-Info software. Based on a 3% prevalence of ITN use in Nigeria [12], and a 6% worst acceptable rate of ITN use, a sample size of 124 was calculated. Employing an attrition rate of 10% data was collected from 140 individuals.

Sampling technique

A multistage sampling technique was employed to collect data. A list of all the streets in Ile-Ife, forty in all, was collected from the Ife Central Local Government Secretariat. Based on available resources, 50% of the streets (twenty) were randomly selected (first stage). Seven houses were systematically selected for study in each street, with the first house randomly selected between the first four houses on the street (second stage). Every fourth house after the index house was subsequently systematically selected until a total of seven houses had been selected on the street (third stage). At the households, where more than one member was eligible, balloting was done to select the final respondent (fourth stage). One hundred and forty participants were interviewed after verbal consent was obtained.

Data collection technique

Data were collected from each study participant using an interviewer-administered semi-structured questionnaire. Prior to this, the questionnaires were pre tested among students and workers at the Obafemi Awolowo University Ile-Ife campus, ambiguous questions were adjusted and irrelevant ones excluded. Socio-demographic data, information on the awareness and utilization of insecticide-treated bednets for malaria prevention as well as opinions about ITNs were collected.

Data Analysis

Data were analyzed using a personal computer and the Statistical Programme for the Social Sciences (SPSS) software. Frequency tables were used to display categorical data while the Chi-square test was used to test for associations and a P-value less than 5% was accepted as being statistically significant.

Limitation

Ideally, for the results of this study to be generalizable, all the streets in Ile-Ife ought to have been included in the first stage of sampling and not just 50% of them. This was however not possible due to limited availability of resources.

RESULTS

A total of 140 respondents were interviewed. The modal age group was 30 – 39 years with 48 respondents. There were a slightly higher percentage of females than males. Over three-quarters of the study participants were previously or currently married and had at least secondary education. 32.1% of respondents were professionals such as bankers, lecturers, civil servants and health workers (Table 1).

Table 1: Socio-demographic Characteristics of Respondents (n=140)

Variable	Frequency	Percentage
Age group (years)		
<20	7	5.0
20-29	44	31.4
30-39	48	34.3
40-49	21	15.0
50 & above	20	14.3
Gender		
Male	61	43.6
Female	79	56.4
Marital Status		
Single	32	22.9
Married (Previously or currently)	108	77.1
Education		
No formal education	6	4.3
Primary education	25	17.9
Secondary Education	37	26.4
Post-secondary	71	51.4
Occupation		
Farming	5	3.6
Trading	36	25.7
Artisan	19	13.6
Student	19	13.6
Professional	45	32.1
Others	16	11.4

Table 2: Awareness and use of Insecticide-treated Bednets

	Frequency	Percentage
Aware of ITNs		
Yes	72	51.4
No	68	48.6
Total	140	100.0
Source of information (n=72)		
Friend/Relative	6	8.3
Radio only	38	52.8
Radio/Television	42	58.3
Television only	10	13.9
Health Centre/Hospital	16	22.2
Sleep under Bed nets		
Ordinary bed nets	16	11.5
Insecticide-treated nets	3	2.1
No nets	121	86.4
Total	140	100.0

Table 3: Respondents opinions about ITNs and reasons for their non-utilization

Opinion about ITN	Number of Respondents (n=140)	Percentage %
Another profit-making venture	5	3.6
Good but inconvenient	14	10.0
Very Good	44	31.4
Does not know about ITNs	77	55.0
Reason for non-utilization of ITNs (n=69)*		
Cannot get to buy	35	50.7
Inconvenient	20	29.0
Too costly	10	14.5
Do not sleep on a bed	4	5.8

** Respondents aware of ITNs but not sleeping under them*

Over half of the respondents had heard about insecticide-treated bednets. Attaining post secondary education was significantly associated with awareness of ITNs ($P < 0.00$). Age and sex of respondents did not affect awareness ($p > 0.05$).

Regarding utilization of bednets, 13.6% slept under bed nets. Only 2.1% of respondents slept under ITNs while the vast majority, 86.4% do not sleep under any king of bed nets. Main source of information about ITNs was the radio (Table 2).

The most common reason cited for not sleeping under ITNs was unavailability of the nets (50.7%). Other reasons included inconvenience (29%), cost (14.5%), and no beds (5.8%).

When respondents were asked about their opinion regarding ITNs, majority (77%) expressed no opinion about ITNs because they knew nothing about them, 44% felt they were very good, 3.6% felt the concept of ITNs was just another profit-making venture by the government (Table 3).

DISCUSSION

This study assessed respondents' awareness and utilization of ITNs and related factors in Ile-Ife, Ife Central Local Government area, Osun State, South western Nigeria. About half of the respondents were aware of insecticide-treated bed nets (ITNs). This is higher than the 7% awareness reported during a NETMARK survey 2000 in South-east Nigeria[18]. Major sources of information about ITNs were the radio and health facilities. This is consistent with a study conducted in the Gambia [19] where use of ITNs was found to be associated with possession of a radio set. The level of awareness of ITNs was found to increase steadily with increase in respondents' level of education. This may be due to the fact that English, the language most commonly used in health communication messages about ITNs is not understood by persons with lower education. No significant relationship was found between the age and sex of respondents and awareness of ITNs. This finding is at variance with a study in Uganda [20], where factors favouring awareness and usage of bed nets included age less than 30 years.

Very few respondents slept under any kind of bed nets and a much smaller proportion slept under ITNs. This finding is similar to the 12% usage of ordinary bed nets reported in southeast Nigeria [16]. It is however very low compared with the findings from Gambia[17] where 86% of the population, sleep under ordinary bed nets. In Guatemala, 75% usage of ordinary bed nets was reported [21]. According to the NETMARK survey in south-east Nigeria, which included 1000 households, only 1 household (0.1%) used ITN [18], similarly, UNICEF in their situation assessment and analysis for 2001 quoted less than 3% ITNs usage among women and children in Nigeria [12]. In Zimbabwe, researchers found the rate of ITN usage to be between 4.4% and 16% [22], slightly higher than in Nigeria.

The main reason why respondents who were aware of ITNs, were not sleeping under them was unavailability of the nets. Other reasons include inconvenience associated with the use of ITNs particularly "hot weather" and cost. In a study in Kenya [23], "too hot" was the leading single reason for lack of adherence with ITN use by children. That a few respondents were not sleeping under ITNs because they did not sleep on beds is a pointer to poor awareness about these nets as they could be tucked under a mat [9].

Almost half of the respondents aware of ITNs did not sleep under them because they could not get them to buy. This underscores the questions of availability and accessibility. This is at variance with the NETMARK's report from Enugu Nigeria [18] where 60% of those interviewed said they did not use ITNs because they could not afford to buy them, while 22% did not see the need for them. Similarly in Zimbabwe, 58.3% of Zimbabweans could not buy ITNs because they could not afford the price [22]. Cost was also found to be the main reason for not using ITNs in Ghana [10].

Most of the respondents agreed that ITNs were very good. In Enugu, it was reported that over 80% of respondents expressed desire to buy ITNs if they can get them to buy [16]. The Bagamoyo Bed Nets Project in Tanzania and Guinea Bissau [24] also recorded high levels of acceptance.

In conclusion, there was moderate awareness of ITNs in Ile-Ife, but very poor utilization largely due to unavailability. It is recommended that for Nigerian to benefit from the impact of ITNs in reducing malaria episodes, information, education and communication about ITNs aimed at eliciting behaviour change in its utilization, should form part of health education massages delivered at Primary Health Care Facilities and also through the mass media. Perhaps, more importantly ITNs should be made available in all major markets at affordable prizes.

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