



AWARENESS, OWNERSHIP, AND UTILISATION OF BED NETS IN RURAL AREAS OF ALIERO, KEBBI STATE, NIGERIA

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Abstract

Effective control of malaria can make a major contribution to the attainment of international malaria targets by 2015. This study assesses awareness, ownership, and utilisation of mosquito nets among rural households. A community based cross-sectional study was performed in four villages of Aliero Local Government Area. Ninety percent of the inhabitants had awareness about the use of any type of beds nets either insecticide treated bed nets (ITNs) or non ITNs. ITNs awareness level of inhabitants was 64%; however, just 31.9% of them own ITNs and 68.1% owns non ITNs. The main reason of non possession of ITNs was due to unaffordability (68.8%) and non availability (23.9%). Education was observed to be significantly association with bed net usage behaviour. Indeed, respondents had adequate knowledge regarding bed net (ITNs and non ITNs). However, inhabitants had poor ownership and use of ITNs due to lack of availability and affordability. Therefore, ITNs should be made widely available, at a subsidize price or free to the entire rural communities.

Key Words: Awareness, ownership, utilisation, bed nets, rural areas, Aliero.

Introduction

In the WHO African region, Nigeria and the Democratic Republic of the Congo and together account for over 40% of the estimated total of malaria deaths globally (WHO, 2012). Achieving and sustaining malaria control is central to meeting many of the Millennium Development Goals in the most affected countries. One of the eight goals specifically relates to malaria. And other goals, specifically those related to child mortality and maternal health will be difficult to reach in endemic countries without substantially reducing the malaria burden.

Since the introduction of Roll Back Malaria strategy, several efforts have been on course towards the reduction of the burden of malaria by formulation of strategic plans. The ultimate long-term vision of the current five-year strategic plan (2009 – 2013) is having “A malaria free Nigeria”. This is to be achieved by ensuring that families will have universal access to malaria prevention and treatment.

Protection against mosquito bites, vector control, rapid diagnosis and treatment of malaria cases, is the cornerstone of the malaria control strategy (Steenkeste *et al.* 2010). Prevalence and density of malaria parasitaemia are related to the extent of man-mosquito contact (Orogade *et al.* 2002). Bed nets are among the most recognized methods of personal protections against mosquitoes (Mazigo *et al.* 2010) and many studies have reported that ITNs reduce malaria incidence, transmission and mortality (Evans *et al.* 1997; Lengeler, 2004). They constitute a cost-effective investment in health and should become more central in malaria prevention and control efforts (Goodman *et al.* 2001).

Past research in a variety of countries reveals that there are many factors influencing bed net use, for example, age and gender (Alaii *et al.* 2003; Ngondi *et al.* 2011), education, occupation/livelihood (Dunn *et al.* 2011), malaria knowledge, beliefs and risk perceptions (Chuma *et al.* 2010; Dye *et al.* 2010), perceived benefits and disadvantages of nets (Ng’ang’a *et al.* 2009; Dye *et al.* 2010), knowledge of appropriate net use/care practices, and net-hanging skills (Widmar *et al.* 2009; Rickard *et al.* 2011), household size and composition (Wiseman *et al.* 2007), household structure and space (Alaii *et al.* 2003; Ng’ang’a *et al.* 2009), use of other vector control measures (Wiseman *et al.* 2007; Edelu *et al.* 2010), social norms and values (Dunn *et al.* 2011), and cultural beliefs and practices (Chuma *et al.* 2010; Dunn *et al.* 2011), all have the potential to influence net use by individuals and within households.

Results of recent research suggest that ITNs can reduce malaria episodes by 48–50% (Lengeler, 2004) and, if universally used, could prevent an estimated 7% of global under five mortality (Jones *et al.* 2003). A study reported that use of bed nets by 75 percent of population could eradicate malaria (Agusto *et al.* 2013).

Method and Materials

Study Area

The study was carried out in the four villages: Danwarai, Gehuru, Jiga, and Kashin Zama of Aliero Local Government Area. Aliero is approximately located at latitudes 4°23’S and 12°26’40”N and longitudes 3°6’W and 4°27’35”E. It was created in 1996, with a total land mass of 412.25 sq. km (Statistical Year Book, 2007). It has a total population of 67,078 (FRNOG, 2009).

Study Design and Data Collection

The study was a community based cross-sectional study. A structured questionnaire was designed and interviewed by the researcher. The questionnaire was administered to 200 randomly selected households in June to August 2012. Only one adult, the heads of households was interviewed per household. In their absence, a responsible adult above 18 years, chosen by the family was interviewed. The questionnaire was prepared in English and translated to Hausa language.

Ethical Clearance

The objectives of the study were explained to community leaders and local government before data collection. Full verbal explanation of the study was given to members of selected households and verbal consent was obtained before inclusion as participants. Respondents were given the right to refuse to take part in the study as well as to withdraw any time during the interview. Privacy and confidentiality were maintained throughout the study.

Data Analysis

The data were entered in Microsoft Excel data sheets and analyzed using Epi Info, version 3.5.3. Descriptive statistics were carried out to measure relative frequencies, percentages, averages, and relative frequencies of the variables.

Results

Baseline Characteristics of the Study Population

A total of 200 households' heads were interviewed, including 36 respondents from Danwarai, 80 respondents from Gehuru, 39 respondents from Jiga, and 45 respondents from Kashin Zama. There were 68 (34.0%) females and 132 (66.0%) males. Islam was the predominant religion with 198 (99.0%) respondents and Christianity with only 2 (1.0%) respondents. The socio demographic and household characteristics of the study population are presented in Table 1.

Awareness of Insecticide Treated and Untreated Bed Nets

About 180 (90.0%) of the respondents reported bed nets (ITNs or non ITNs) as the most common known protective method against malaria, while 128 (64.0%) respondent had awareness of ITNs. Protection from mosquito bites was reported to be the main known reasons by 149 (82.8%) respondent for using bed nets. Only 62 (31.0%) respondents were aware of use of insecticides for retreatment of ITNs. The time for retreatment was after 2 or 3 months, reported by only 6 (9.7%) respondents. Retail shops were reported by 50 respondents (80.6%), to be the main source of insecticides (Table 2).

Bed Net Ownership and Utilization

About 160 (80%) of the respondents reported to own any bed nets (ITNs or non ITNs), while 40 (20.0%) reported not using any mosquito net. Those who reported using any bed nets, only 51 (31.9%) reported to use ITNs and 109 (68.1%) reported to use non ITNs. The main reason of non possession of ITNs was due to unaffordability reported by 75 (68.8%) and nonavailability by 26 (23.9%). Education level was observed to be significantly associated with bed net usage behaviour ($P = 0.001$). Only 6 respondents of the ITNs user reported to use insecticides to retreat their bed nets. Retail shop was reported as the main source of insecticide by all 6 respondents. Cost of insecticides was the main reason of not retreating their ITNs by 25 (55.6%) respondents. About 110 (68.8%) reported that everyone in their family was sleeping under bed nets (Table 3).

Discussion

Estimates from Africa as a whole suggest that only three percent of children less than five years of age sleep under ITNs, while up to ten times as many are thought to sleep under any bednet [22(RBM, 2005)]. Same observation was reported from this study in which only 31.9% of respondents were using ITNs, while 68.1% were using untreated bed nets among 80% of any bed net users. Although an additional 10% were aware of their effectiveness in prevention of malaria but could not afford them. Similar high level of awareness on preventive use of any bed net had been observed in Nepal [23 (Joshi and Banjara, 2008)].

The respondents had a good awareness of ITNs but had poor ownership of ITNs. Our results emphasize cost as an important reported barrier for non-use of bed nets either treated or untreated and insecticides to retreat their ITNs. This indicates the need to make ITNs and insecticides more accessible and affordable. It should be subsidized by government to enable all families to invest in them.

Most of the households reported bed net ownership and the majority reported that everyone in the household was sleeping under a bed net. This was an encouraging observation and can be used by malaria control programme to replace it with ITNs in this community. The main reason of sleeping under bed nets was protections from mosquito bites. The perceived benefit of sleeping under bed nets as a method of malaria prevention was higher among educated respondents. Generally, educated communities had better access to multiple information sources such as community meetings, health educations, and mass media (television and radio).

Only 6 respondents of the ITNs user reported to use insecticides to retreat their bed nets after 2-3 months and the main source of insecticides was indicated to be the retail shops. The cost of insecticide and unawareness was mentioned to be the main reason for not re-treating bed nets. Some reported that they are not aware of the source of insecticides.

These call for targeted health education/communication to increase the population's awareness for retreatment of ITNs with insecticides, its source, and time to retreat. Better awareness, ownership and use of ITNs could contribute much to the overall reduction of the malaria burden. This will help to attain MDG goal of malaria control by 2015 as well as the longer-term vision of worldwide eradication.

Conclusion

Indeed, respondents had adequate awareness regarding bed net (ITNs and non ITNs). However, inhabitants had poor ownership of ITNs utilization due to lack of availability and affordability. Since cost is considered a major reason for its low utilization, distribution and promotion of ITNs to entire rural residents at free of charge or at subsidize rate may increase its coverage. It may possibly bring constructive outcome in the near future. The use of ITNs, which is already recognized, there should be emphasis on their protective effect. The added advantage of treating bed nets with insecticides should be made known to the communities by health education campaign.

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Appendix:**Table 1: Baseline characteristics of the study population**

Characteristics	Frequency (%)
Gender: No of male	132 (66.0)
No of female	68 (34.0)
Family size mean \pm SD	12.42 \pm 5.7
Age :	
18 years	29 (14.5)
19-45 years	103 (51.5)
45-64 years	43 (21.5)
\geq 65 years	25 (12.5)
Religion: Islam	198 (99.0)
Christianity	2 (1.0)
Marital Status:	
Married	163 (81.5)
Unmarried	25 (12.5)
Widow/widower	10 (5.0)
Divorced	2 (1.0)
Highest level of education	
No education	39 (19.5)
Primary	49 (24.5)
Secondary	41 (20.5)
Tertiary qualifications	25 (12.5)
Others (Islamic etc)	46 (23.0)
Main occupations:	
Farmers	52 (26.0)
Business	57 (28.5)
Employed	21 (10.5)
Housewife	32 (16.0)
Unemployed	19 (9.5)
Others	19 (9.5)

Table 2: Awareness of insecticide treated or untreated bed nets

Variables	Frequency (%)
Bed nets (ITNs or non ITNs)	180 (90.0)
ITNs	128 (64.0)
Reasons for using bed nets	
Protect from mosquito bites	149 (82.8)
Protect from malaria	22 (12.2)
Habit	9 (5.0)
Use of insecticides to re-treat bed nets	
Yes	62 (31.0)
No	138 (69.0)
Time for re-treatment of bed nets with insecticides	
After 1 month	11 (17.7)
After 2 or 3 month	6 (9.7)
After 12 months	16 (25.8)
Do not know	29 (46.8)
Source of ITNs	
Retail shops	50 (80.6)
Donated by government	20 (32.3)
Nongovernmental organization	5 (8.1)
Do not know	12 (19.4)

Table 3: Bed net ownership and its utilization

Variables	Frequency (%)
Bed net ownership	
Bed net (ITNs or non ITNs)	160 (80.0)
No use of bed net	40 (20.0)
Non ITNs	109 (68.1)
ITNs	51 (31.9)
Reasons of not possessing any bed nets	
Expensive	28 (70.0)
Reduce surrounding air	12 (30.0)
Reasons of not possessing ITNs	
Expensive	75(68.8)
Not available	26 (23.9)
Cannot prevent malaria transmission	5 (4.5)
No reasons	3 (2.8)
Reasons of not using insecticides to re-treat bed nets	
Expensive	25 (55.6)
Not available	10 (22.2)
Did not know it should be retreated	10 (22.2)
Family members who sleep under bed nets daily	
Children alone	24 (15.0)
Children and mothers	18 (11.8)
Everyone in the house	110 (68.8)
Father and mother alone	2 (1.3)
Others (visitors)	6 (3.8)