

Use of insecticide-treated mosquito nets for children under five years in an urban area of Lagos State, Nigeria

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Abstract

Background: Insecticide-treated nets (ITNs) have proven to be one of the most effective means of reducing malaria morbidity and mortality in children and pregnant women. This study is carried out to determine the practice and determinants of ITN use for children under five years among care givers in an urban area of Lagos State.

Materials and Methods: A community-based, cross sectional study was carried out in Lagos State in April 2007 among three hundred and forty (340) care givers primarily responsible for child care at home. They were selected by a multi-stage sampling method using a pre-tested, interviewer-administered, structured questionnaire.

Results: ITN use rate for under-fives was high (61.8%) and this was significantly determined by care giver's marital status ($P < 0.001$) and the number of children under five years in the household ($P = 0.006$). Educational level of care giver and occupation of head of the household were not significant determinants.

Conclusion: There is need for health campaigns on ITNs targeted at unmarried care givers of young children. In addition, we also recommend social marketing of modern family planning methods to reduce family size, thereby increasing chances of ITN use among children less than five years to reduce malaria burden.

Key words: Children, Insecticide-treated net, malaria, Nigeria, under-five, urban

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Introduction

Most malaria cases and deaths worldwide occur in sub-Saharan Africa predominantly among children and pregnant women.^[1,2] In Africa, a child dies of Malaria in every 45 seconds.^[1] It is a major cause of anaemia in children and survivors of severe malaria may be left with significant neurodisabilities such as learning impairments. The use of Insecticide Treated Nets (ITNs) is one of the strategies of Roll Back Malaria (RBM) initiatives to reduce malaria burden. The aim of this study is to determine the rate and determinants of ITN use in children under five in the study area so as to propose the design of appropriate interventions that will help to reduce the burden of malaria.

Materials and Methods

This study was carried out among care-givers in Ikosi-Isheri

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Local Council Development Area (LCDA), in Lagos state, Nigeria. It is located in the Northern part of Lagos state. The LCDA which was carved out of Kosofe LGA in October 2003, is urban and divided into seven wards. The study was carried out in April 2007 in two of the wards in the LCDA.

It was a cross-sectional, descriptive study. The minimum required sample size (320) was calculated using the statistical formula for cross-sectional, descriptive studies. However, a sample size of 340 was used for the study.

A multistage sampling method was used to select the respondents for this study. In the first instance, two wards were selected by simple random sampling out of the seven

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wards in Ikosi- Isheri LCDA, Upper Ikosi (Ward C) and Isheri-Olowora (Ward A).

Then using simple random sampling, a street was chosen from each ward from the most current list of streets available. By simple random sampling (balloting), the starting point on each street was determined out of the total number of compounds/houses on that street.

Information was obtained with the aid of pre-tested, interviewer-administered, structured questionnaires. Five interviewers were trained to assist the researcher in administering the questionnaires.

Interviewers questioned caregivers from consecutive households with at least one child under five years (following a higher-numbered-house pattern from the starting point). Subsequently more streets were selected by balloting until desired sample size was achieved. Only one care giver was interviewed in each house, but if more than one were present, simple random sampling was done to select one person.

Some of the information sought from the respondent included age, marital status, level of education and occupation. Others were occupation of head of the household, number of children less than five years in the household, the cause of malaria, preventive measures and use of ITNs for under fives.

A respondent was considered eligible for the study if he/she is primarily responsible for child care. Permission to carry out study was obtained from the Local Government Chairman. The nature and purpose of the study was explained to intended respondents following which an informed consent was obtained before questionnaires were administered. Confidentiality was maintained through out the study.

Data analysis

Data was analysed using EPI-Info version 6.04 statistical software. Frequency distribution of variables and cross-tabulation of variables were recorded. Chi-square and Fisher’s exact tests were done to test for significance. Margin of error accepted was 5% ($P \leq 0.05$).

Results

Three Hundred and Forty (340) respondents were interviewed. The modal age group of the care-givers was 25-35 years and majority (71.2%) were mothers of the children, 11.8% were their fathers, 7.9% were their grandmothers while the rest were other care-givers such as nannies. Most (80.3%) of the caregivers were married and 7.4% of them were single. The study population was dominated by Yorubas. Over ninety percent (90.6%) had some form of formal education.

More than half of the respondents were either unskilled, or had no occupation while 22.6% of them were skilled and 18.2% were professionals. For the heads of household, more than 60% were either skilled or professional. Thirty percent of the households had 3 children while 39.1% had four children or more. Most (59.1%) of the households had only one child under five years and 7.4% of them had at least three children in this age group. Two hundred and ten, (61.8%) of the respondents used ITN for children under five years [Table 1].

Married respondents had a significantly higher ITN use rate for children under five years, than respondents who are single or separated/divorced care-givers, $P < 0.001$, [Table 2]. The number of children under five years in the household also significantly influenced the use of ITN for the under-fives, $P = 0.006$ [Table 3]. Families with less than three under-fives (63.8%) had a higher rate of ITN use than those with three or more children under five years old. Educational level of care-giver was not significantly associated with ITN use for the under-five children but the lowest proportions of users were among those without secondary education [Table 4]. Respondents’ knowledge of mosquitoes as the only cause of malaria also did not significantly influence their use of ITN for children under five years [Table 5].

Table 1: Use of ITN for children under five years

ITN for children under five years	Frequency (%)
Yes	210 (61.8)
No	130 (38.2)
Total	340 (100)

Table 2: Relationship between caregivers’ marital status and their use of ITN for children under five years

Marital status	Use ITN for children under five years			X ²	P
	Yes No. (%)	No No. (%)	Total No. (%)		
Single	10 (40.0)	15 (60.0)	25 (100)	18.65	< 0.001
Married	184 (67.4)	89 (32.6)	273 (100)		
Widowed/separated	16 (38.1)	26 (61.9)	42 (100)		
Total	210	130	340		

Table 3: Association between number of children under five years in the households and use of ITN by the children under five years

No of children < 5 years	Use ITN for children under five years			X ²	P
	Yes No. (%)	No No. (%)	Total No. (%)		
< 3	201 (63.8)	114 (36.2)	315 (100)	7.58	0.006
≥ 3	9 (36.0)	16 (64.0)	25 (100)		
Total	210	130	340		

Table 4: Association between caregivers' educational level and use of ITN for children under five years

Educational level	Use ITN for children under five years			X ²	P
	Yes No. (%)	No No. (%)	Total No. (%)		
None	18 (56.3)	14 (43.7)	32 (100)	6.81	0.078
Primary	37 (51.4)	35 (48.6)	72 (100)		
Secondary	96 (62.8)	57 (37.2)	153 (100)		
Post-secondary	59 (71.1)	24 (28.9)	83 (100)		
Total	210	130	340		

Table 5: Association between respondents' knowledge of mosquitoes as the only cause of malaria and their use of ITN for children under five years

Mentioned only mosquito	Use of ITN for children under five years			P
	Yes No. (%)	No No. (%)	Total No. (%)	
Yes	9 (69.2)	4 (30.8)	13 (100)	0.773*
No	201 (61.6)	126 (38.4)	327 (100)	
Total	210	130	340	

*Fisher's exact P

Discussion

The use of ITNs is one of the strategies of the RBM initiative to reduce morbidity and mortality from malaria especially in children and pregnant women. Expanding its coverage has been found to achieve this reduction.^[2-4]

The level of ITN use in this community is better than other malaria endemic countries such as Madagascar, Togo, Senegal and Kenya.^[5-8] This may be due to the several campaigns on malaria control by the government and donor agencies who made ITNs available at a subsidized rate or even free of charge. Data from household surveys conducted in 30 malarious African countries between 1998 and early 2002 showed that only Guinea Bissau met the 60% target coverage with ITNs defined for Africa in the Abuja Summit on Roll Back Malaria in 2000.^[9] In 23 countries, ITN use for children less than five years old was at or less than 5%, with an overall median use of 2%.^[9] In a semi-urban community in South-South Nigeria, only 18.28% of those who bought ITNs through a social marketing programme used them properly.^[10] Most of these nets (53.06%) were occupied by under-five children that slept with their parents on the bed.^[10] The high coverage recorded in this study

is encouraging though the same cannot be said of Ile-Ife, another South-West location where only 2.1% of children with malaria used ITNs.^[11] If the targets for malaria control are to be met, focus for ITN use should go beyond vulnerable groups like children and pregnant women to everybody. An interesting finding in some parts of Uganda was that bed nets were "reserved" mainly for the heads of the households.^[12]

Marital status was a significant determinant of ITN use in Makeni District, Kenya.^[13] Other authors have also reported better health outcomes for infants and toddlers of married mothers.^[14] It is therefore, not surprising that married care-givers significantly had better ITN coverage for the under-fives. It is possible they have better exposure and experience about child health.

For under-fives, sleeping on the bed with their parents ensures higher ITN use rate.^[10] This may explain the significantly higher coverage found among children in households with two or less children under five years who may be sharing their parents' bed. Having many under-fives in a household, (most likely in a crowded accommodation) would probably result in the young children sleeping on the floor. In addition, smaller-sized households are more likely to afford ITNs.

Improving the functional literacy of women significantly improves positive health practices.^[15] The use of insecticide treated net for children under five years has been found to be significantly related with the level of education of the mother, occupation and knowledge.^[8,11,16] This was, however, not evident among the study population. The reason for this may partly be ascribed to the fact that majority of the caregivers had some form of formal education and most of the heads of households were in skilled or professional occupations. Moreover, ITNs are being made available at a reasonable cost and even distributed free in some states like Lagos.

Conclusion

ITN use for under-five children in this community was high. Nevertheless, interventions targeted at the unmarried caregivers and also social marketing of modern family planning methods should be promoted. These would increase the ITN coverage for children less than five years and thus reduce the burden of malaria.

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