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KNOWLEDGE, USE AND PROMOTION OF INSECTICIDE TREATED NETS BY HEALTH WORKERS IN A SUBURBAN TOWN IN SOUTH WESTERN NIGERIA

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ABSTRACT

Background: Morbidity and mortality associated with malaria can be significantly reduced by widespread use of insecticide treated nets. Health workers can increase acceptability of ITN by promoting its use and serving as role model.

Objective: To assess the knowledge, use and promotion of insecticide treated bed-net by health workers.

Method: This descriptive, cross sectional study was carried out among health care workers in Sagamu (Ogun State) between November 2004 and January 2005. Data was collected from 263 health workers using a pre-tested, structured questionnaire.

Result: Two hundred and forty six (93.5%) were aware of insecticide treated bednets (ITN) but many did not have adequate knowledge about it, only 52 (20.9%) knew that ITN should be retreated every 6 months. Sixty (22.8%) were currently using ITN. In the homes where they were currently using ITN, children were the main users (59%). The major reasons given for not using an ITN were that it had not occurred to them (23.2%), 13.3% were satisfied with the method they were using and 12.1% felt it was not convenient to use. Less than one-third (32.3%) indicated that ITN was available in their health facility. Fifty-seven percent (56.7%) had recommended it for patients before. The main reasons given by those who had not recommended it before were: lack of knowledge about it (52.5%), while 20% indicated that they were not familiar with it.

Conclusion: Awareness about ITN is high among the health workers but the knowledge about it is inadequate. The major challenges to use and promotion of ITN by health workers are lack of conviction about the unique benefits of ITN, inadequate knowledge and poor access to the nets.

Key words: Use, Promotion, Insecticide Treated Nets, Health workers [(*Accepted 6 July 2007*)

INTRODUCTION

Malaria affects about 500million people and kills 1.5-2.7million people annually[1]. The prevalence is increasing and spreading to previously unaffected areas. In Nigeria, malaria accounts for I in 10 maternal deaths and is one of the leading causes of childhood deaths. Almost two thirds (65%) of cases reported at health facilities are due to malaria [2]. Apart from being a significant cause of morbidity and mortality, malaria causes significant economic burden for affected individuals and communities. Malaria was estimated to cost Africa $12billion annually [3] and the economic burden is increasing as the mosquitoes develop resistance to commonly available insecticides and the parasite develops resistance to the cheap and easily available antimalarials such as chloroquine and sulfadoxine-pyrimethamine [4]. Considering the significant burden of malaria in Africa, malaria control has been given utmost priority by world health authorities. The National Malaria Control Programme in Nigeria identified insecticide treated net as a key strategy to malaria control [5].

Widespread use of Insecticide impregnated bed-net (ITN) has been shown to significantly reduce morbidity and mortality in the community [6,7]. At the African Summit on Roll Back Malaria held in Abuja, Nigeria in April 2000, African leaders committed themselves to ensure that by the year 2005, at least 60% of those at-risk of malaria will have access to an effective means of malaria prevention such as insecticide treated net. To achieve this, the Federal Government of Nigeria (FGN) tried to improve net coverage by promoting awareness through social marketing with emphasis on providing free ITNs for

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children and pregnant women. Despite the efforts of the FG, use of ITN remains low in Nigeria[8].

The Abuja declaration aimed to build human and institutional resources to fight the malaria scourge[4]. Health workers are an important source of information and motivation for community members concerning health matters. Health workers can create a demand for ITN by recommending it to people and by serving as role models[9]. Since studies have shown that health workers who practice particular health promoting behaviours are more likely to counsel patients about them and more likely to convince them to adopt it[10], this study examined the knowledge and use of ITN by health workers and discussed how these may affect the promotion of its use.

MATERIALS AND METHODS

Background to the Study

Sagamu is a suburban town in Ogun State in the South Western part of Nigeria. It is the headquarter of Sagamu Local government Area of Ogun State. Private and public health institutions as well as local traditional healers provide health care for the people. During the period of the study, ITN was available free of cost at the Primary Health Care centres, for pregnant women and children who had completed their immunization schedule and was available for sale at some of the private institutions but it was not available at the tertiary institution in the town (Olabisi Onabanjo University Teaching Hospital). ITN was being sold at a cost of N500 ($3.7) by community-based distributors and at N800 ($6.0) N1000 ($7.5) in the shops.

Method

This cross-sectional study was carried out between the months of November 2004 and January 2005 in Sagamu. Health care workers in the three Primary Health Care centres in Sagamu, the Teaching hospital and ten randomly selected private clinics were involved in the study. The ten private clinics were randomly chosen from the 50 registered clinics in the town. The investigators and interviewers who were adequately briefed about the objectives of the study were involved with the data collection.

At the teaching hospital, the questionnaires were administered to the doctors during their clinical meetings. Through the assistance of the Chief Nursing Officer of the hospital, the questionnaires were given to the heads of department of the various Nursing Units who assisted with data collection from the nurses in their units. At the Primary Health Care centres and selected Private clinics, consent was obtained from the most senior personnel on duty and data was collected from the eligible health workers who were present at the health facilities at the time of data collection. Consent was obtained from individuals before administering questionnaires to them.

Pre-tested structured questionnaire was used to collect information from the respondents. The questionnaires were self-administered. Data collected included the socio-demographic characteristics, knowledge about malaria and its prevention, awareness, use of ITN and counselling of patients about its use. Data was analysed using Statistical Package for Social Science version 10. Chi-square was used to test relationship between variables. P value <0.05 was accepted as being statistically significant.

Limitation of the study: The study is based on self-report alone and may therefore be prone to over-reporting of approved behaviour. However, the anonymous nature of the study makes it less likely.

RESULT

Socio-demographic data

A total of 263 health workers were involved in the study. One hundred and forty-six respondents (55.5%) worked at the teaching hospital, (33) 12.5% at the Primary Health Care centres and 26.2% were from the private hospitals. Table 1 shows that almost three quarters of the study population (73%) were between 26 to 45 yrs of age. The majority were married (63.5%), male to female ratio of 1:1.9. Of the 145 respondents that indicated the number of their children, 89% had less than 4 children. Eighty-three (31.8%) were doctors, 44.1% were nurses, 3.4% were Community health technicians or Community Health Officers, others which included auxiliary nurses constituted 4.6% of the respondents while 16.3% did not indicate their cadre.

Knowledge about malaria

Almost half of the respondents (47.9%) had experienced 2 or more episodes of malaria in the last one-year. While thirty percent (30.4%) had a malaria attack once, 14.8% could not remember the number of times. Only 6.5% said they did not have a malaria episode in the past year. Eighty-nine percent (89%) believed that malaria is a dangerous disease. The known high-risk groups were children (46.8%), pregnant women (38.0%) and old people (10.3%). Forty two percent (42.2%) indicated that everybody was at high risk. The commonly known means of malaria prevention included clean environment (57.8%), netted windows and doors (52.1%) and use of insecticide treated nets (49.4%).

Almost all the respondents (98.9%) were doing something to prevent malaria in their families. The

most popular method being used included window and door netting (45.3%), cleaning of the environment (43.7%) and use of insecticide 29.3%. The most important factors influencing their choice of malaria prevention methods included convenience of use (43%), the method keeps mosquitoes away better (36.1%), affordability (22.2%) and the ability to kill mosquito better (17.5%). Others included that the chosen method provides a long-term solution to mosquito problem (9.9%), effective to prevent malaria (6.1%), allows for better sleep (4.9%), familiarity with method (5.3%) and that it saves more money (2.3%).

Knowledge about ITN

Although only 49.4% had earlier identified ITN as one of the methods of malaria prevention, when asked directly, 93.5% of the respondents had heard about ITN before. The commonly known sources of ITN were government hospital (42.2%) and pharmacies/chemists (36.1%). Only 6.8% knew it could be obtained from the market while thirteen percent (13.3%) did not know where to obtain it. Groups of people that the respondents felt could benefit most from ITN include children (40.3%), pregnant women (17.5%) while 49.4% indicated that everybody would benefit from its use. Out of the 246 respondents who were aware of ITN, 70 (27.7%) knew it could be used on a mat while only 53 (20.9%) knew the correct re-treatment period.

The perceived advantages of ITN included that it prevents mosquito bites (66.2%) and prevents malaria (33.5%). Only 13.3% believed that it is a cheap method on the long run (table 2). The perceived disadvantages included that the chemical may be dangerous (25.5%), impedes movement in and out of bed (16%) and the inconvenience of re-treatment (14.8%). A few respondents felt it is costly (12.6%), hot and inconvenient (6.8%), has an irritating smell (6.8%) and that it is not easy to set up on their bed (4.2%). Others indicated that it causes skin irritation (0.8%) and it is not easily available (1.2%).

Use of ITN

Sixty-nine (26.2%) had an ITN at home. Forty four percent (44%) of those who had ITN in their homes received it free of charge. Majority of those who had an ITN in their home were using it (93.2%). 64 (24.3%) had used an ITN before. The major reasons given for not having using ITN were that it had not occurred to them (23.2%), satisfaction with the method they were using (13.3%) and that it is not convenient (12.1%). Others included not knowing How to use it (6.6%) and the high cost (4.4%). Out of The 64 (24.3%) that had ever used an ITN, 11 (17.2%) had stopped before for various reasons whichincluded fear that the chemical is dangerous (45.5%) that it was not easy to maintain (36.4%) while the others indicated that the chemical for re-treatment was not available or that it was not effective.

Sixty respondents (22.8%) were currently using an ITN in their homes. Where they had ITN in their homes, the children under 5 yrs of age were the main users (59%) and they were sleeping under the net every night. Fathers and mothers were sleeping under the net in only one-fifth of the cases. Of those who were using ITN, 74.4% acquired it less than 6 months ago while 23.1% acquired it 7-12months ago.

Among the 194 who had never used it before, 65.2% will like to use it in future while 16.3% would not like to use it, 18.5% were undecided. Of those who are willing to use it, 31.6% were willing to pay less than N200, 15.2% would pay N201-500, and 4.6% was ready to pay N501-N1000. A few factors that could affect use of ITN by the health workers were examined. It was hypothesised that those who earn more and those who work in facilities where ITN was freely available were more likely to use it. While ITN was available in some private clinics, it was not available in others. Because of the anonymous nature of the study, it was not possible to distinguish between those who work in private facilities where ITN was available from those who did not therefore the cross tabulation involved only health workers from public institutions. Level of income did not influence use of ITN ($p>0.05$) however the workers at the Primary health care centres (where free ITN was available) were significantly more likely to be using ITN compared to workers in the tertiary hospital (where ITN was not available) ($p<0.005$).

Promotion of ITN

Fifty-seven percent (57%) had recommended ITN for people to use before. Reasons given by those who had never recommended it to patients were lack of knowledge about it (52.5%), the fact that they had never used it and therefore did not know its effectiveness (20%), they had not considered it (15%) and it was not easily accessible (10%). Only 32.3% indicated that ITN was available in their health facility however 74.5% believed that it should be made available in the health facilities and prescribed for patients.

Table 1: **Sociodemographic Characteristics of the Health Workers**

Variables	N 263 Freq	%
Age		
18-25	38	14.4
26-35	119	45.2
36-45	73	27.8
46-55	31	11.8
>56	2	0.8
Sex		
Male	92	35.0
Female	171	65.0
Profession		
Doctor	83	31.6
Nursing	116	44.1
Community health Technicians	19	7.2
Others	45	17.1
Institution		
Teaching hospital	146	55.5
Primary health Care Centre	33	12.5
Private hospital	73	27.7
Non response	11	4.2

Table 2: **Use and Promotion of ITN by health worker**

Variable	Yes(%)	No(%)	Total
Use of ITN	60(22.8)	203(77.2)	263
Use of ITN by Workers at facility*	N-23	N-156	N-179
Teaching Hospital	8(5.8)	138(94.2)	146
PHCC	15(45.5)	18-954.5)	33
		X2 -38.41 P value -<0.0005	
Promotion of ITN	149(56.7)	114(44.3)	263

P <0.0005 is very significant

* At the time of the study ITN was not available at the teaching hospital. It was free at the Primary Health Care Centres (PHCC) for children who had completed their immunization and pregnant women and was being sold at a reduced price to the general populace

Table 3: Perceived advantages and disadvantages of ITN by health workers

Perceived Advantage	N -263 %	Perceived Disadvantages	N-263 %
Prevent mosquito bites	66.2	Chemical may be dangerous	22.5
Prevents malaria	33.5	Not easy to get in and out Of bed	16.4
Cheaper on the long run	13.3	Re-treatment is inconvenient	14.8
		Costly	12.6

*Multiple choice answers

DISCUSSION

This cross sectional study has shown that most health workers in the study population do not use ITN and a significant proportion of them do not promote its use among patients despite the fact that about 90% of them correctly identified malaria as a dangerous disease and most of them had episodes of malaria in the previous year. This finding has serious implications for malaria control in the area since health workers are important sources of health information in the community. In Zimbabwe, a survey showed that one of the major reasons given for buying ITN by the purchasers was that health workers recommended it (11).

The discrepancy between the respondents' knowledge and experience of malaria and their attitude to ITN use suggests that there are other factors that must be considered to achieve the right attitude. In a study carried out in Western Kenya, Alah *et al* (12) found that participants correctly ranked malaria as being important and its prevention as beneficial but expressed concerns that the insecticide might be a toxic family planning aid. Some health workers in this study also expressed the fear that the chemical might be dangerous to their health.Although majority of the health workers were aware of ITN, their knowledge of it was poor. This supports the opinion expressed by Kilama that operational health staffs usually lack essential information to tackle the problem of malaria (13). This poor knowledge of ITN may limit its use and promotion as it has been shown that poor knowledge of malaria constituted an impediment to ITN use in Ghana (14). Only one-fifth of the health workers knew the correct re-treatment period. Almost three out of four did not know that ITN could be used on the sleeping mat. This may limit its promotion among people who may not have access to a bed and these unfortunately are the people who are less likely to have access to other effective means of malaria prevention or may be less able to afford treatment when infection occurs. Another significant gap in the knowledge of the health workers is the low level of awareness that pregnant women will benefit greatly from the use of ITN. Similar to findings among ITN users in Zimbabwe, where majority of those

who own nets were using it (>90%), 93.2% of the health workers who had ITN were using it. However, contrary to what was found among the Zimbabweans and in other communities where adults were the major users of ITN (11), in this study, children under 5 year of age were the main users of ITN in households where they had ITN. This may be because of the pattern of social marketing of ITN in Nigeria whereby ITN is given free to children who complete their immunization schedule (15). To achieve mass effect, use of ITN must be widespread and should not be limited to use by vulnerable groups alone (13). Therefore strategies to promote ITN use should not only target vulnerable groups but the entire community members.

The most important factor influencing choice of anti-mosquito method by the health workers is the convenience of the method. A few respondents perceived ITN to be inconvenient to set up and use especially with beds without posts. It is therefore important that simple methods of setting up the nets should be devised and the knowledge widely disseminated to the populace.

Respondents raised concern about the non-availability of ITN and scarcity of insecticide for re-treatment and many felt it should be available for sale in all health facilities. Similar to the findings in Nigeria and other West African countries (16,17), most of the respondents who were willing to use ITN were also willing to pay for it but at much less than the current market price. Onwujekwe et al found that in a rural Nigerian population, socioeconomic status influenced ownership of ITN and as the proposed selling price for ITN reduced, proportion of people who were willing to buy increased (18). In this study, use of ITN was not influenced by respondents' level of income however respondents who worked in a facility where free ITN was available were significantly more likely to be using ITN compared to those who worked in a facility where free ITN was not available. The implication of these findings is that people are likely to own an ITN if they are convinced of its benefits, if it is available and affordable.

CONCLUSION

Using the health system to promote ITN is a strategy that has not been adequately explored in this area. Despite widespread awareness, the knowledge of most of the health workers about ITN is deficient. Many do not currently use ITN and a significant proportion of them do not promote its use among their patients. However the health workers have a positive attitude towards promotion of ITN. The major challenges are for health workers to have adequate knowledge about ITN, clearly define in their minds the specific benefits of ITN and have easy access to it.

Based on the above findings, we propose that the knowledge of health workers regarding ITN should be improved urgently through various methods including workshops, seminars and symposia Social marketing of ITN should be intensified in order to popularise the use and also to increase the availability of the nets. Effort should be made to fully integrate promotion of ITN into the routine health care in health facilities (public and private including facilities for traditional birth attendants), which should serve as major outlets for distributing ITN freely or at a cost that takes the socio-economic status of the majority of Nigerians into consideration.

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