Social marketing of insecticide-treated bed net for malaria control: an experience in a semi-urban community in south-south Nigeria

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Abstract

Background: The effectiveness of the insecticide-treated bed net in reducing the morbidity and mortality associated with malaria has been proved at all levels of malaria transmission. Several models on how to achieve massive coverage have been suggested, but social marketing of the nets is highly favoured for its sustainability.

Aim: To report the experience of a small-scale social marketing project for insecticide-treated bed net in a semi-urban community in south-south Nigeria.

Methods: The social marketing project was established in 2003 in Egbema, a semi-urban community in Rivers State, with a population of 47,000. A descriptive cross-sectional study design was used for the study, with the sales records of the project and a structured, interviewer-administered questionnaire as study tools. The sales records were analysed to assess the performance of the project, while the questionnaire was used to collect data on the socio-economic characteristics of buyers of the net.

Results: In six months, the project achieved an uptake rate of 1.10 ITN per month, per 1000 population, and a 6.5% coverage of the target population. Most, 208 (67%), of the paid up sales were achieved at the well-child clinic and the antenatal clinic of the health facilities that serve the community. Buyers in the two lower socio-economic quartiles bought only about one third of the nets. Members of the community were predominantly farmers/fishermen, but only 19 (10%) of the buyers of the nets identified themselves as such.

Conclusion: The study shows that the use of social marketing for promoting the use of ITN for malaria control is slow in a poor community.

Key words: Social marketing, Insecticide-treated bed net, Malaria control, Uptake rate, South-south Nigeria

Introduction

The effectiveness of the insecticide-treated bed net (ITN) in reducing the morbidity and mortality associated with malaria has been proved at all levels of malaria transmission in several studies including some large scale trials sponsored by the World Health Organization. This effectiveness has been found to increase with increased use of the insecticide-treated bed net in the community. The community wide effect of the use of ITN provides the extra impetus to boost its coverage. The Roll Back Malaria Initiative target is to achieve at least 60% coverage of insecticide-treated bed net amongst malaria vulnerable group in five years which lapsed in 2005. However, there has not been a consensus on how to meet this target, or how to increase the use of the insecticide-treated bed net in the community in order to harness its community wide effect. The hallmark of an ideal model is that which can ensure not only high coverage even amongst the poorest and the most vulnerable, but also sustainability in resource-poor sub-Saharan African countries where malaria is most endemic.

Price reduction through the reduction or waivering of tariffs and taxes on netting materials and insecticides was advocated during the African Summit on Roll Back Malaria. This has been implemented in several countries including Nigeria,
but it has not led to the desired coverage. Simon et al 10 observed that whereas the tariffs and taxes on netting materials were reduced from 40% to 5%, and those of insecticide for public health use reduced from 42% to zero in Nigeria, the reduction led to only 18% decrease in the retail prices of insecticide-treated bed net, without any commensurate increase in the demand of the nets in Nigeria.

Free distribution of the nets and insecticides, through public health facilities has been advocated, considering the cost-effectiveness of the insecticide-treated bed net for malaria control; and the success of the Expanded Programme on Immunization (EPI). Although this method can rapidly meet coverage targets, it is not sustainable in most of the malaria endemic countries, and has to be funded with donor contributions.

Social marketing of insecticide-treated bed net is highly favoured by most donor agencies. Social marketing is the use of commercial marketing techniques in the promotion and distribution of health services and products, not for profit, but to achieve social goals. It has been formally defined as the application of commercial marketing technologies in the analysis, planning, execution and evaluation of programmes, and products designed to influence the voluntary behaviour of target audience in order to improve their personal welfare and that of the society. Social marketing places a lot of emphasis on the packaging, pricing and promotion of the product or service to make it very attractive to clients. To achieve this, formative research is carried out to understand the needs of the potential clients. Social marketing was first used to promote family planning products and services; now it is being used to promote a wide range of health services and products.

Social marketing programmes for insecticide-treated bed net have been implemented in a number of African countries including Nigeria, but the author is not aware of any published work on the experience in Nigeria. This work is to report the experience of a small scale social marketing of insecticide-treated bed net in a semi-urban community in south-south Nigeria.

Materials and Methods

Study area
The social marketing programme was established in Egbema in 2003 by the author as a personal community development effort. Egbema is a semi-urban community in the Ogba/ Egbema Ndoni Local Government Area of Rivers State with a 2003 projected population of about 47,000. Out of these, 9,400 (20%) are under-five children and 2,350 (5%) are pregnant women, bringing the total target population of the social marketing programme to 11,750.

Although, the area is one of the leading oil producing communities in Nigeria, most of its people are still subsistent farmers/fishermen. Most of the houses are built with cement blocks, and roofed with corrugated iron sheets; often within a short distance of one another. Most of the inhabitants live in family houses and an average household with under-five children resides in two rooms, consisting of a bed room and a sitting room. Sleeping accommodation differs by age. Children aged less than three years sleep with their parents often in the bed, while older children usually sleep on mats in the sitting room.

The use of bed net was common in the area up to the 1980s; now it is seen as old fashioned, rarely used except in the farm settlements and over baby cots, where they are used for mosquito nuisance control.

Malaria transmission
Malaria is holoendemic in the study area, but with seasonal peaks corresponding to the rainy season. Most of the transmissions are due to the activities of Anopheles gambiae, Anopheles funestus and Anopheles melas. Malaria and its complications are responsible for at least 25% of infant mortality and 30% of childhood mortality.

The social marketing project
The specific objectives of the social marketing project were, to increase awareness and use of insecticide treated bed net for malaria control, encourage the retreatment of the nets and promote its year round use especially amongst under-five
children and pregnant women.

To achieve these objectives, formative research was carried out in the community to collect specific information on how to package, price, promote and where to market the products. Four focal group discussions were conducted in the native Egbema language to extract these information with groups stratified according to gender and previous use of bed net.

Iconet a product of Syngenta Nig. Ltd. was found suitable for the potential clients. It is a package containing bed net, insecticide, net treatment kits, and pictorial instructions on the treatment of the net. The insecticide is a water based formulation of lambdo-cyhalothrin a very potent pyrethroid insecticide that can remain active for upwards of six months even after washing.

The package was sold with only a small mark up of the factory price to make it affordable to most members of the community. A 180 x 150 x 130 cm net, which is capable of covering two adults and a child, was sold for five hundred and fifty naira (₦550), which is equivalent to a full day's pay of an unskilled worker in the area. In spite of this competitive price, the marketers were directed to sell even on credit, since the sale period coincided with the rainy and planting season, when expendable funds are usually scarce. The social marketing project had eight sales outlets equitably distributed in the community. The sales outlets are domiciled in the health centres, Government General Hospital, and some patent medicine shops in the community. Door to door marketers where engaged mainly for publicity purposes.

The promotion strategy of the project emphasized face-to-face interactions, for example between the researcher, the co-opted health workers and mothers attending the well child clinics. Also employed were organized mass communication campaigns such as comic plays by door to door marketers, posters, informational leaflets, displays of mounted bed nets, recorded messages from influential members of the community and the use of the town crier.

**Study design**

This study is a descriptive cross-sectional study to report the experience of this small scale social marketing project. The study tools are the sales records of the project and a structured interviewer administered questionnaire.

**Data collection**

Each of the eight sales outlets kept a sales record detailing the date of purchase of the net, the name, address and occupation of all the buyers, and the likely users of the net. The sales records were collated and analyzed after six months of sale.

The structured questionnaire was face-to-face, interviewer-administered on all female buyers, and wives of all the male buyers, as extracted from the sales records. A trained field staff using the address provided during the purchase of the net visited each of the respondents at home. Verbal consent was obtained from each of the respondents before the administration of the questionnaire. The questionnaire assessed the socioeconomic status of the buyers through their educational status, occupation and properties owned.

**Data analysis**

The socio-economic status of the buyers of the net were determined by creating a composite socio-economic index using principal component analysis of the occupation and educational levels of the respondents of the questionnaire and their husbands, and ownership of zinc-roofed house, motorcycle, car, television and refrigerator. Principal component analysis is a data reduction technique that has been shown to effectively measure economic status based on household asset indicators without the necessity of direct income or expenditure information. The score given to each of the variables was determined by the estimated proportion of community members with the variable, and the importance of the variable in the determination of the health outcome of a child. The upper and lower limits of the possible scores were determined, and used to create a socio-economic quartile. The score of all the respondents was calculated and placed in the appropriate quartile.

The uptake rate of the insecticide-treated bed net is expressed per month per 1000 population, and calculated by dividing the number of nets sold by
the population of the community and the duration of sales. The coverage of insecticide-treated bed achieved by the programme is defined as the proportion of the target population possessing an insecticide-treated bed net.

Results

The project sold 311 insecticide-treated bed nets and 164 insecticide sachets through its eight sales outlets, and door-to-door marketers within a six-month period. This brings the uptake rate of the social marketing project in the community to 1.10 ITN per month, per 1000 population. Fifty-eight (18.7%) of the insecticide-treated bed nets were to be used by those outside the target group. This means that the project achieved 6.5% coverage of the target population from the 253 nets it sold within six months for the use of those in the target group.

Two hundred and eight (67%) of the paid up sales, were achieved at the well child clinics of the health centres, and the antenatal clinics of the General hospital that serve the area. Seventy-four percent (76) of the sales achieved outside the health centres, and the general hospital, were achieved often with the prompting of the door-door marketers.

The questionnaire was administered to only 190 (61.1%) of the buyers. This is because 58 (18.7%) of the nets were sold to male buyers who were still not yet married, and therefore bought for their own personal use, while 37 (11.9%) of the nets were sold to buyers who bought more than one net. Consent could not be secured in 18 cases (5.8%), while 8 of the buyers (2.5%) could not be traced for the administration of the questionnaire. Most of the male buyers who bought for their own personal use, work in the forest as loggers, farmers or hunters, where mosquito is a great nuisance.

The socio-economic status of the respondents is presented in Table 1. The two lower quartiles bought only about one third of the nets. Only 19 (10%) of respondents indicated that their husbands were farmers/fishermen.

<table>
<thead>
<tr>
<th>Socio-economic Quartile</th>
<th>Number of buyers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Poorest)</td>
<td>23</td>
<td>12.1</td>
</tr>
<tr>
<td>Q2 (Lower middle)</td>
<td>41</td>
<td>21.7</td>
</tr>
<tr>
<td>Q3 (Upper middle)</td>
<td>77</td>
<td>40.5</td>
</tr>
<tr>
<td>Q4 (Richest)</td>
<td>49</td>
<td>25.8</td>
</tr>
<tr>
<td>Total</td>
<td>190</td>
<td>100</td>
</tr>
</tbody>
</table>

Discussion

The uptake of the nets and the coverage rate of the target population achieved by the social marketing project were poor in spite of the efforts made to promote sales. When the sales figures are placed alongside the Roll Back Malaria goals of achieving 60% coverage of the target population, it becomes glaring that the social marketing technique can be a slow method of achieving this target. Part of the reason for the poor sales is poverty, as more than 60% of the nets were bought by those in the two upper socio-economic quartiles (Table 1). This is consistent with the findings in most social marketing projects providing beneficial interventions to people living in poverty. Making the product affordable to all potential customers has always been a feature of social marketing projects. This project tried to achieve this by recovering only the cost of the products, and not passing the cost of demand creation activities to the customers. The poor sale amongst the lower socio-economic groups is a pointer that further subsidies are needed to drive the demand of the ITN amongst this group.

The timing of the social marketing project also contributed to the poor sales. This is also the finding in other social marketing projects in Africa. In most agrarian communities, the ability to pay for a product is often tied to the harvesting of crops. The low sale of the net amongst farmers in the study area could be attributed to the fact that the sale period coincided with the rainy season when the expendable income of the farmers is at the lowest. During the rainy season, crops (mainly cassava) are not mature enough for harvesting, while the stock...
of previous year’s harvest is already running low. The timing of the sales period was to ensure that demand for the products can be boosted by the need to reduce the nuisance of mosquito, which is a serious problem during the rainy season. Other social marketing projects\textsuperscript{11, 23, 25} had reported that sales are boosted more by the desire to reduce the nuisance of mosquito, than the need to prevent malaria. Though efforts were made to give the bed nets and insecticides on credit, responses remained poor, because credit facilities in the study area are rarely taken up except in extreme situations.

The analysis of sales records of the social marketing project indicates that the uptake of the insecticide-treated bed net was better in the antenatal clinic, and the well-child clinics. This is not surprising, considering the fact that both clinics have the same target groups with the insecticide-treated bed net project. They offer a conducive environment for such social marketing activities as health education, product demonstrations and sales. The utilization of these clinics is very high in Nigeria, and if one considers the number of pregnant women, and under-five children in Nigeria that can be accessed through the clinics, it becomes obvious that any distribution system that makes cornerstones out of the clinics is likely to be successful. Though, the potentials of these two clinics, for a variety of reasons, were not fully explored during the sales period of the project, remarkable results were achieved in other studies\textsuperscript{25, 27} both in socially marketed projects, and projects involved in free distribution of nets. The KINET project in Tanzania\textsuperscript{25} in spite of a strong commercial market for nets, still found health facilities effective sales points for the insecticide-treated bed net. In Kenya\textsuperscript{27}, the distribution of 70,000 free insecticide-treated bed net through the ante-natal clinics in 35 districts across the country within 12 weeks, to mark the African malaria day, was considered a cheap, simple and equitable method. It was also found to have the added benefit of strengthening the ante-natal service, its delivery, and utilization.

Conclusion and Recommendations

The study showed that the social marketing technique for the promotion of the use of insecticide-treated bed net for malaria control is slow, because of the widespread poverty amongst the vulnerable population. It also shows that the ante-natal clinic, and the well-child clinic can be effective sales points of the insecticide-treated bed net to the target population. Meeting the Roll Back Malaria target would therefore require donor assistance to ensure that the use of this effective tool for malaria control is not restricted to those who can afford it, because it offers benefits that get beyond the individual user.

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