Farmers Utilization of Insecticide Treated Bed Nets for Malaria Prevention in Ahoada East Local Government Area, Rivers State, Nigeria

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Abstract

The study examined the utilization of insecticide treated bed nets for malaria prevention by rural farmers in Ahoada East Local Government Area of Rivers State, Nigeria. The sample size of the study was 100 respondents who were randomly selected from farmers in the area who benefited from the free distribution of the nets by Rivers State Government. The questionnaire was used in eliciting data from the respondents. Data were analyzed with percentage, mean score and multiple regression. Socio-economic result shows that the respondents on the average were 40 years old, earned monthly net income of N24,184.00 ($121.38) and spent 11 years in schooling. More results indicated that while the ownership of the net was as high as 71.73%, the actual utilization was as low as 28.27%. Result of multiple regression analysis indicated a multiple determination (R²) value of 0.6333. Determinants of the utilization of the net were age, sex, occupation and educational level of the respondents. The two major constraints in the utilization of the net in the area were inadequate information and poor design and inconvenience of hanging. In order to improve the rate of utilization of the net in the area, the study recommends enhanced information which will lead to a better education of the beneficiaries. A better design which will reduce the inconveniences associated with hanging of the nets is also recommended.

Keywords: Farmers; Utilization; Insecticide; Treated bed nets

Introduction

Malaria exerts a significant health and economic burden on Nigerians. "According to the statistics of the Federal Ministry of Health [1], malaria was responsible for 60% of out-patient visits to health facilities, 30% of childhood deaths, 25% of infant deaths and 11% of maternal death, and an estimated annual loss of 132 billion Naira, in the form of treatment and prevention costs, and loss of man-hours amongst other losses. Rivers State government in the south-south Nigeria distributed more than two million mosquito treated bed nets. The target of the State was to provide two nets to every household in the state of which farmers were among. Ownership as used in this study means all those who received the free nets. Utilization in other hand was used to describe all those who actually put the nets into continuous use. Recently, it has been shown that the use of insecticide-treated bed nets can reduce malaria morbidity by 50% to 60% and malaria mortality by 20% as indicated by Azondelon et al. [2].

Meaning of insecticide treated nets (ITNs)

ITN is a form of personal protection that has been shown to reduced malaria illness, severe disease and death caused by malaria endemic regions according to the Centre for Disease Control and Prevention [3]. Approximately, 40% of the world’s population (mostly those living in the poorest countries are at the risk of malaria as indicated by Adogu and Ijemma [4]). Although bed nets form barrier against mosquitoes around people sleeping under them, bed nets treated with an insecticide are much more protective than untreated nets. ITN was introduced in Nigeria in the year 2000 as an effective means of preventing mosquito bites and malaria transmission as stated by Ukibe et al. [5]. In 2012, an estimated 627,000 people died of malaria in the sub-Saharan Africa according to Centre for Disease Control [3].

Effects of malaria on farmers

Malaria costs Africa more than 12 billion dollars annually and it slowed economic growth in African countries by as much as 1.3% per year as shown by Adebayo et al. [6]. When malaria attacks farmers, their health is hampered, resulting to the reduction of agricultural production. In the fight to increase food production in the tropics, farming communities suffer most from malaria according to the New Agriculturist [7]. This is because malaria effect on farmers leads to fever which results into incapacitation. The study of Oluwatayo [8] has shown that farmers who were susceptible to malaria infection suffered about 10 days of incapacitation.

Malaria causes reduced farm labour according to Eboh and Okeibunor [9] because its attack leads to the death of farmers. Malaria also leads to financial insecurity in that its attack leads to increased expenditure on malaria treatment. In addition, malaria infection reduces the use of agricultural innovations as shown by GBC Health [10] because premature death of trained farmers from malaria hinders a further use of the acquired agricultural innovations. According to the World Health Organisation [11] there were 214 million new cases of malaria worldwide and 438,000 malaria deaths in 2015 with African as the most affected region. The economic burden of malaria on production efficiency among farmers in Oyo State, Nigeria was as higher as N7, 578.71 according to Adekanle [12].

The rational for the study was that, despite the free distribution of insecticide treated bed nets by the State government of which farmers were among the beneficiaries, malaria problem is still rampant among farmers in the study area. The goal of the study was therefore to know
why farmers still suffer the burden of malaria after receiving the free nets. The study objectives therefore analyzed the socio-economic characteristics of the farmers, determined the level of ownership and utilization and ascertained constraints to the use of the nets by farmers.

**Research Methodology**

According to the Federal Republic of Nigeria [13], malaria in Nigeria is transmitted by the vector species called Anopheles mosquito with a very high rate of prevalence in the country. This study was conducted in Ahoada East Local Government Area in the Niger Delta, south-south of Nigeria, and has a topography of flat plains netted in a web of rivers and tributaries as shown by the Rivers State Economic Summit [14]. Ahoada East Local Government Area is one of the 23 Local Government Areas of Rivers. It is in the West Senatorial District. The people are predominantly farmers.

Primary data for the study were obtained with a structured questionnaire which was designed by the researcher. The questions contained in the questionnaire elicited data to cover the objectives of the study. A trained enumerator for this purpose distributed and collected the questionnaire from respondents. The population of the study was made up of all farmers who received the free insecticide treated bed nets in the area. A sample size of 100 respondents was randomly selected from the list of farmers who benefited from the free nets in the Local Government Headquarters. Twenty farmers were drawn from each of the five randomly selected communities of the study area [15]. The communities were Abarikpo, Ihuaie, Odiabie, Ogbo and Ula-Ihuda. Data were analyzed with percentage, means of a Likert-type rating scale and multiple regression analyses using the Statistical Programme for Social Sciences (SPSS) version 15 and Excel, 2007. The scoring for constraints in the use of the bed net was done with a four point Likert-type rating scale. The points in the scale were very severe (4 points), severe (3 points), and averagely severe (2 points) not severe (1 point). A cut-off mean (mid-point) was obtained by adding 4, 3, 2 and 1 and dividing the sum by 4 to have 2.50, as used by Ugwoke [16]. Results showing means which were equal or greater than 2.5 were interpreted as severe constraints, while those with less than 2.5 were interpreted as not severe constraints.

**Results and Discussion**

The results in Table 1 show that 60.0% of owners of the free insecticide treated bed nets distributed by the state government in the study area were males, while females represented 40%. This finding indicates that more males benefited from this activity of the government than females. Married respondents represented a higher proportion of ownership of the insecticide treated bed nets with 43.0%. The age range of 30-40 years with 71.0% represented the highest age of owners of the treated mosquito nets. The mean age was 40 years. This mean age represented a very active age, showing that many who received the insecticide treated mosquito nets were in their active ages.

The finding however shows that age range of 50-60 was 7.0%, while that of those above 60 years was 5.0%. This result seems to indicate that as the age of respondents increases to 50 and upwards the interests shown in the use of the net decreases. Further results showed that 66.0% of the respondents were full-time farmers, while 34.0% were part-time farmers, showing that farming is the main livelihood source of the people in the study area. The result on the monthly farm net income range of N24,500.00–N32,000.00 with 51.0% was the highest for these respondents. The monthly mean income was N24,158.00 ($121.39). This mean income shows that an average farmer in the area earned more than N18,000.00 which is the monthly minimum wage of civil servants in Rivers State. The mean income also connotes that farmers in the area were out of the poverty line which is below $1.00 per person per day by reason of the fact they earn about $4.05 per day. For educational attainment, secondary level was the highest with 45.0%. The mean number of years spent in schooling was 11 years, while as much as 16.0% of the farmers have not attempted any form of formal education. The low standard deviation for age (0.61), income (0.78) and educational level (0.90) shows the reliability of the socio-economic factors.

Table 2 shows that the highest ownership of insecticide treated bed nets was in Ogbo community with 98.0%. They also occupied the highest position in terms of utilization with 48.0%. This result showed a gap of as much as 50.0% between the ownership of the net and its utilization. Abarikpo community had 96.0% ownership and as low as 5.0% in utilization. This community was the least (5th position) in terms of utilization of the nets. The trend in the utilization of the treated bed nets in this study agrees with the study of Ukibe et al. [5] in Anambra State, Nigeria where out of the 60% of the respondents that owned...
Table 2: Percentage distribution of ownership and utilization of insecticide treated bed nets in the area (n=100).

| Community          | Ownership Percentage (%) | Ranking | Utilization Percentage (%) | Ranking |
|--------------------|--------------------------|---------|----------------------------|---------|
| Abarikpo           | 96                       | 2nd     | 5                          | 5th     |
| Ihuaje             | 45                       | 5th     | 38                         | 2nd     |
| Odiabidi           | 66                       | 3rd     | 37                         | 3rd     |
| Ogbo               | 98                       | 1st     | 48                         | 1st     |
| Ula Ehuada         | 57                       | 4th     | 36                         | 4th     |
| Mean               | 72.4                     | -       | 25.4                       | -       |

Source: Field survey, 2012. Multiple responses were allowed.

Table 3: Summary of multiple regression analysis of relationship between respondents’ socio-economic characteristics and utilization of the treated nets.

| Parameters | Co-efficients estimates | Linear | Semi-log | Double-log |
|------------|-------------------------|--------|----------|------------|
| Intercept  | BO                      | 0.101  | -2.22    | -3.36      |
| Age (X1)   | B1                      | 7.65   | 2.034    | 0.308      |
| Sex (X2)   | B2                      | 0.52   | -0.64    | -0.188     |
| Marital Status (X3) | B3           | 2.91   | 1.06     | 0.38       |
| Income level (X4) | B4            | 11.01  | 2.39     | 0.48       |
| Occupation (X5) | B5            | 21.85  | 3.08     | 0.43       |
| Educational Level (X6) | B6          | 20.70  | 2.73     | 0.43       |

Source: Field survey, 2012. Figures in parentheses are t-ratios. * = Level of significance at 0.05%, ** = Level of significance at 0.01%, NS = Non significance.
| Constraints                              | Total Score | Mean    | Ranking | Decision |
|-----------------------------------------|-------------|---------|---------|----------|
| Cultural barrier and superstition       | 290         | 2.9     | 6th     | Severe   |
| Religious prohibition                    | 160         | 1.6     | 8th     | Not Severe |
| Feeling of suffocation                   | 210         | 2.1     | 7th     |          |
| Inadequate educational information on use | 335         | 3.35    | 1st     | Not Severe |
| Inadequate health extension workers     | 320         | 3.2     | 4th     | Severe   |
| Distance to health centres for advice    | 322         | 3.22    | 3rd     | Severe   |
| Feeling of heat inside net              | 315         | 3.15    | 5th     | Severe   |
| Poor design and inconvenience of hanging | 330         | 3.3     | 2nd     | Severe   |

Source: Field survey, 2012. Cut-off mean=2.50

### Table 4: Summary of mean distribution of constraints to utilization of insecticide treated mosquito bed nets (n=100).

**Biography of Author**

Dr. Franklin Ezioh Nlerum, has a Ph.D in Rural Sociology and Development. His research interests are in Agricultural Extension, Rural Sociology and Rural Development. Currently, he is a Senior Lecturer. He has worked in Rivers State Agricultural Development Programmed as a Block Extension Supervisor, Subject Matter Specialist (Agronomy/Plant Protection) and an Assistant Director of Agriculture. He has published over 40 papers in both local and international journals. He is an Editorial Board member of Pyrex Journals (Journal of Agricultural Extension and Rural Development) and he is also a member of some professional bodies in his field of research interest.

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