An Exploratory Study on Predictive Factors for Utilization of Long Lasting Insecticide Treated Bed Nets (LLITNs) among Tribal Population in India

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Abstract: Currently, long lasting insecticide treated bed nets (LLITNs) is one of the effective methods to prevent malaria in among tribal population residing in endemic areas. But utilization of LLITNs among the community still remains a great challenge. Present community based study includes two tribal villages to identify the predictive factors for utilization of LLITNs in a tribal population in Chhattisgarh, India. It suggests that recent history of malaria, knowledge about symptom, transmission and prevention of malaria could be possible predictive factors for LLITNs utilization. This also implies that Improvement of Knowledge about the disease, mode of transmission, prevention strategies of malaria can help to improve the existing scenario of malaria among the tribal population.

Keywords: LLITNs utilization, predictive factors, Tribals, Malaria

1. Introduction

Malaria is a pernicious public health illness and one of the major tropical diseases globally. Worldwide, there are more than 100 malaria endemic countries. In majority of developing countries of Asia and Africa, malaria is still a haunting public health problem. Majority of deaths that are attributed to African region (Approx 80-90%) followed by South East Asian region (9-10%). India reports the highest number of cases of malaria (61%) among South East Asian countries [1].

With vast research experience on long lasting insecticide treated bed nets (LLITNs), it has been shown that LLITNs are effective in the preventing malaria [2-5]and also comparatively cost effective [6]. World health optimization (2007) adopts long lasting insecticide treated nets as one of the primary intervention for effective malaria control But Compliance with the LLITNs use may be affected by many factors like knowledge about malaria, behavior, belief of certain community, community acceptance, etc [7]. A qualitative study was from Solomon Island suggested that just increase in knowledge about the disease and preventive methods cannot be the all time solution for the compliance with LLITNs use [7]. Other major reasons cited for nonuse could be low mosquito density, ineffectiveness of ITN and poor condition of the net [8]. IRS sprays, purchase of bed net and geographic area were also another aspect in the LLITNs uses by tribal population

Though knowledge and community acceptance among tribal community can improve LLITNs as the method of malaria control over insecticide spray [9]. Success results of ITN distribution and usage can justify its predating ability to another region due to diversity of cultural beliefs and tradition varies differently in different tribes. [9]

Vandal et al conducted a study across five countries for assessment of use and nonuse of treated bed nets; there was variation in utilization between countries ranging from 51.1 to 81.1 percent. This study found that 27.5 percent of households in Madagascar did not use bed nets for under five children as someone else was using the bed nets and other 42.2 percent households did not use bed nets due to non-availability of enough bed nets. [10]

Lover et al found that unavailability of bed nets and inadequate space were considerable problems described by the respondent for not using bed nets. This study also revealed that head of the house hold was the decision maker
and pregnant women should be given preference for bed net. In many places, bed nets are frequently used for fishing and protecting crops. [11]

Worn-out bed nets, dirty bed nets, changes in bed arrangement, lack of enough space in the house, absence of mosquito, and preference of insecticide sprays while sleeping in the farms. discomfort while using bed nets and the use of bed nets as curtain for traditional pit latrine were observations for nonuse of LLITNs This study reported gender, age groups (mainly 15–24 years) and distance from the vector-breeding site as some of the determinants of utilization of bed nets. [12]

Another trial in Ethiopia found foremost reasons were lack of knowledge and skill for proper use of LLITN and resistance in insecticide spay. [13] A qualitative study in Odisha state, India suggests that financial constraints, other uses of bed nets, climate and fear of toxicity also influence the behavior of households and determinants of low utilizations [14].

Little is known about predictive factors in this study population which can progress the LLITNs utilization. Hence, Purpose of this study is to identify the predictive factors for utilization of LLITNs in a tribal population in Chhattisgarh, India

2. Methodology

The present study was carried out from November 2012 to December 2012 in two tribal populated villages of Kabirdham district Chhattisgarh. These villages are surrounded by ‘Kanha national park and Tiger reserve’ and ‘Bhoramdev Tiger reserve’ in Chhattisgarh, India. Present study was carried out two months after LLINs were distributed as a part of intervention study in these villages [15]. All the households of these two villages who gave written informed consent were included in the study. Households which were absent during the study period were excluded from the study. Questions were asked through an Interviewer administered structured questionnaire. The structured questionnaire was designed to collect information on family, demographic characteristics and various factors which may affect the LLITNs utilization

The questionnaire was first prepared in English and then translated and back translated by independent persons. The questionnaire was pretested to check for ambiguity in the language, and all the necessary amendments like arrangement of the questions order, options for the questions were made accordingly. First Univariate analysis was done and then all the important predictive variables were taken in the multivariate model for analysis. Analysis was done using logistic regression method. Double entry of data was done to ensure consistency. Collected data was entered in Epidata 3.1 version and analyzed in Statistical Package for the Social Sciences (SPSS) version 16 for windows software. Present study was approved by the institutional reviewing board (IRB) committee of Christian Medical College Vellore.

3. Results

A Total of 117 households were visited from two villages. In the Univariate analysis, Age, Literacy, education, annual income, type of house, family size and Previous Exposure to Health education was included. Nearly 50% of households were affected with malaria. Table 1 show that ‘recent history of malaria’ has statistically significant association between utilization of LLITNs.

Table 1: Association between Various predicting variables and utilization of bed nets (Univariate analysis)

<table>
<thead>
<tr>
<th>Name of variable</th>
<th>Category</th>
<th>Total N=218</th>
<th>Utilization of Bed nets n (%)</th>
<th>Unadjusted OR with 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Less than 38</td>
<td>112</td>
<td>43 (38.4)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>38 and above</td>
<td>106</td>
<td>41 (38.7)</td>
<td>0.99 (0.57-1.7)</td>
</tr>
<tr>
<td>Literacy</td>
<td>Illiterate</td>
<td>129</td>
<td>46 (35.7)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Read and write</td>
<td>89</td>
<td>38 (42.7)</td>
<td>0.74 (0.4-1.29)</td>
</tr>
<tr>
<td>Education</td>
<td>Less than primary</td>
<td>156</td>
<td>57 (36.5)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Primary and above</td>
<td>62</td>
<td>27 (43.5)</td>
<td>0.75 (0.41-1.4)</td>
</tr>
<tr>
<td>Annual income</td>
<td>Less than 12500 INR</td>
<td>152</td>
<td>61 (40.1)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12500 INR and above</td>
<td>66</td>
<td>23 (34.8)</td>
<td>1.25 (0.9-2.29)</td>
</tr>
<tr>
<td>Type of house</td>
<td>Hut /kutcha house</td>
<td>160</td>
<td>56 (35)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mixed/Pucca house</td>
<td>58</td>
<td>28 (48.3)</td>
<td>0.58 (0.3-1.1)</td>
</tr>
<tr>
<td>Family size</td>
<td>Less than 4</td>
<td>111</td>
<td>40 (36.04)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5 and above</td>
<td>107</td>
<td>44 (41.1)</td>
<td>0.81 (0.47-1.4)</td>
</tr>
<tr>
<td>History of malaria</td>
<td>No</td>
<td>107</td>
<td>30 (28)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>111</td>
<td>54 (48.6)</td>
<td>0.41 (0.23-0.72)*</td>
</tr>
<tr>
<td>Previous Exposure to</td>
<td>No</td>
<td>185</td>
<td>69 (37.3)</td>
<td>1</td>
</tr>
<tr>
<td>Health education</td>
<td>Yes</td>
<td>33</td>
<td>15 (45.5)</td>
<td>0.71 (0.34-1.51)</td>
</tr>
</tbody>
</table>

*significant at p < 0.05
that odds of using bed nets among families who had suffered
predictors for utilizing bed nets. The findings of this study
confounders and effect modifiers, recent history of malaria
the family for bed net utilization. After adjusting for possible
female members also play active role in decision making in
his decision making ability in the family. In the study group,
occupation, literacy and annual income. This may be due to
the household characteristics such as age, education,
any association between utilization of LLITNs and head of
public health professionals. Socio economic characteristics
behavior and interaction with society is major confront for
such as Age and Living conditions etc. Dealing with human
intervention, other factors which need to looked cautiously

4. Discussion

Predictive factors helps to identify the apart from main
intervention, other factors which need to looked cautiously
such as Age and Living conditions etc. Dealing with human
behavior and interaction with society is major confront for
public health professionals, Socio economic characteristics
of the head of the family have a significant impact on the
any association between utilization of LLITNs and head of
the household characteristics such as age, education,
occupation, literacy and annual income. This may be due to
his decision making ability in the family. In the study group,
female members also play active role in decision making in
the family for bed net utilization. After adjusting for possible
confounders and effect modifiers, recent history of malaria
and postest knowledge score were noted to be potential
predictors for utilizing bed nets. The findings of this study
that odds of using bed nets among families who had suffered
from malaria within the last three month was twice as
compared to families which had no similar experience of
malaria within the household shows that past exposure to the
disease and knowledge gained subsequently on how it could
prevent disease impacts motivation. This study also found an
association between utilization of bed nets with current
knowledge about malaria symptoms (OR 5.17), transmission
(OR 2.7) and preventive methods (OR 7.7). In contrast to
this, study from odisha shows that the community was more
aware about the disease and symptoms than prevention and
treatment.[14]This study also demonstrate that proper health
education also helps in changing attitude of the community,
and positive community response is one of the major
determinants for utilization of bed nets.

5. Conclusion

Free LLITNs distribution has removed the financial
constraint for the community. After increasing LLITNs
coverage, it needs to be assured that Community should use
it properly. Certainly, there are factors other than socio
economic characteristics which can influence the LLITNs
utilization. Correct and appropriate knowledge of malaria
transmission, awareness about preventive methods and
treatment are some of the determinants of utilization of bed
 nets. There were always focus on imparting health education
effectively. This study has shown the capability of Health
education in improving LLITNs by the tribal residents.
Apart from Health Education, Ailment due to malaria in the
family was another predictive factor for improvement in
education in improving LLITNs by the tribal residents.
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family was another predictive factor for improvement in

6. Future Scope

Though, imparting Health education is cost effective tool but
further studies need to be done for generating more
evidence. It also necessitates further research in different
tribe groups residing in other endemic countries. It will help
to generalize the study findings in large endemic population.

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and colleagues who helped in either in data collection and
helped in reaching to the tribal community

8. Declaration of Conflicting Interests

None declared.

9. Funding

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References


[2] Kim A. Lindblade et al. Sustainability of Reductions in
Malaria Transmission and Infant Mortality in Western Kenya with Use of Insecticide-Treated Bednets4 to 6 Years of Follow-up [Internet]. [Cited 2013 Aug 24]. Available from: http://jama.jamanetwork.com/article.aspx?articleid=198545


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