



Utilization of Insecticide-Treated Bed Nets and Long Lasting Impregnated Nets in Urban area of Guwahati City- A Cross Sectional Study.

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ABSTRACT

Background: Treating bednets with a suitable insecticide increases their effectiveness as the chemicals repel the mosquitoes and kill those, which come in contact with the treated bednet. Hence high coverage of bednets treated with insecticide is a cost effective way to prevent malaria. **Objectives:** To study the Utilization of Insecticide-Treated Bed nets in Urban area of Guwahati City. **Materials and Methods:** Community based cross sectional study done in the households of four urban slums of Guwahati City. **Results:** Of the 200 households under study 43% were using ordinary bednets, 24% were using ITN, 27% were using LLIN and 6% were not using any bednets at all. However the distribution of bed nets and use of nets treated with insecticide as per family size is not as per the required norms. **Conclusion:** Effective communication and monitoring and evaluation strategies must be in place, alongside systems for delivery, so that the impact of the intervention can be enhanced and assessed.

KEYWORDS : Insecticide-Treated Bed Nets, Long Lasting Impregnated Nets, Utilization, Cross sectional study

Introduction:

Sleeping under a bednet reduces the risk of man-vector contact as mosquitoes bite at night and is thus an effective preventive measure. Treating bednets with a suitable insecticide increases their effectiveness as the chemicals repel the mosquitoes and kill those, which come in contact with the treated bednet¹. If the bednets are used properly and are not washed, their effectiveness lasts for more than six months. Bednets thus need to be treated twice a year for year round use. In most parts of the country, malaria is seasonal and therefore even a single treatment prior to the transmission season will provide adequate protection during the high-risk period. High coverage with the insecticide treated bednets (ITNs) in an area is thus a cost effective vector control measure besides providing individual protection.

In many states especially in the eastern and north eastern parts of the country, which are also at high risk of malaria, bed net use is relatively high. Organization of camps through public/private/NGO partnerships for the treatment of community owned bednets is being done especially by the Deptt of Health and Family welfare and local councillors from Municipal Corporation in Guwahati.

Projected to the entire population, malaria is calculated to cause 205 thousand (2.05 lakh) deaths per year before age 70 in India, which is much higher than the World Health Organization (WHO) estimate of 15 thousand deaths from all age. Of these malaria-attributed deaths, 55 thousand were in early childhood, 30 thousand were in children 5-14 years old, and 120 thousand (1.2 lakh) were in adults 15-69 years old.²

- Areas for bednet distribution should be carefully selected and prioritized based on high risk factors such as high API, high proportion of Pf cases, inaccessibility of the villages or operationally difficult area for indoor residual spray. Since 2002, a number of countries have begun scaling-up the free or highly subsidized provision of ITNs, including LLINs, and several of them have shown a substantial increase in coverage as a result. Insufficient attention has been paid to designing and implementing locally appropriate communication strategies to accompany ITN distribution, to inform communities of the importance of ITNs and of how to hang, use and maintain them properly. As a result, many people who received ITNs did not

sleep under them, re-sold them, reduced their efficacy through inappropriate washing practices, or failed to replace them when they became damaged or torn.

Objectives:

1. To study the Utilization of Insecticide-Treated Bed nets in Urban area of Guwahati City.
2. To study the effect of use of ITBN

Methods and materials:

Study design: Community based cross sectional study

Study period: January 2015- June 2015

Study area: Urban area of Guwahati City

Study Population: Households of urban slums of Guwahati City

Sampling Procedure: Out of the recognized, four slums were selected randomly from which 200 households were visited after taking their informed consent.

Study variables: Use of ITBN and LLIN and effect of their use.

Study Tools: Pre designed and pre tested structured proforma

Data collection Technique: House to house visits were done and data collected from these four recognized slums till the required sample size is met.

Statistical Analysis: Data was collected and analyzed using Microsoft Office Excel.

Results:

Of the 200 households under study 43% were using ordinary bednets, 24% were using ITN, 27% were using LLIN and 6% were not using any bednets at all (Table 1). While amongst the ITN and LLIN users 59% procured the nets from Municipality while 41% got it from the Govt Health Facility (Figure 1). Again amongst the users only 17.8% of the families were here where all the members slept under LLIN (Figure 2). 68.3% of the families got a single bed net irrespective of the family size while 27.7% got 2 nets irrespective of family size. One family with 7 members got 4 bed nets. (Table 2) 47% of the families complained of some sort of discomfort in the form of itchiness, odour, rashes etc.(Figure 3) However inspite of using ordinary or treated bed nets there were few cases of fever due to Malaria, dengue, or other causes reported. (Table 3). The result has not been found to be statistically significant.

Table 1: Distribution of households as per type of bednets used:

| Type of bed nets | No | % |
|------------------|-----|------|
| Ordinary | 87 | 43.5 |
| ITN | 47 | 23.5 |
| LLIN | 54 | 27 |
| Not used | 12 | 6 |
| Total | 200 | 100 |

Figure 1: Pie diagram showing distribution of households according to their source of LLIN:

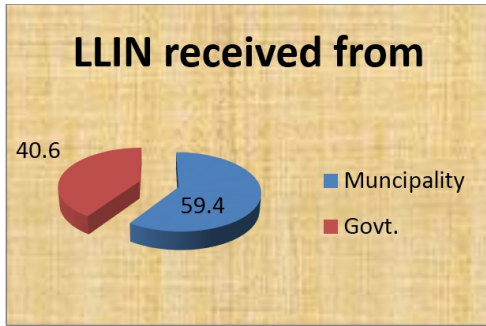


Table 2: Table showing number of ITN and LLIN received as per family size:

| No of family member | ITN or LLIN bednets | | | | | | | | |
|---------------------|---------------------|------|----|------|----|------|----|-----|-------|
| | 1 | | 2 | | 3 | | 4 | | Total |
| | No | % | No | % | No | % | No | % | |
| <2 | 16 | 72.7 | 6 | 27.3 | - | - | - | - | 22 |
| 3-5 | 35 | 77.8 | 10 | 22.2 | - | - | - | - | 45 |
| 6-7 | 10 | 55.6 | 5 | 27.8 | 2 | 11.1 | 1 | 5.6 | 18 |
| 8 and above | 8 | 50 | 7 | 43.8 | 1 | 6.3 | - | - | 16 |
| total | 69 | 68.3 | 28 | 27.7 | 3 | 3 | 1 | 1 | 101 |

Figure 2: Pie diagram showing number of households where all the family members use LLIN:

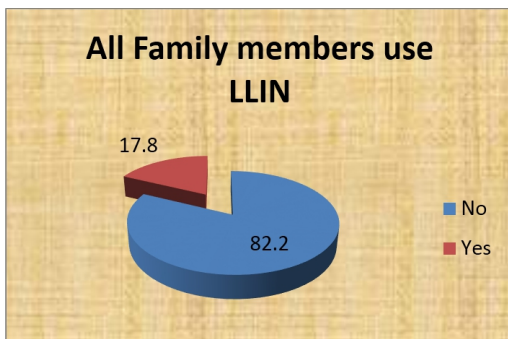


Figure 3: Pie diagram showing distribution of households according to their problems in using bed net:

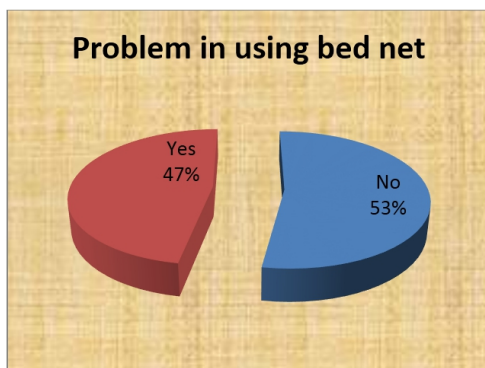


Table-3: Fever cases in relation to type of bednets used:

| Type of bed nets | Diagnosis | | | | | Total |
|------------------|-----------|---------|-------|--------|----------|-------|
| | Dengue | Malaria | Viral | Others | No fever | |
| Ordinary | 5 | 8 | 17 | 3 | 54 | 87 |
| ITN/LLIN | 3 | 11 | 33 | 2 | 52 | 101 |
| Not used | - | 2 | 2 | - | 8 | 12 |
| Total | 8 | 21 | 52 | 52 | 114 | 200 |

Chi sq value=5.32, p>.05

Discussion:

On the basis of five community-randomized trials, a Cochrane review concluded that, when full coverage is achieved, ITNs reduce all-cause child mortality by an average 18% (range 14–29%) in sub-Saharan Africa³. The general implication of this is that 5.5 lives could be saved per year for every 1000 children under 5 years of age protected.⁴ Anopheles gambiae and An. funestus were highly susceptible to permethrin and deltamethrin in WHO tests in 1999 and 2004, while Culex quinquefasciatus susceptibility to these pyrethroids was much lower. Efficacy of pyrethroid-treated nets was similarly high against An. gambiae and An. funestus while efficacy against Cx. quinquefasciatus was considerably lower⁵. It has also been seen that LLIN is an effective intervention for the control of An. culicifacies transmitted malaria in India⁶. However as seen in this study the no of fever cases has not zeroed as there are complimentary reasons associated with use of bed nets, the prime being non adherence to distribution and use of bed nets as per family size.(Table 2)

Conclusion:

Effective communication and monitoring and evaluation strategies must be in place, alongside systems for delivery, so that the impact of the intervention can be enhanced and assessed.⁴ Preparatory work should be done so that the bed nets are optimally utilized, including identification and recording of the eligible families and health educational activities in the community. Involvement of local community representatives, self help groups and NGOs should be encouraged to promote transparency of operations and optimal use by the community.

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