

## Ownership, Perception, and Usage of Long-Lasting Insecticide-Treated Net (LLIN) During Dry Season Among Residents of Kola Ward in Guyuk L.G.A of Adamawa State

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**Background:** Malaria is caused by one of four species of Plasmodium parasites that are transmitted by various species of mosquitoes in the genus Anopheles. One of the major ways to control malaria is through the use of long-lasting insecticide-treated net (LLIN) that prevents these mosquitoes from feeding on people. LLIN use has been shown to reduce illness and death drastically from malaria across a range of transmission environments.

**Methods:** This research study was aimed to ascertain the level of ownership, perception and usage of long lasting insecticide-treated nets (LLIN) during dry season in the month of December by the residents of Kola Ward in Guyuk L.G.A of Adamawa State. A structured questionnaire was administered to two hundred and thirty (230) willingly volunteer participants residing within the study area.

**Result:** The result of this study revealed that out of the total (230) of the participants enrolled in this study 140 (60.87%) of them owned LLIN while 90 (39.13%) do not; 196 (85.22%) were of the view that using LLIN goes a long way in preventing malaria infection while 34 (14.78%) were of the view that using it or not does not matter during dry season; 86 (37.39%) were using LLIN while 144 (62.61%) were not using it during the period; 87 (60.44%) said there was no mosquito bite during that period that is why they are not using it, 30 (20.14%) said there is discomfort while sleeping inside LLIN, 20 (13.89%) said they have difficulty hanging it and 7 (4.86%) said they were avoiding using it because it has adverse effects. However, the result of chi-square test revealed that there was a significant difference ( $P < 0.05$ ) in all the responses made by the participants.

**Conclusion & Recommendation:** The study concludes that though the level of ownership of LLIN is high in the study area, usage does not meet up to the standard coverage rate. It is recommended that more effort need to be put in place by the government, NGOs, concern individuals and health workers in the state to increase the level of awareness on the need to use LLIN even during dry season.

*Key words: Long Lasting Insecticide-treated nets (LLIN), Malaria and Participants*

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## Background

In 2010, there were estimated to be about 219 million malaria cases in the world (with estimates ranging from 154 million to 289 million) and 660, 000 deaths (with estimates ranging from 610,000 to 971,000). The countries contributing the most malaria cases were the Democratic Republic of the Congo (DRC), Nigeria, and India, with the DRC and Nigeria accounting for >40% of deaths (World Health Organization (WHO), 2012). Until substantial progress is made in these countries, the millennium development goal (MDG) of halting and reversing the incidence of malaria by 2015 will not be achieved. With a population of 162 million people (WHO, 2012), Nigeria has the largest population in Africa at risk of acquiring malaria. In 2008, the country accounted for a quarter of all malaria cases on the African continent (WHO, 2008). Malaria is therefore a huge burden on the Nigerian health system; it is also a cause and consequence of poverty, which has important implications for the economic development of the country. Recognizing the morbidity and mortality from malaria in African countries such as Nigeria led to the formation of the rollback malaria (RBM) global partnership in 1998 (WHO RBM, 2002). Attempts to prevent malaria through anti-malaria drugs and insecticides are threatened due to the emergence and spread of drug-resistant malaria parasites and insecticides resistant vector mosquitoes. This together with the increasing incidence of the diseases heightened the need for the use of Long Lasting Insecticide Treated Nets (LLINs) as one control method. Studies show that the proper use of LLINs can reduce mortality (Ibor *et al.*, 2014; Zimmerman and Voorham, 2003). However, there is evidence that relatively few people in high-risk regions access and use them. Similarly, studies have attributed the failure to use the LLINs to the following: it is perceived to be expensive, not hanged due to the size of the beds, heat and lack of enough air when slept under it (Ewa *et al.*, 2012). Ewa *et al.*, (2012) contended that low coverage of health centers, cultural preferences, low income, lack of awareness about the benefits of LLINs, low staffing levels, poor infrastructures and limited demand creation efforts have hampered progress, as well as the high levels of poverty in the communities. As government and other sponsoring agencies intensify efforts to create easier access to LLINs, the extent to which the general population residing in high-risk areas own and utilize

this medical commodity remains paramount. This study examines the ownership, perception and usage of LLINs during dry season among residents of Kola ward in Guyuk L.G.A of Adamawa State, with a view to determining the extent of coverage and level of utilization among vulnerable rural population.

## Study Area

Guyuk Local Government Area of Adamawa State lies between latitude 11°26 ' and 11°34 'N and Longitude 14°12 ' and 14°34 'E. The area has a population of 10,837 and 2,164 households. It is mainly an upland zone, rising above 250 meters above the sea level. It is bordered with the Kiri in Sheleng L.G.A. and Benue River along Numan L.G.A. respectively. The climate has two distinct seasons; rainy season (April-October) and the dry season November-March. Temperature ranges between 24° and 28°C with high humidity.

## Methodology

Data were collected with the aid of standardized questionnaires which were pre-tested before the actual fieldwork. The information was collected from 230 household heads 1 person per household (i.e. 230 houses). Their knowledge of ownership, perception, and usage of long- lasting insecticide-treated net (LLIN) during dry season was examined. Informed consent of the respondents was obtained before questionnaire administration. The questionnaire was developed using other studies (Deressa and Ali, 2009; Rashed *et al.*, 1999; Uzochukwu *et al.*, 2008). A pre-test was conducted for construct validity and changes to the questionnaire were then made.

The quantitative data obtained was entered into excel and analysis was done with STATA version 10. The results were displayed in charts. Cross-tabulation of variables was also done. Chi-squared test was used to test for significant associations between variables. A p-value of less than 0.05 was considered as statistically significant.

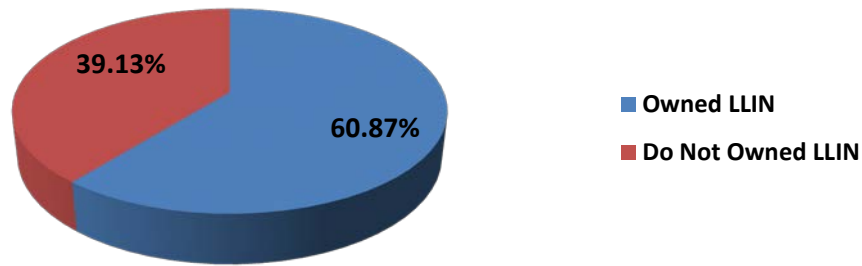


Figure 1: The LLIN percentage ownership in the study area during the survey period

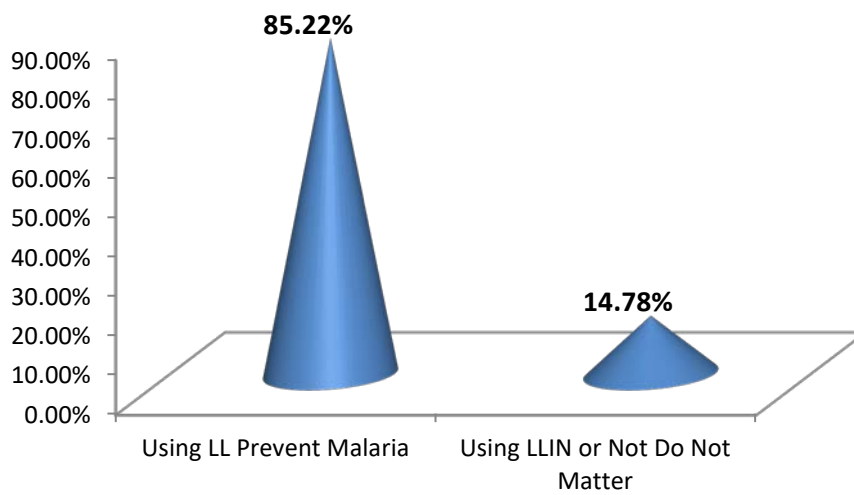


Figure 2: The perception of individuals in the study area on effectiveness of using LLIN in preventing Malaria infection

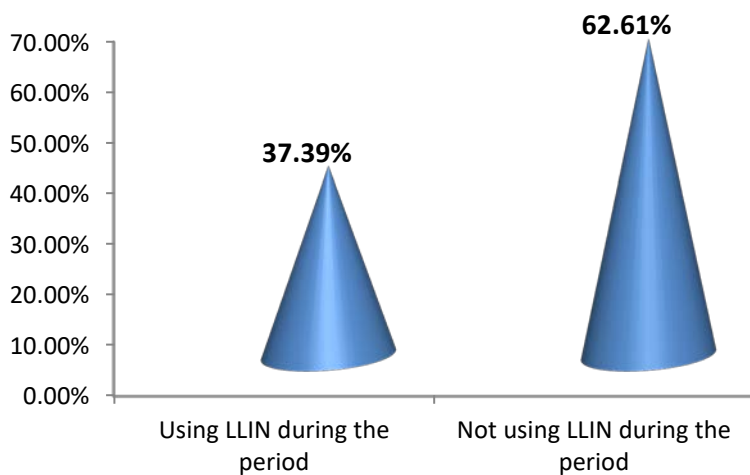


Figure 3: The LLIN percentage usage in the study area during the survey period

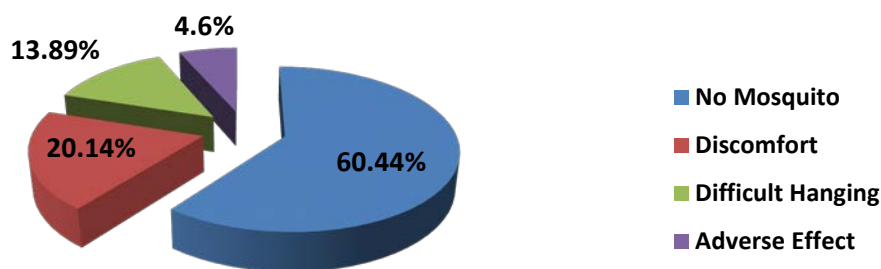


Figure 4: The perception of individuals in the study area on why they do not use LLIN

## Results and Discussions

Understanding people's perceptions of LLINs is an important determinant of success in malaria control programs that have LLINs use as their central focus. Therefore, the goal of this study was to identify perceptions and Usage of LLINs among the study participants.

The result of this study revealed that out of the total (230) of the participants enrolled in this study 140 (60.87%) of them owned LLIN of which males were 65 (46.43%) and female 75 (53.57%). However, the result revealed that 90(39.13%) of the participants do not own LLIN of which male were 61 (67.78%) and female 29 (32.22%) (Fig. 1). Out of the total (230) of the participants enrolled in this study 196 (85.22%) were of the view that using LLIN goes a long way in preventing malaria infection while 34 (14.78%) were of the view that using it or not does not matter during dry season (Fig. 2); 86 (37.39%) were using LLIN while 144 (62.61%) were not using it during the period (Fig. 3); 87 (60.44%) said there was no mosquito bite during that period that was why they were not using it, 30 (20.14%) said there was discomfort while sleeping inside LLIN, 20 (13.89%) said they have difficulty hanging it and 7 (4.86%) said they were avoiding using it because it has adverse effects (Fig. 4). However the result of chi-square test revealed that there was a significant difference ( $P < 0.05$ ) in all the responses made by the participants. Perception of participants regarding non usage of LLINs due to its harmful effects was also reported by other researchers in a related study (Onwujekwe *et al.*, 2005; Pettifor *et al.*, 2008). These sets of individuals believe with the statement "insecticide may make

treated bed nets unfit use because of its harmful effect. In addition, a study conducted by other researchers proved that during the rainy season and the resulting mosquito density causes people to perceive more nuisances biting which motivates them to use LLINs unlike during dry season that people perceived that there are no mosquitoes bites (Beer *et al.*, 2012; Frey *et al.*, 2006; Okrah *et al.*, 2002).

The result of this study revealed that out of the total (230) of the participants enrolled in this study 140 (60.87%) of them owned LLIN while 90 (39.13%) do not. The LLIN distribution coverage rates fell short of the global target of 80% set in a 2005 World Health Assembly resolution and by the Rollback Malaria partnership (2015). The result showed that gender significantly influenced the use of LLINs in the area, this was because they were closer to the children and both children and pregnant women were believed to be vulnerable to malaria infection (WHO, 2014; Ibor *et al.*, 2014). Ownership of nets does not always translate to usage. This has been demonstrated by authors in previous studies (Sunday *et al.*, 2014; Gikandi *et al.*, 2009) where net use does not keep up with possession. The same trend was reported in this survey. Though ownership was as high as 60.87%, only 37.39% of all respondents slept under a LLIN. One reason for this discrepancy as postulated by several authors could be the lack of educational campaigns accompanying LLIN distributions (Gikandi *et al.*, 2009). However in the study, some respondents said there was no mosquito bite during that period that was why they were not using it; some said it caused discomfort; some said there was difficulty hanging it; some said it has adverse effects.

## Conclusion

This study documents a lot of misperceptions about malaria among the study population. The elements of knowledge chosen for evaluation in this study are important because they are related to the use of nets and can be targeted for modification through specific communication for behavior change. The study concludes that though the level of ownership of LLIN is high in the study area, usage does not meet up to the standard coverage rate. The public health implication is that more effort needs to be put in place by researchers, government, NGOs, health workers and all concerned individuals to further raise the level of LLIN usage through health education.

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