

Biting Pattern of Malaria Vectors in Kamuli – Why Insecticide-Treated Bed nets are Important



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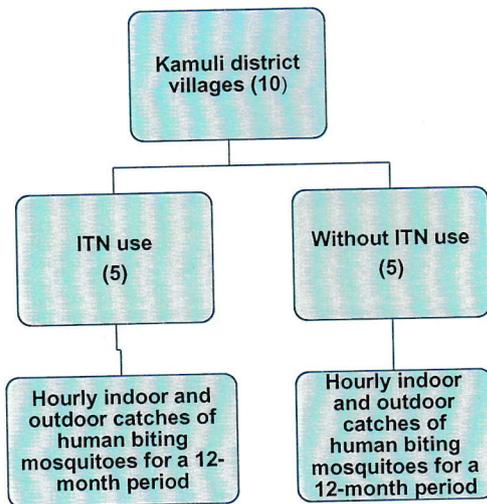
Background

Malaria is a major cause of illness in Uganda, with children under five years of age, pregnant mothers and people living with HIV/AIDS, particularly vulnerable. Use of Insecticide-treated bed-nets (ITNs) has been widely promoted to protect people from mosquito bites. The main reason for the promotion of ITNs is because the mosquitoes – *Anopheles gambiae s.l* and *Anopheles funestus* – that are largely responsible for transmitting the malaria parasite do most of their biting between 10.00pm and 5.00am when it is assumed most people are in bed. In spite of the prolonged use of ITNs, malaria prevalence is still high and, it is thought that perhaps the *Anopheles* spp mosquitoes are biting earlier or later in the day.

Objectives

This study set out to investigate if the biting times of *An. gambiae* and *An. funestus* in an area that had used ITNs consistently for more than five years had changed.

Methods



Results

There were nearly four times more *Anopheles* mosquitoes biting humans in the non-intervention zone than in the intervention zone (Table 1). *Anopheles gambiae s.l.* catches exceeded ($p < 0.001$) those of *An. funestus*.

Table 1. Catches of female *Anopheles* mosquitoes in non-intervention and intervention zones over a 12 month period

| Mosquito group | Non-intervention zone | | Intervention zone | | Totals |
|-------------------------|-----------------------|--------------|-------------------|------------|--------------|
| | Indoor | Outdoor | Indoor | Outdoor | |
| <i>An. gambiae s.l.</i> | 853 | 1079 | 299 | 346 | 2,577 |
| <i>An. funestus</i> | 453 | 411 | 39 | 39 | 942 |
| Totals | 1,306 | 1,490 | 338 | 385 | 3,519 |

In both zones, peak night biting occurred between 23.00 and 05.00 hours for both *An. gambiae s.l.* and *An. funestus*, while the majority of bites occurred between 03.00 and 06.00 hours for both species (Fig. 1)

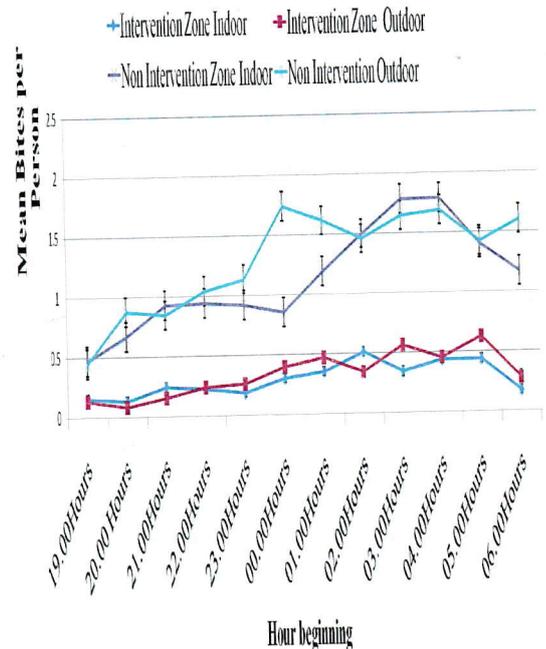


Fig. 1. Comparison of mean bites per person (\pm S.E.) of *Anopheles gambiae s.l.* and *An. funestus* at different hours of the night between intervention and non-intervention zones in Kamuli district ($p < 0.001$).

Conclusions

Use of ITNs reduces mosquito numbers in an area and bites received per person. A person is more likely to be bitten while outdoors than that when one is indoors. The biting times of the malaria vectors has not changed but it is clear that protection against mosquito bites is needed from dusk to dawn. Therefore, in addition to ITNs, we advocate for other methods of protection against mosquito bites to protect people when they are not in bed.

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