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Indoor and outdoor biting behaviour patterns of malaria vectors in Batticaloa and Mullaitivu districts, Sri Lanka

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The biting behaviour of anophelines is an important determinant of malaria transmission. Bionomics of malaria vectors such as peak biting hours, dynamics of indoor and outdoor biting preferences, and temporal variations of human feeding behaviours are essential in planning vector control activities such as Long-Lasting Insecticidal Nets (LLINs) and personal protective measures. Therefore, the objective of this research was to study the biting behaviours of malaria vectors at selected study sites in the Batticaloa and Mullaitivu districts. Human landing night collections were carried out between 1800 and 0600 hours at monthly intervals from January 2019 to December 2019. All human landing night collections indoors and outdoors yielded 414 anophelines belonging to eight species, of which 90.1% was *Anopheles culicifacies* Giles and 5.5% was *An. subpictus* Grassi. The other anopheline species were *An. tessellatus* Theobald (1.2%), *An. pallidus* Grassi (1.2%), *An. varuna* Iyengar (0.7%), *An. vagus* Dönitz (0.5%), *An. jamesii* Theobald (0.5%) and *An. peditaneatus* Leicester (0.2%). Human biting behaviour of *An. culicifacies* was predominant in both Batticaloa and Mullaitivu study sites with relative biting preference 69% and 100%, respectively. Further, *An. culicifacies* biting in both indoors and outdoors was prevalent throughout the year in both study sites. Human feeding behaviour of *An. culicifacies* was higher in January and October in Mullaitivu and May and October in Batticaloa study sites. The human landing activity peaked during 1900–2100 and 0400–0500 hours in Batticaloa, with the highest human landing density of 0.65 mosquitoes/person-hour outdoors and 0.25 mosquito/person-hour at indoors. In Mullaitivu study site, human landing activity peaked during 2000–2400 and 0200–0500 hours with the highest human landing density of 1.3 mosquitoes/person-hour at outdoors and 0.7 mosquitoes/person-hour at indoors. The study shows that the primary vector, *An. culicifacies* biting activity is high throughout the night, with similar indoor and outdoor patterns. Outdoor biting behaviour of *An. culicifacies* is more prevalent than indoor. Hence, all these factors need to be taken into consideration when planning and implementing malaria vector control activities in these two districts.

Key Words: Biting behaviour, malaria, vectors, Batticaloa, Mullaitivu

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