Abstract

Malaria is an important public health problem and socio economic burden of Sri Lanka. Jaffna district which lies in the northern dry zone of the country is an endemic region for malaria. Over two decades of civil unrest has greatly affected the life style of the people in the district. The conflict situation badly hampered vector surveillance and vector control activities. There were only a few small-scale studies previously reported on malaria and its vectors in the district. With this background a study was carried out to establish the prevalence of *Anopheline* mosquitoes, community perspective of malaria and its control and identify malaria risk Grama Niladhari (GN) divisions of the district.

Adult anopheline mosquitoes were collected using cattle baited hut and nets; immatures were collected using standard dipper method. The collections were carried out monthly, from selected endemic localities from November 2005 to July 2006. Among this collected blood fed adult anopheline mosquitoes were speciated and *Anopheles subpictus*, the reported potential vector in the district, were screened for sibling species composition based on egg morphology and exposed to common insecticides using WHO bioassay kits. Knowledge, attitude and practices (KAP) of the community living in high-risk and low-risk localities were tested using a pre-tested structured questionnaire. A malaria risk map for the district was also created by overlaying the identified risk factors using Geographic Information Systems.

The species composition of anopheline mosquitoes collected during the study period was *An. culicifacies* 0.5%, *An. subpictus* 46%, *An. varuna* 4%, *An. nigerrimus* 44% and *An. pallidus* 5.5%. *An. subpictus* was the predominant anopheline species in all localities and a low density of *An. culicifacies*, the major vector in other parts of the Island, was observed. Similar species composition was observed during a study carried out, during a peak malaria transmission time, in 1995.

Sibling species B, C and D of *An. subpictus* were identified during the study period. Species B was the predominant sibling species in both coastal and inland areas. However, the presence of species C and D was higher in inland areas when

compared to coastal areas. Except sibling species B, species C and D showed a significant association ($P<0.05$) to rest indoor and outdoor respectively. All sibling species of *An. subpictus* were highly resistant to 4% DDT. Generally, all sibling species were susceptible to 5% malathion than that of DDT. However, there were statistical significant betwee subspecies with species C showing higher level of resistant to malathion than B and D.

The community in the high-risk area showed a reasonable knowledge on vector and its breeding sources; positive attitude towards mosquito control, treatment seeking behavior towards Government hospital for suspected malaria and completing the full course of malaria treatment; good practice of personal protective measures against mosquito bite, in the KAP study. Public living in the low-risk area significantly differed in treatment seeking behavior, completing the full course of malaria treatment and in use of personal protective measures.

A malaria risk map for the district was created using the proportion of improvised houses, proportion of households qualifying for Government subsidies and the digitalized land use pattern as the variables. Some Grama Niladhari (GN) divisions (J/419, J/422, J/425, J/428, J/432) coming under Point Pedro Medical Officer of Health (MOH) division were identified as potentially high risk areas for malaria. The GN divisions of other MOH divisions namely Manipay, Thellippalai, Kopay, Kayts and Chavakachcheri were found to be moderately at risk and the GN divisions of Jaffna MOH division are at low risk.

Even though a drastic decline in malaria cases has been reported during the course of the study period in the district, the presence of potential vectors indicates the possibility of an outbreak if the parasite is imported to the district. Therefore, considering the cyclic nature of malaria, the regional health authorities continued to be vigilant in carrying out vector surveillance, improving the infrastructure facilities in the Central Dispensaries, conducting health education and promoting the active participation of the public in high-risk areas.