Geospatial Health 6(1), 2011, pp. 3-4

Letter to the Editor

Comments on "Socio-geographical factors in vulnerability to dengue in Thai villages: a spatial regression analysis" by Tipayamongkholgul and Lisakulruk

Dear Editor,

We compliment Tipayamongkholgul and Lisakulruk for their spatial regression analysis of different local socio-geographic predictors of dengue infection in the Thai province of Prachuap Khiri Kan, published in *Geospatial Health*, issue 5.2 (2011). However, for such a comprehensive analysis, we feel that it is essential that full details about the local vectors and the casual and formal dress worn by the villagers during the day-time are discussed and evaluated.

The biology of the vector *Aedes albopictus* and *Ae. aegypti*, responsible for dengue fever and chikungunya fever, is intriguing. *Ae. albopictus* is a very aggressive day-time biter, with peaks generally occurring during early morning and late afternoon. It is a container-inhabiting species laying its eggs in any water-containing receptacle in urban, suburban, rural and forested areas (Novak, 1992). Furthermore, *Ae. aegypti* is also any early-morning or late-afternoon biter, but will also bite at night if there is sufficient artificial light. Importantly, *Ae. aegypti* is particularly fond of ankles.

Conventionally, the casual and/or formal dress worn by every individual in this part of the world varies during the day. Any dress that hides the lower extremities during day time would offer protection against bites by mosquitoes of the genus *Aedes*. However, every inadvertent day-time exposure of the lower extremities, while on leisure or formal employment, would be associated with a higher probability of being bitten and infected by a mosquito carrying the dengue virus.

A prospective, long-term study measuring the ecological impact of urbanization of dengue endemicity should also have addressed the description of anti-vector measures being adapted during the interim phase. Generally, the anti-mosquito measures are practiced by individuals during the night when repellents, insecticides or mosquito nets are used. Unfortunately, the nocturnal use of insect repellents, the wearing of permethrin-impregnated clothing, sleeping under permethrin-impregnated bed nets, and staying in accommodations with screened or air-conditioned rooms (Centers for Disease Control, 2009) would not completely protect a villager, as he or she would be exposed to the potential risk of bites by *Aedes* mosquitoes during day-time activities.

References

Centers for Disease Control and Prevention, 2009. CDC health information for international travel 2010. Atlanta: US Department of Health and Human Services, Public Health Service.

Novak R, 1992. The Asian tiger mosquito, *Aedes albopictus*. Wing Beats 3, 5.

Tipayamongkholgul M, Lisakulruk S, 2011. Socio-geographical factors in vulnerability to dengue in Thai villages: a spatial regression analysis. Geospat Health 5, 191-198.

Subhash C. Arya and Nirmala Agarwal

Department of Clinical Microbiology and Infection Control
Sant Parmanand Hospital
18 Alipore Road
Delhi-110054, India
E-mail: subhashbhapaji@mail.com

Response to Comments on "Socio-geographical factors in vulnerability to dengue in Thai villages: a spatial regression analysis" by Tipayamongkholgul and Lisakulruk

Dear Editor,

We thank Arya and Agarwal for their constructive comments regarding our article "Socio-geographical factors in vulnerability to dengue in Thai villages: a spatial regression analysis" published in the previous issue of *Geospatial Health*.

The potential influence of local vectors and types of dress during day time with respect to the risk for dengue infection was not evaluated, since the main aim of our ecological study was to identify areas at risk in general. We agree that the points made by Arya and Agarwal are useful and should be considered in further studies to evaluate the determinants that characterizes area at risk for dengue infection.

The primary vector of dengue in Thailand is *Aedes aegypti*. This mosquito species prefers living in shelters and lays its eggs in man-made containers within, or around, the premises (Polawat and Harrington, 2005). It generally seeks blood meals inside premises during the day (between 08:00 and 17:00 hours), but bites are more frequent in the morning (Thavara et al., 2011). Not surprisingly, the majority of dengue cases in Thailand are school-age children, who wear shorts or skirts and short shirts during the whole day (Chareonsook et al., 1998; Sukhontha et al., 2011).

References

Chareonsook O, Foy HM, Teeraratkul A, Silarug N, 1999. Changing epidemiology of dengue hemorrhagic fever in Thailand. Epidemiol Infect 122, 161-166.

Kongsin S, Jiamton S, Suaya S, Vasanawathanad S, Sirisuvan S, Donald S, 2010. Cost of dengue in Thailand. Dengue Bull 34, 77-88.

Ponlawat A, Harrington LC, 2005. Blood feeding patterns of *Aedes aegypti* and *Aedes albopictus* in Thailand. J Med Entomol 42, 844-849.

Thavara U, Tawatsin A, Chansang C, Kong-ngamsuk W, Paosriwong S, Boon-Long J, Rongsriyam Y, Komalamisra N, 2001. Larval occurrence, oviposition behavior and biting activity of potential mosquito vectors of dengue on Samui Island, Thailand. J Vector Ecol 26, 172-180.

Tipayamongkholgul M, Lisakulruk S, 2011. Socio-geographical factors in vulnerability to dengue in Thai villages: a spatial regression analysis. Geospat Health 5, 191-198.

Mathuros Tipayamongkholgul and Sunisa Lisakulruk

Department of Epidemiology, Faculty of Public Health
Mahidol University, 420/1 Rajawithi Road, Bangkok, Thailand
E-mail: phmty@mahidol.ac.th