Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 222 (2016) 283 – 289

Procedia
Social and Behavioral Sciences

ASLI QoL2015, Annual Serial Landmark International Conferences on Quality of Life
ASEAN-Turkey ASLI QoL2015
AicQoL2015Jakarta, Indonesia. AMER International Conference on Quality of Life
The Akmani Hotel, Jakarta, Indonesia, 25-27 April 2015
"Quality of Life in the Built & Natural Environment 3"

Infestation Profile of Aedes Mosquitoes in Multi-Storey Buildings in Selangor, Malaysia

Farah Amirah Mohamad Sairi[a], Nazri Che Dom[*], Siti Nazrina Camalxaman

[a]*Department of Environmental Health, Faculty of Health Sciences, Universiti Teknologi MARA, 42300 Puncak Alam, Malaysia*
[b]*Department of Medical Labaratory Technique, Faculty of Health Sciences, Universiti Teknologi MARA, 42300 Puncak Alam, Malaysia*

Abstract

The aim of the present study was therefore to determine the infestation profile (IP) by performing entomological surveillance activities in apartments and flats within Subang Jaya, Selangor. Results implied that Ae.albopictus was dominant in both types of multi-storey buildings (IP=60%). Interestingly, Ae.aegypti (IP=20%) were found outdoors in flats. In addition, flats tended to display high ovitrap index (OI= 16.7%) compared to apartments (OI=6.06), based on mosquito density analysis. There was however, no significant difference in the container preference in both types of multi-storey buildings. As a conclusion, Aedes mosquitoes in the environment could consequentially lead to an increase in the transmission level of dengue in these type of houses.

Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment- Behaviour Studies, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.

Keywords: Infestation profile (IP), *aedes* mosquitoes, dengue introduction

* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .
E-mail address: nazricd@salam.uitm.edu.my

Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment- Behaviour Studies, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.
doi:10.1016/j.sbspro.2016.05.160

1. Introduction

Dengue is a growing public health problem in Malaysia. The incidence of dengue is increasing despite the availability of current and modern technologies in controlling its spread. The high incidence of dengue may be attributed to the increase in the number of mosquitoes breeding places. The transmission of dengue involves three factors, namely the virus, mosquito vectors and the human host. In order to control the disease, the transmission chain has to be broken, and this is done through the elimination of the mosquito population. Therefore, vector surveillance is one of the most important aspects of vector control. The purpose of surveillance is to determine the presence of vectors, their frequency of occurrence, change in density levels as well as other epidemiological parameters related to its vectorial capacity. Needless to say, it is of utmost importance to have fundamental information regarding the distribution and density of the vectors.

Aedes aegypti is highly anthropophilic (Huber *et al*., 2008) and preferentially resides near human dwelling. Females show a preference for breeding in domestic container (Wongkoon *et al*., 2007), but may also use rainwater-accumulated container in peri-domestic environments (Pamplona *et al*., 2009). *Aedes albopictus* is common in suburban and rural areas, and tends not to colonize in indoor water collection (Teng *et al*., 1999). However, in many countries including Malaysia, both of these vector species overlap in their indoor and outdoor breeding habitats (Lee and Hishamudin 1990, Chen *et al*., 2006). This changing nature of infestation requires further evaluation.

Effective application of control measures is dependent on the understanding of the infestation profile (IP) of the vectors. Studies on the bionomics of these mosquitoes have been conducted over the years. Cheong (1967) reported that *Ae. aegypti* larvae were found to prefer ant-trap and earthen jars in urban town. In addition, other artificial container especially tires and flowerpots were also preferential to be a breeding habitat. However, 2 decades later, Lee & Cheong (1987) discovered that *Ae. aegypti* larvae seemed to prefer miscellaneous containers such as buckets, basins, bowl and concrete tanks. Obviously, there were certain changes in the preferred larval habitat after a lapse of 20 years. Dieng *et al*., (2012) in his recent research work on unusual breeding sites concluded that breeding pattern can increase in contact with host (human and birds) and presumably population densities of these vectors may potentially boost the risk of spread and transmission of dengue. This changing pattern in breeding habit of these mosquitoes is significantly altered due to the need of domestic mosquito to feed blood from host for their immediate energy needs as well as for it to survive in nature.

Therefore, monitoring of *Aedes* population is one of the important activities conducted in vector control programmes. Ovitrap have been designated as a surveillance tool for monitoring *Aedes* populations (Dibo *et al*., 2005). The use of ovitraps in the surveillance of *Aedes* sp was recommended by the World Health Organization (Cheng *et al*., 1982). Many studies had been done in Malaysia to determine the population and abundance of *Aedes* mosquitoes (Chen *et al*., 2005; Rozilawati *et al*., 2007; Wan Norafikah *et al*., 2009; Dom *et al*., 2013). However little information is available on the distribution and abundance of *Aedes* mosquitoes at multi-storey buildings. Results of a preliminary study on vertical dispersal of *Aedes* in multi-storey buildings conducted by Wan Norafikah *et al*., (2012), indicated the possibility of lower *Aedes* population at higher level of multi-storey houses. Constant studies on the profile of the infestation of *Aedes* mosquitoes are an important tool in mosquito control. Such studies will help to determine the existing and disappearing mosquito species and the extent of their distribution (Anyanwu *et al*., 2000). Thus, the present study was designed to investigate the IP of existing mosquito fauna and possible public health implications specifically on the residents of multi-storey houses.

2. Methodology

2.1. Description of study sites

Entomological was conducted in selected multi-storey buildings located in 4 residential areas namely, Apartment Acadia (AA), Apartment Lagoon Perdana (ALP), Flat Bandar Sunway (FBS) and Flat Angsana (FA). The geographical and ecological description of the study sites is given in Table 1. The selection of these areas is based on continuous occurrence of DF cases from 2010 to 2014, which was obtained from Vector Control Unit of the Subang Jaya municipity area (MPSJ).