

MOSQUITO-OVITRAP INDEX AND DENGUE FEVER EPIDEMICS IN GUANGDONG PROVINCE, CHINA: A SPATIOTEMPORAL ANALYSIS

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Background and Aims: This study aims to use spatiotemporal analysis methods to describe the spatial distribution and clustering of dengue fever (DF) cases and explore the possibility of developing a time series forecast model of DF based on an index on *Aedes* larval density in Guangdong Province, China.

Methods: We obtained a data set containing numbers of notified monthly DF cases in Guangdong Province, China for the period of January 2005 – December 2010 from Chinese Center for Disease Control and Prevention. Monthly data on the mosquito-ovitraps index (MOI) on *Aedes* larval density and population data were obtained from the National DF Surveillance Sites in Guangdong province and China CDC, respectively. Geographical information system (GIS) and Kulldorff's spatial scan statistic were used to uncover spatial clustering of DF at prefecture level. Time series regression model was used to estimate independent contribution of MOI on incidence of DF in this study.

Results: There were 1658 DF cases (locally-acquired: 1599 (94.03%); overseas-acquired cases: 99 (5.97%)) in Guangdong between 2005 and 2010. The incidence rates of DF in spring, summer, autumn and winter were 0.0018, 0.0647, 0.2259 and 0.0023/100,000, respectively. High incidence clusters of DF were concentrated in Zhuhai (1.6178/100,000), Guangzhou (1.3524/100,000) and Shantou (0.5723/100,000), China, which have humid subtropical climate and the large amount of foreign tourism. Our results showed that there appeared to be an upward trend of geographic range of DF transmission in Guangdong, China. Monthly MOI at lag of 1 – 2 months may trigger DF outbreak in high incidence clusters of DF.

Conclusions: The geographic range of notified DF cases seems to be expanded in Guangdong, China over recent years. MOI warrant further investigation as a mediator/predictor of the DF cycles. The findings suggested the surveillances of vector should be taken at early stage. However, more research is needed to explore the possibility of developing early warning system for DF.