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Investigation and Monitoring Method of Vector Density in Kaohsiung City

Authors : Chiu-Wen Chang, I-Yun Chang, Wei-Ting Chen, Hui-Ping Ho, Chao-Ying Pan, Joh-Jong Huang

Abstract : Dengue is a 'community disease' or 'environmental disease', as long as the environment exist suitable container (including natural and artificial) for mosquito breeding, once the virus invade will lead to the dengue epidemic. Surveillance of vector density is critical to effective infectious disease control and play an important role in monitoring the dynamics of mosquitoes in community, such as mosquito species, density, distribution area. The objective of this study was to examine the relationship in vector density survey (Breteau index, Adult index, House index, Container index, and Larvae index) form 2014 to 2016 in Kaohsiung City and evaluate the effects of introducing the Breeding Elimination and Appraisal Team (hereinafter referred to as BEAT) as an intervention measure on eliminating dengue vector breeding site started from May 2016. BEAT were performed on people who were suspected of contracting dengue fever, a surrounding area measuring 50 meters by 50 meters was demarcated as the emergency prevention and treatment zone. BEAT would perform weekly vector mosquito inspections and vector mosquito inspections in regions with a high Gravitrap index and assign a risk assessment index to each region. These indices as well as the prevention and treatment results were immediately reported to epidemic prevention-related units every week. The results indicated that, vector indices from 2014 to 2016 showed no statistically significant differences in the Breteau index, adult index, and house index ($p > 0.05$) but statistically significant differences in the container index and larvae index ($p < 0.05$). After executing the integrated elimination work, container index and larvae index are statistically significant different from 2014 to 2016 in the ($p < 0.05$). A post hoc test indicated that the container index of 2014 ($M = 12.793$) was significantly higher than that of 2016 ($M = 7.631$), and that the larvae index of 2015 ($M = 34.065$) was significantly lower than that of 2014 ($M = 66.867$). The results revealed that effective vector density surveillance could highlight the focus breeding site and then implement the immediate control action (BEAT), which successfully decreased the vector density and the risk of dengue epidemic.

Keywords : Breteau index, dengue control, monitoring method, vector density
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