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Distribusi dan Minimum Infection Rate Aedes spp. sebagai Vektor Dengue di Buffer Area Bandara Internasional Juanda
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

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INTISARI

Latar Belakang: Infeksi dengue sampai saat ini masih menjadi permasalahan kesehatan yang perlu diperhatikan di Indonesia. Tingginya mobilitas manusia dan barang menyebabkan wilayah sekitar bandara sangat rentan terhadap penularan dan penyebaran penyakit tular vektor.

Tujuan: Penelitian ini dilakukan untuk menentukan kepadatan *Aedes* spp. serta mengidentifikasi keberadaan virus dengue pada spesimen nyamuk., menggambarkan distribusi spasial penderita dengue, serta mengetahui hubungan faktor pengetahuan, sikap dan praktik masyarakat terhadap keberadaan jentik di *buffer area* Bandara Internasional Juanda.

Metode: Penelitian studi observasional dengan desain *cross sectional.* Telur *Aedes* spp. dikoleksi menggunakan ovitrap, jentik dan pupa diambil dari kontainer air masyarakat. Nyamuk dewasa dikoleksi menggunakan aspirator dan *sweep net*. Pemeriksaan molekuler dilakukan terhadap nyamuk betina hasil koleksi lapangan dan stadium pradewasa yang dipelihara hingga dewasa. Nilai *Minimum Infection Rate* (MIR) dihitung dari jumlah pool positif dibagi jumlah nyamuk uji. Analisis spasial dengan teknik *Average Nearest Neighbour*, *kernel density* dan *overlay*. Penghitungan tingkat pengetahuan, sikap dan praktik dengan kuesioner terhadap 100 responden.

Hasil: Sebanyak 102 rumah diperiksa dengan 333 kontainer. Nilai *stegomyia index* (*House Index* 45,10%; *Container Index* 27,33%; *Breteau Index* 89,22) berada pada *Density Figure* level 6 dengan kategori tinggi, dan *Ovitrap Index* sebesar 56,99%. *Pupa Index* sebesar 0,93 pupa per rumah dan 0,28 pupa per kontainer. Kategori *Maya Index* dengan 48% rumah termasuk kategori rendah, 33% kategori sedang, dan 19% kategori tinggi. Uji molekuler menunjukkan 1 dari 7 pool *Ae. aegypti* positif virus dengue (14,29%) dengan nilai MIR 9,7 per 1.000 nyamuk, sedangkan 2 pool *Ae. albopictus* seluruhnya negatif. DENV-2, DENV-3, dan DENV-4 terdeteksi pada *Ae. aegypti* asal pradewasa. Pola distribusi spasial kasus dengue cenderung acak (R=1,07; z=0,43; p>0,05). Tidak adanya hubungan yang bermakna antara tingkat pengetahuan, sikap dan praktik masyarakat terhadap keberadaan jentik (p>0,05).

Kesimpulan: Kategori kepadatan *Aedes* spp. berada dalam kategori tinggi dengan ko-sirkulasi tiga serotipe virus dengue. Pola spasial kasus dengue cenderung acak, sedangkan pengetahuan, sikap, dan praktik masyarakat tidak berhubungan secara bermakna dengan keberadaan jentik.

Kata Kunci: Dengue, *Aedes* spp., *Minimum Infection Rate*

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Distribution and Minimum Infection Rate of *Aedes* spp. as Dengue Vectors in the Buffer Area of Juanda International Airport

ABSTRACT

Background: Dengue infection remains a public health concern requiring continued attention in Indonesia. High levels of human and cargo mobility make airport surrounding areas particularly susceptible to the transmission and spread of vector-borne diseases.

Objective: This study was conducted to determine the density of *Aedes* spp. and identify the presence of dengue virus in mosquito specimens, describe the spatial distribution of dengue cases, and determine the association between community knowledge, attitudes, and practices and the presence of larvae in the buffer area of Juanda International Airport.

Methods: This was an observational study with a cross-sectional design. Aedes spp. eggs were collected using ovitraps, while larvae and pupae were collected from household water containers. Adult mosquitoes were collected using aspirators and sweep nets. Molecular testing was performed on field-collected female mosquitoes and immature stages reared to adulthood. The Minimum Infection Rate was calculated by dividing the number of positive pools by the total number of mosquitoes tested. Spatial analysis was conducted using Average Nearest Neighbor, kernel density, and overlay techniques. Knowledge, attitudes, and practices were assessed using questionnaires administered to 100 respondents.

Results: A total of 102 houses and 333 containers were inspected. The Stegomyia indices, comprising a House Index of 45.10%, Container Index of 27.33%, and Breteau Index of 89.22, were classified as Density Figure level 6, indicating high vector density. The Ovitrap Index was 56.99%. The Pupa Index was 0.93 pupae per house and 0.28 pupae per container. Based on the Maya Index, 48% of houses were classified as low risk, 33% as moderate risk, and 19% as high risk. Molecular testing showed that 1 of 7 *Ae. aegypti* pools was positive for dengue virus (14.29%), with an MIR of 9.7 per 1,000 mosquitoes, while both *Ae. albopictus* pools tested negative. Serotyping identified DENV-2, DENV-3, and DENV-4 in *Ae. aegypti* specimens collected at immature stages and subsequently reared to adulthood. The spatial distribution of dengue cases tended to be random ($R=1.07$; $z=0.43$; $p>0.05$). No significant associations were found between community knowledge, attitudes, and practices and the presence of larvae ($p>0.05$).

Conclusion: *Aedes* spp. density was classified as high, with co-circulation of three dengue virus serotypes. Dengue cases showed a random spatial distribution, while community knowledge, attitudes, and practices were not significantly associated with larval presence.

Keywords: Dengue, *Aedes* spp., Minimum Infection Rate