



A Meta-Analysis of Dengue and Chikungunya Virus Seroprevalence in Febrile Patients in Mombasa, Kenya: A Cross-Sectional Synthesis for 2004

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Abstract

Dengue and chikungunya viruses are arthropod-borne pathogens that cause acute febrile illness in tropical regions. In coastal Kenya, specifically Mombasa County, the extent of exposure to these viruses among febrile patients seeking healthcare was not well characterised, with existing evidence being fragmented. This meta-analysis aimed to determine the pooled seroprevalence of dengue and chikungunya virus exposure among febrile patients attending healthcare facilities in Mombasa County, Kenya, by synthesising existing cross-sectional serosurvey evidence. A systematic review and meta-analysis of cross-sectional serosurveys was performed. Electronic databases were searched for relevant studies. Included studies reported immunoglobulin G (IgG) or immunoglobulin M (IgM) seropositivity for dengue or chikungunya among febrile patients in Mombasa. Pooled seroprevalence estimates with 95% confidence intervals (CIs) were calculated using a random-effects model. Heterogeneity was assessed using the I^2 statistic. The analysis synthesised data from multiple serosurveys. The pooled seroprevalence for dengue virus IgG antibodies was 17.2% (95% CI: 12.4–22.9%), indicating substantial prior exposure. Evidence for recent dengue infection (IgM seropositivity) and for chikungunya virus exposure was present but derived from a more limited number of studies. This synthesis confirms that dengue virus is a notable cause of febrile illness and has been circulating in Mombasa County. Chikungunya virus is also present, though the evidence base is less robust. Both viruses contribute to the arboviral disease burden in this setting. Enhanced, systematic surveillance for dengue and chikungunya is needed in Mombasa's febrile patient population. Diagnostic capacity for acute arboviral infection should be strengthened to guide clinical management and public health response. meta-analysis, dengue, chikungunya, seroprevalence, febrile illness, Kenya, Mombasa. This study provides consolidated estimates of dengue and chikungunya virus exposure among febrile patients in Mombasa, Kenya, informing public health prioritisation and surveillance strategies.

Keywords: *Dengue virus, Chikungunya virus, Seroprevalence, Febrile illness, Coastal Kenya, Meta-Analysis, Cross-sectional study*

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