Abstract

Introduction: Mosquito-borne infections are of global health concern because of their rapid spread and upsurge, which creates a risk for coinfections. DENV and ZIKV are transmitted by *Aedes aegypti* and *A. albopictus* and are prevalent in Nigeria and neighbouring countries. However, their seroprevalence, burden, hidden endemicity and possible cocirculation are poorly understood in Nigeria.

Methods: We conducted a cross-sectional study of 871 participants from three regions of Nigeria. All serum samples were analysed using malaria RDT and the immunoblot molecular diagnostic assay recomLine Tropical Fever for the presence of arboviral antibody serological marker IgG (Mikrogen Diagnostik, Neuried, Germany) with DENV and ZIKV Nonstructural protein 1 (NS 1), DENV and ZIKV Equad (variant of the envelope protein with designated mutations to increase specificity), according to the manufacturer's instructions.

Results: The overall IgG antibody seropositivity against DENV-flavivirus was 44.7% (389/871); 95% CI (41.41-47.99), while ZIKV-flavivirus was 19.2% (167/871); 95% CI (0.16-0.21), and DENV-ZIKV-flavivirus cocirculation antibody seropositivity was 6.2%5 (54/871); 95% CI (0.6-0.7) in the three study regions of Nigeria. The study cohort presented similar clinical signs and symptoms of flaviviruses (DENV and ZIKV) in all three study regions.

Conclusion: This study highlighted an unexpectedly high antibody seropositivity, burden, hidden endemicity, and regional spread of mono- and co-circulating flaviviruses (DENV and ZIKV) in Nigeria.Key messagesDengue flavivirus sero-cross-reactivity drives antibody-dependent enhancement of ZIKV infection.Both viruses share common hosts (humans) and vectors (primarily Aedes aegypti), and are thus influenced by similar biological, ecological, and economic factors, resulting in epidemiological synergy.Additionally, the actual burden in epidemic and interepidemic periods is grossly or chronically unknown and underreported. Despite this trend and the potential public health threat, there are no reliable data, and little is known about these arboviral co-circulation infections.

Keywords: Endemicity; Nigeria; burden; chikungunya; dengue; seroprevalence.