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**ADMINISTRATIVE INFORMATION****Support** - Wellcome Trust.**Review Stage at time of this submission** - Data analysis.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202640055**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 April 2026 and was last updated on 15 April 2026.**INTRODUCTION**

**Review question / Objective** This review aims to address the following questions:

1. What is the prevalence and incidence of dengue and chikungunya viruses in the Horn of Africa?
2. What are the geographic and population-level distributions of these infections?
3. What epidemiological patterns (e.g., outbreaks, seroprevalence, temporal trends) are reported across the region?

**Rationale** Dengue and chikungunya are important emerging and re-emerging arboviral diseases in Africa, with increasing reports of outbreaks and transmission in the Horn of Africa. However, available evidence remains fragmented across surveillance reports, outbreak investigations, and cross-sectional studies. A comprehensive synthesis of existing data is needed to better understand the epidemiological burden, identify knowledge gaps, and inform public health planning, surveillance, and control strategies in the region.

**Condition being studied** Dengue and chikungunya are viral infections transmitted primarily by *Aedes aegypti* and *Aedes albopictus* mosquitoes. Both diseases typically present as acute febrile illness, with dengue potentially progressing to severe complications, and chikungunya often associated with prolonged joint pain. Their overlapping clinical presentation and co-circulation complicate diagnosis and surveillance, particularly in resource-limited settings.

**METHODS**

**Search strategy** ("dengue" OR "dengue virus" OR "DENV" OR "chikungunya" OR "chikungunya virus" OR "CHIKV") AND ("Aedes" OR "vector\*" OR "mosquito\*") AND (("Kenya" OR "Somalia" OR "Ethiopia" OR "East Africa" OR "Horn of Africa" OR "Western Kenya") OR ("Mombasa" OR "Nairobi" OR "Kisumu" OR "Eldoret" OR "Nyanza" OR "Mandera" OR "Garisa" OR "Coast\*" OR "Kilifi" OR "Kwale" OR "Isiolo" OR "Wajir") OR ("Addis Ababa" OR "Oromi\*" OR "Amhara" OR "Tigray" OR "Dire Dawa" OR "Somali

Region”) OR (“Mogadishu” OR “Hargeisa” OR “Kismayo” OR “Puntland” OR “Somaliland” OR “Jubaland”)) (“dengue” OR “dengue virus” OR “DENV” OR “chikungunya” OR “chikungunya virus” OR “CHIKV”)

AND (“Aedes” OR “vector\*” OR “mosquito”)

AND (

(“Kenya” OR “Somalia” OR “Ethiopia” OR “East Africa” OR “Horn of Africa”)

OR (“Mombasa” OR “Nairobi” OR “Kisumu” OR “Mandera” OR “Garisa” OR “Coast\*” OR “Kilifi” OR “Kwale” OR “Isiolo” OR “Wajir”)

OR (“Addis Ababa” OR “Oromi\*” OR “Amhara” OR “Tigray” OR “Dire Dawa” OR “Somali Region”)

OR (“Mogadishu” OR “Hargeisa” OR “Kismayo” OR “Puntland” OR “Somaliland” OR “Jubaland”)

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**Participant or population** Studies involving human populations of all age groups residing in countries within the Horn of Africa (e.g., Somalia, Ethiopia, Kenya) will be included.

**Intervention** Not applicable, as this review focuses on epidemiological outcomes rather than interventions.

**Comparator** Not applicable.

**Study designs to be included** Eligible studies will be include analytical and descriptive cross-sectional studies, seroprevalence studies, surveillance studies, and outbreak investigations reporting dengue and/or chikungunya data.

**Eligibility criteria** Inclusion Criteria :  
 Studies conducted in Kenya, Somalia, or Ethiopia.  
 Human populations and/or vector populations (e.g., *Aedes aegypti*, *Aedes albopictus*, or other *Aedes* spp.).  
 Studies reporting on dengue virus (DENV) or chikungunya virus (CHIKV) infection, detection, or serotypes.  
 Vector-related studies reporting presence, distribution, infection rates, vector competence, or prevalence of *Aedes* spp. in relation to DENV or CHIKV.  
 Data on seroprevalence, incidence, detection (PCR, RT-PCR, qPCR, virus isolation, serology), outbreaks, or molecular characterization of DENV/CHIKV.

Observational studies (cross-sectional, case-control, cohort, surveillance reports).

Studies published in English.

Exclusion Criteria:

Studies conducted outside Kenya, Somalia, or Ethiopia.

Studies not related to dengue or chikungunya (e.g., other arboviruses like Zika, Yellow fever, Rift Valley fever, unless co-infections are studied with DENV/CHIKV).

Studies on vectors not linked to dengue or chikungunya transmission.

Reviews.

**Information sources** Six databases will be selected for the systematic search: PubMed, Web of Science, Scopus, SpringerLink, Nature Portfolio, and Google Scholar.

**Main outcome(s)** Primary outcomes include prevalence, incidence, and seropositivity of dengue and chikungunya infections. Secondary outcomes include geographic distribution, outbreak occurrence, and temporal trends. Effect measures will primarily be proportions and rates.

**Data management** All identified records will be managed using reference management software. Extracted data will be stored in a structured dataset (e.g., Excel), including study characteristics, outcomes, and methodological details.

**Quality assessment / Risk of bias analysis** Methodological quality of included studies will be assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for analytical cross-sectional studies. Each study were evaluated across relevant domains, and quality scores will be calculated based on applicable items.

**Strategy of data synthesis** A descriptive synthesis will be conducted to summarize study characteristics and epidemiological findings. Where sufficient homogeneity exists, quantitative synthesis (meta-analysis) will be performed using appropriate statistical models.

**Subgroup analysis** Subgroup analyses will be conducted by country, study design, and population characteristics.

**Sensitivity analysis** Sensitivity analyses will be performed based on study quality and inclusion criteria.

**Language restriction** English.

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**Country(ies) involved** Somalia, Kenya, Ethiopia, USA.

**Keywords** Dengue; Chikungunya; Arbovirus; Horn of Africa; Epidemiology; Systematic review; Seroprevalence; Outbreak.

**Dissemination plans** Findings will be disseminated through publication in a peer-reviewed journal and presentation at relevant scientific conferences and stakeholder meetings.

**Contributions of each author**

Author 1 - Aamir Osman - Conceptualization; Methodology; Software; Validation; Formal analysis; Investigation; Visualization; Data Curation; Writing - Original Draft; Writing - Review & Editing.

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