

A systematic review of digital health models for clinical prediction, surveillance, and management of dengue

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ABSTRACT

Introduction: Digital health models are increasingly applied for the prevention, detection, and prediction of diseases including dengue infection, the leading cause of mosquito-borne viral infections worldwide. This study aimed to systematically review published literature that utilised digital health models for clinical prediction, surveillance, and management of dengue. **Methods:** A systematic review was conducted by using the PubMed, Scopus and Cochrane Library databases for published citations of primary studies evaluating different types of digital health models in surveillance, management and prediction for dengue clinical outcomes. We excluded studies with no original data related to the topic. Two reviewers independently assessed and extracted the data using a standardised template. **Results:** Our review included 24 out of 254 papers. Digital health models were applied for clinical prediction (70.8%), clinical prediction and management (12.5%), clinical prediction and surveillance (8.3%), and management and surveillance of dengue infections (4.2%), respectively. Prognostic models were used in four studies (16.7%) among critically ill patients with severe dengue, profound shock and high risk of recurrent shock and respiratory distress, with two papers reporting platelet counts as an important factor for prognostication. Other digital health models were used for early warning systems in dengue outbreaks, entomological outcomes, dengue hotspots forecast associated with variations in meteorological parameters, and vaccine efficacy prediction for dengue. **Conclusion:** The reporting of the model performance measures was limited in some of the published literature. Hence, future research should evaluate the longer impact and performance validation of the digital health models.