

## **A bibliometric analysis of trends in global dengue research from 1989 to 2018: based on Scopus**

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The World Health Organization (WHO) emphasised that dengue is one of the neglected tropical diseases, yet the spread of this disease has been increasing dramatically. The objectives of this study are to: 1) identify the bibliographic trends in spatial and temporal contexts 2) explore the trends of co-authorship among countries and 3) recognize the subject pattern of dengue related publications. The data were collected from the Scopus database between the years 1989 and 2018, when a trial access of the same was available in February 2019. The keyword “dengue” was used to extract review articles (RAs) and retrieved 976 items. Arcmap, MS Excel and VOSviewer were used to analyse and visualise the data. 85 countries have contributed RAs and the top 25 most-active countries account for 86.2% of the total. The USA, India, Brazil and the United Kingdom have the highest publication output with 19.1%, 6.4%, 6.1%, and 6.0% respectively, followed by Singapore (5.3%), China (including Taiwan) (5.2 %) and Thailand (4.5%). Temporal trends indicate that publications are significantly low in the first fifteen years, with considerable fluctuations in each year. Publications have increased in 2003 (18 RAs) and reached the peak in 2018 (117 RAs). Five clusters of co-authorship collaboration were identified, where the United States, Singapore, Thailand, China and South Korea are the largest. The co-authorship collaboration indicates that a considerable research association was held between the North and South. The study on subject patterns revealed an expansion of topics. i.e. during 1989 -2003, dengue, dengue virus, epidemiology and diagnosis have been the research areas. From 2004-2018, new topics like dengue fever and vaccine, diagnosis, *Aedes aegypti* mosquito vectors and antiviral therapy have emerged. Overall, this study reveals that dengue related publications are increasing globally, with strengthening collaborations between countries, institutions and authors.

**Keywords:** *bibliometric analysis, dengue, Scopus database, VosViewer*