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LETTER TO THE EDITOR

Bibliometric assessment of the scientific production of literature regarding Mayaro



Mayaro virus (MAYV) fever is a zoonotic arbovirus from the Togavirus family. This virus is transmitted by *Haemagogus* mosquitos in sylvatic cycles and by *Aedes* in rural, suburban, and urban cycles [1]. MAYV is endemic in the tropical rainforests of South America and was originally described in Trinidad & Tobago (1954). The virus has been reported in Venezuela, Brazil, Peru, Bolivia, Guyana, French Guyana, and Suriname [2–5]. Viral infection is associated with exposure to humid forest environments where vectors are present. The disease is very similar to dengue and is characterized by rapid onset fever, generalized aches, headache, retro-orbital pain, dizziness, generalized arthralgia, and often incapacitating joint edema. MAYV usually evolves as a non-lethal self-limited course (3–5 days). However, arthralgia may last for weeks or months [1,2,5].

The virus is reemerging in the Amazon region of Brazil, but the number of patients identified with MAYV tends to be low [6,7]. The molecular detection of MAYV in febrile patients suspected of having dengue suggests that other arboviruses may be silently circulating during dengue outbreaks in regions of South America [4]. The number of studies on MAYV has not increased substantially in the half century since its discovery.

We conducted a bibliometric analysis using available information deposited in the major biomedical and multidisciplinary journal-indexing databases to assess the current state the MAYV-related literature worldwide. We examined several databases, including the Science Citation Index (SCI), Scopus, and Medline (using GoPubMed®). Our search strategy involved collecting data on indexed articles from the databases using the term “Mayaro” as the main operator for analytical purposes.

The SCI search identified 113 articles as of June 2015 (52.21% from Brazil, 20.35% from the USA and 7.96% from Peru). The Scopus search revealed there

Table 1 The top 20 countries with scientific production on Mayaro research that is available in SCI, Scopus, and/or Medline (as of December 1, 2014).

Rank	Country	Number of articles	Database with highest number of articles
1	United States	100	Scopus
2	Brazil	94	Scopus
3	France	35	Scopus
4	Trinidad & Tobago	14	Scopus
4	United Kingdom	14	Scopus
5	Australia	12	Scopus
5	China	12	Scopus
5	Peru	12	Scopus
6	French Guiana	10	Scopus
6	Germany	10	Scopus
7	India	7	Scopus
7	Netherlands	7	Scopus
8	Germany	6	SCI
8	Canada	6	Scopus
8	Switzerland	6	Scopus
9	Argentina	5	Scopus
9	Spain	5	Scopus
9	Thailand	5	Scopus
10	Venezuela	4	SCI
10	Finland	4	Scopus

were 351 articles (28.49% from the USA, 26.78% from Brazil and 9.97% from France). The Medline search retrieved 121 articles (44.63% from Brazil, 14.05% from the USA and 4.13% from Australia) (Table 1). Our findings showed that 35.89% of the articles available in Scopus and 38.93% of articles in journals indexed at SCI were published between 2010 and 2014 (Fig. 1). Although MAYV virus was originally described in Trinidad & Tobago, only 3.99% of the articles in Scopus and 0.83% of articles in Medline are from this country (Fig. 1).

The results of this study show the USA, Brazil, and France have major roles in MAYV research (Fig. 1). The Universidade Federal do Rio de Janeiro

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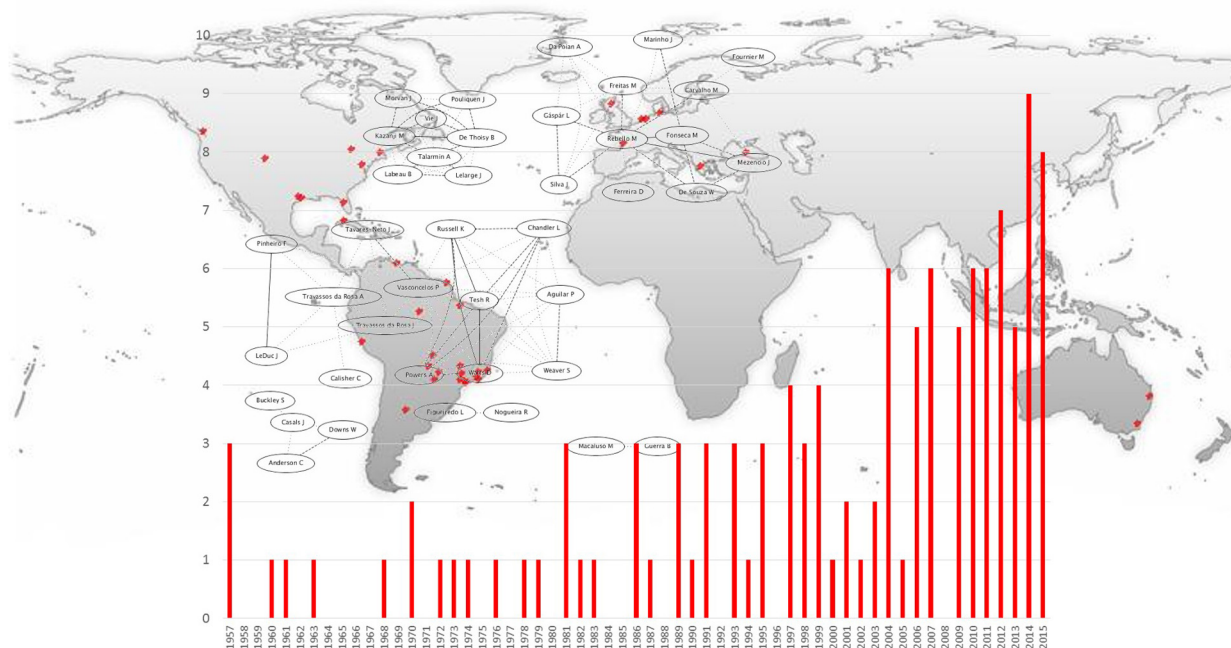


Figure 1 Major international research cooperation networks and trends in time of publications on Mayaro, 1957–2015 (from GoPubMed®).

in Brazil published 49 articles (13.9% of the published research indexed on Scopus). The next most abundant source of MAYV research was the University of Texas Medical Branch at Galveston, USA, which contributed 25 articles (7.12%). The Institute Pasteur, Paris, France contributed 9 articles (2.56%) (Fig. 1). These results are not surprising because these countries have played an important role in fostering international cooperation on MAYV research and control. The abundance of research from Brazil is not surprising because several cases and outbreaks have been reported in this country [3–7].

MAYV infection is considered to be neglected by some authors. The disease affects people living in rural areas in tropical countries sharing the Amazon basin because it is transmitted by enzootic and sylvatic cycles (Brazil, Venezuela, Peru, among others) [1–7]. However, global scientific collaboration networks (Fig. 1) clearly demonstrate that there is research being conducted in the countries where MAYV is present [3,4,6,7].

One of the most important issues associated with MAYV infection is the concurrent infection with dengue virus. The concurrent MAYV infection was recently noted during dengue outbreaks [4]. Thus, concurrent infection with both viruses is possible. One critical issue that must be addressed is whether MAYV infection contributes to additional clinical problems in patients with dengue or other arbovirus, such as chikungunya or zika. These

infections are already circulating in South America and Brazil [3,8–11]. Brazil is leading the worldwide investigation on MAYV infection. However, additional studies are needed to address many issues associated with this neglected disease.

A bibliometric assessment of important infectious diseases in public health can assist in correlating the needs for research in certain areas such as MAYV and provides an accurate overview of scientific output over time [12–14].

It is now time to translate the research findings generated over the past several decades into effective and preventive strategies aimed at controlling tropical viruses with epidemic potential. Additionally, we must prioritize major interventions directed at reducing and controlling the negative impacts of viral diseases, such as Mayaro and other arboviruses, including dengue, chikungunya, and zika, that are also circulating in the Americas [5,8,9,11].

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Conflicts of interest

The authors have no conflict of interest to disclose.

Ethical approval

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