What has been researched about monkeypox? a bibliometric analysis of an old zoonotic virus causing global concern

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Monkeypox has recently emerged as a cause of global concern, particularly in Europe, even leading to the World Health Organization (WHO) to hold an emergency meeting on May 20, 2022, to discuss the recent outbreak and its implications [1]. Monkeypox is a DNA orthopoxvirus endemic in Africa [2]. That is a zoonotic virus, primarily transmitted from animals, especially from some rodent species, usually leading to mild self-limited infections manifesting with fever and rash. The list of countries affected by this poxvirus is growing, most of them in Western Europe but even in Latin America, with Argentina reporting suspected cases. But, a question around this zoonosis is how much has been researched and published internationally about it.

A bibliometric analysis was done, using available information retrievable in 4 bibliographical databases to assess the status of monkeypox-related literature worldwide. PubMed, Scopus, CrossRef, and Google Scholar, using the application Publish or Perish® v.8, were examined, using the term "monkeypox" at the article title as the primary search operator, up to December 31, 2021.

Only 439 monkeypox related articles were indexed in Scopus, 425 in PubMed, and 454 in CrossRef up to December 31, 2021. The median of articles from 1964-to 2021 was 4, 3, and 2, respectively. Since 1964, the most critical year for change in the number of articles was 2003 (Figure 1), with the US Outbreak. From 2003 to 2021, the median of articles increased to 16, 16, and 19, respectively. Nevertheless, the highest number of articles on monkeypox was 2020 at CrossRef with 37 (Figure 1). The top countries with more publications are the USA (253), Switzerland (34), and Congo (27) (Figure 1), corresponding to institutions such as the US CDC (107), the WHO (40), the US Army Medical Research Institute of Infectious Diseases (36), the NIAID among others (Figure 1).

At Scopus and CrossRef, the H-index of the topic is relatively low, with a value of 56 and 53, respectively (Figure 1). The highest cited article has 387 citations so far, at Scopus and CrossRef, the description of the 2003 US Outbreak, compromising 11 cases of confirmed monkeypox infection [3]. This article has been cited in 198 articles indexed in PubMed. A piece to be revisited during the ongoing 2022 multicountry outbreak. Just between January 1st and June 15, 2022, 93 articles are available now in PubMed; double than in 2003 (50), the year with highest number of article before 2022.

As far as we are concerned about monkeypox as a threat, we also can realize now, with the current findings, that still there is a lack of the research on this emerging zoonotic virus, even compared to other emerging pathogens (e.g. SARS-CoV-2, Zika, chikungunya) [4–6]. For example, for chikungunya, up to 2014, there were 5.8 times more articles in Scopus (2579) than for monkeypox up to 2021 [6]. An issue noticed is that half of the publications came out during the last 14 years (after 2008), which can be explained partly by the fact that before, most cases occurred only in African countries [7,8]. This bibliometric assessment indicates the need for more research on this reemerging virus, which is currently expected due to the ongoing outbreak.

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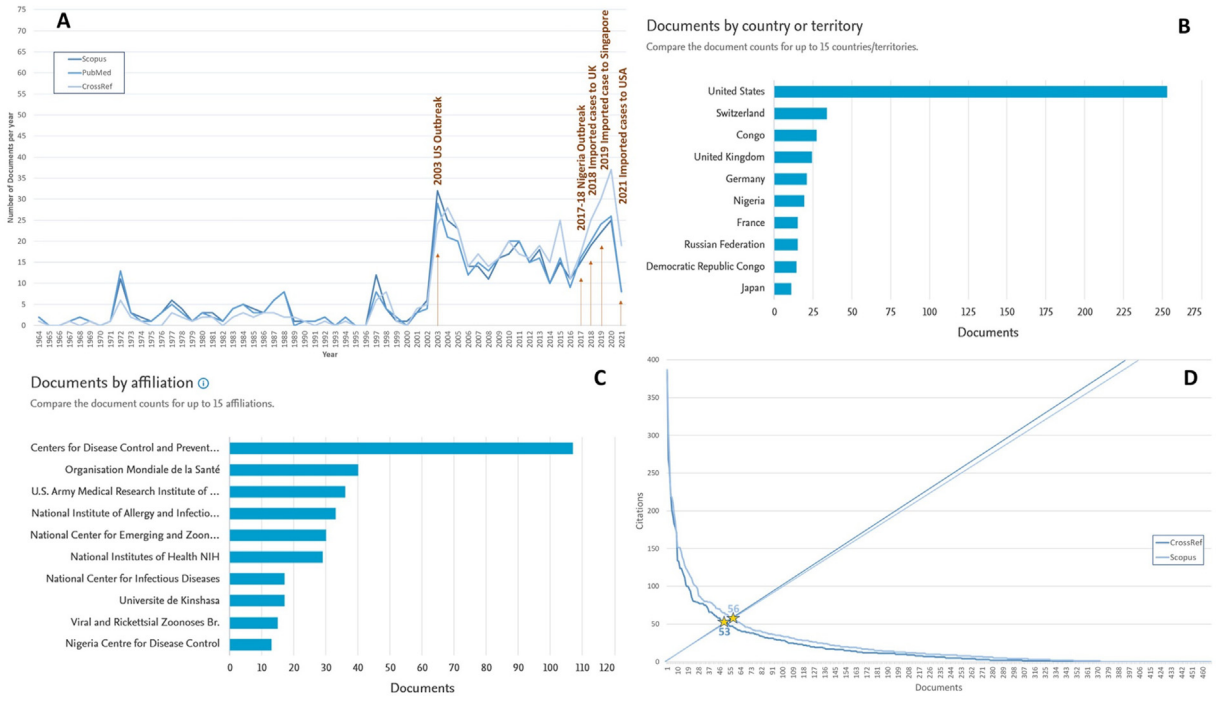


FIG. 1. Research trends by year (A), geographical origin (B), institutions (C), and H index (D), on Monkeypox, from 1964 to 2021, at Scopus, PubMed, and CrossRef.

Conflicts of interest

A. J. Rodriguez-Morales, reports being a medical advisor of Abbott Diagnostics, Amgen, Roche, and Takeda for Latin America, outside the submitted work. The rest of the authors declare no conflict of interest.

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