

Trends during 20 years of Cuban scientific production on infectious diseases

Tendencias de la producción científica cubana sobre enfermedades infecciosas en los últimos 20 años

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ABSTRACT

Introduction: the international epidemiological scenario is characterized by the circulation of several infectious diseases. In this context, bibliometrics is constituted as a modern tool to evaluate the updating and reliability of information, as well as the behavior of science in the most diverse branches of knowledge.

Objective: to characterize the behavior of Cuban scientific production on infectious diseases in Scopus.

Method: an observational and descriptive bibliometric study was carried out, using the data provided by Scimago Journal & Country Rank. A search was made of the data offered by this platform on publications on infectious diseases carried out in Cuba from 2001 to 2020.

Results: a total of 1 342 documents were published for an average of 67,1 documents per year. The growth rate in this period was 178,9 % with an average annual rate of 8,9 %. A total of 20 383 citations were made in the period for an average number of citations of 1 019,1 citations per year. The total number of self-citations was 3,700, where 2006 (362) and 2007 (358) were the years with the highest number.

Conclusions: Cuban scientific production on infectious diseases has a marked upward trend, however, it is necessary to increase scientific training in these areas to improve quality and impact; and thus increase the number of citations. Self-citations maintain higher values than those found in other thematic areas and a tendency to decrease.

Keywords: Communicable Diseases; Bibliometrics; Cuba.

RESUMEN

Introducción: el escenario epidemiológico internacional se caracteriza por la circulación de varias enfermedades infecciosas. En este contexto, la bibliometría se constituye como una herramienta moderna para evaluar la actualización y confiabilidad de la información, así como el comportamiento de la ciencia en las más diversas ramas del conocimiento.

Objetivo: caracterizar el comportamiento de la producción científica cubana sobre enfermedades infecciosas en Scopus.

Método: se realizó un estudio bibliométrico observacional y descriptivo, mediante los datos que ofrece Scimago Journal & Country Rank. Se realizó una búsqueda de los datos que ofrece esta plataforma sobre las publicaciones sobre enfermedades infecciosas realizadas en Cuba desde 2001 hasta 2020.

Resultados: se publicaron un total de 1 342 documentos para un promedio de 67,1 documentos por año. La tasa de crecimiento en este período fue de 178,9 % con una tasa promedio anual de 8,9 %. Se realizaron un total de 20 383 citas en el período para un promedio de citas de 1 019,1 citas por año. El número total de autocitas fue de 3 700, donde 2006 (362) y 2007 (358) fueron los años con mayor número.

Conclusiones: la producción científica cubana sobre enfermedades infecciosas tiene una marcada tendencia al alza, sin embargo, es necesario incrementar la formación científica en estas áreas para mejorar la calidad y el impacto; y así aumentar el número de citas. Las autocitas mantienen valores superiores a los encontrados en otras áreas temáticas y una tendencia a la disminución.

Palabras clave: Enfermedades Transmisibles; Bibliometría; Cuba.

INTRODUCTION

The international epidemiological scene is characterized by the co-circulation of several infectious diseases. The coexistence of emerging and reemerging diseases with neglected tropical diseases poses a greater challenge for health systems.⁽¹⁾

In Cuba during the years 2018, 2019 and 2020, 1 084, 1 091 and 1 110 deaths were reported respectively caused by infectious diseases. In the province of Havana, a total of 355 deaths from this cause were reported during 2020. Infections remained the fifth direct cause of maternal death during 2019 and 2020 and as the third indirect cause in 2018, 2019 and 2020. In 2020, 2 550 914 secondary medical attention to respiratory infections and 164 478 secondary ones were carried out in Cuba to acute diarrheal diseases.⁽²⁾

Scientific research is a mechanism to study and improve the health of populations, and curb the increase in the burden of infectious diseases through the principles of evidence-based medicine, the development of public policies and the allocation of national and international funds.⁽³⁾

Bibliometric studies are a means of evaluating scientific production. The realization of this research has gained importance in recent times due to its predictive value for the editorial teams of journals, scientific societies and academic groups when assessing their status, trends and the identification of demanding changes.

In this context, bibliometrics needs to use modern technologies and tools that offer updated and reliable information about the behavior of science in the most diverse branches of knowledge. One such tool is the Scimago Journal and Country Rank (SJCR). The coverage of journals indexed from the Ibero-American area in SJR has increased as a result of the process of scaling of journals towards higher impact indexes. It is worth highlighting the incidence of Scopus in Scimago where more than 22 600 journals are hosted according to the Elsevier R & D Solutions website itself.⁽⁴⁾

At present there are very few registries of bibliometric studies that include Cuban scientific production on infectious diseases in Scopus. For this reason, the objective of this study is to characterize the behavior of Cuban scientific production on infectious diseases in Scopus.

METHOD

An observational, descriptive and bibliometric study was carried out using the data provided by Scimago Journal & Country Rank (SJCR) (<https://www.scimagojr.com/>).

SJCR is an open access platform that contains metrics obtained through the metadata generated by journals indexed in Scopus. SJCR allows searches using various filters, including subject area, country, region, institution, open access, presence in SciELO and on the Web of Science. In addition, it allows analyzing the quartile in which it is located (position that the journal occupies depending on its SJR within the subject area), H index and other metric indicators.⁽⁵⁾

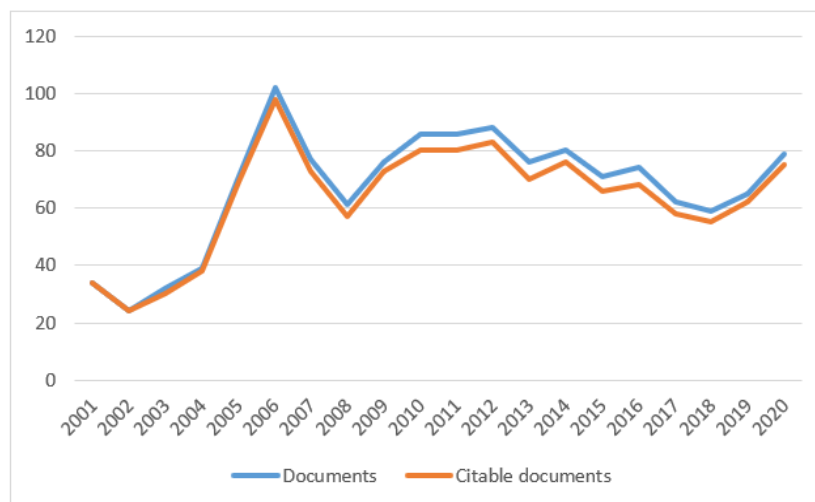
A search was carried out on the data offered by this platform on the publications, from the “Medicine” area, “Latin America” region and “Infectious Diseases” category, carried out in Cuba from 2001 to 2020. The variables were used: published documents, citable documents (number of citable documents published during the year: articles, reviews and conferences), citations and self-citations (number of self-citations of all dates received by documents published during the year).

Descriptive statistics were used, the data were stored in a database prepared for this purpose, for which the statistical software IBM SPSS version 23 was used.

RESULTS

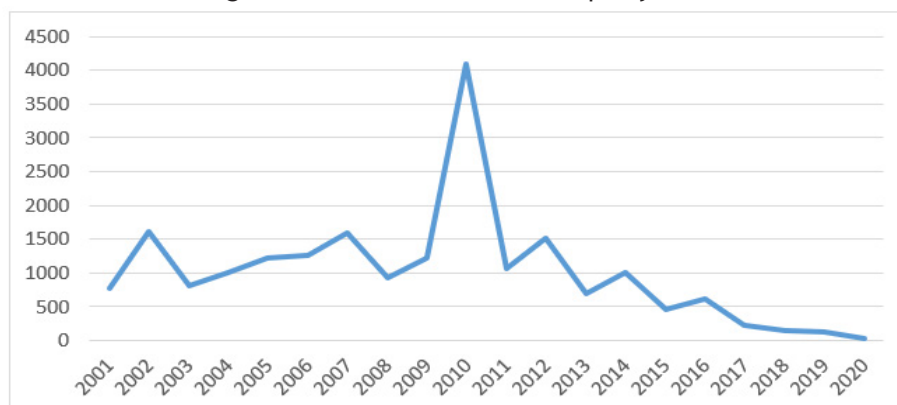
In the period studied, a total of 1 342 documents were published for an average of 67,1 documents per year. The year in which the highest number of documents were published was 2006 (102) and the year with the least number of documents was 2002 (24). The growth rate in this period was 178,9 % with an average annual rate of 8,9 %. Of the documents published, 1 269 were citable documents, which represents 94,6 % of the total documents (figure 1).

Figure 1. Distribution of Cuban scientific production about infectious diseases in Scopus by year



A total of 20 383 cites were made in the period for an average of cites of 1019,1 cites per year. The year in which the highest number of cites were made was 2010 (4 084) while 2020 (30) was the one with the fewest (figure 2).

Figure 2. Distribution of cites per year



The total number of self-citations was 3 700, the years 2006 (362) and 2007 (358) were the years with the highest number. As of 2014, a continuous decrease in the number of self-citations was identified (figure 3).

Figure 3. Distribution of self-citations by year



DISCUSSION

Bibliometric methods have been used to analyse publication output and impact for specific disease areas, to quantify the volume of research output and compare the contributions from different institutions, countries and regions. These methods can also be used to map research collaboration at the national, regional and international level and to compare its potential impact. The methods are based on mathematical and statistical techniques and therefore can provide a quantitative assessment of research performance.⁽⁷⁾

In the period studied, a total of 1,342 scientific papers were published, a result similar to that found by Malik et al.⁽⁷⁾ with 1274 documents published from Pakistan (2000-2020) extracted from Web of Science with 100 sources (38,3 % of total sources), and identified a continuous growth in the number of published documents.

Ramos et al.⁽⁸⁾ found that Spanish production increased throughout the study period (2000-2013), both in Infectious Diseases and in Microbiology, going from 325 and 619 documents in 2000 to 756 and 1 245 documents in 2013, with a rate growth of 131 and 45,8 %, respectively. In the present investigation, an important growth was also identified in that period, higher growth rates were observed.

Falagas et al.⁽⁹⁾ found that between 1995 and 2003 in Latin America 3 111 articles were published in Pub Med. This result, when compared with what was identified by our study, is encouraging considering that in part of that period the lowest level values were recorded in terms of quantity of articles published and subsequently there was a significant increase.

Corona Martínez et al.⁽¹⁰⁾ explain that improving the production of publications, in quantity and quality, has as a sine qua non requirement the training and development of professional skills in the area of scientific research. It cannot be published if it has not been properly researched. Publication is the last step in scientific research, so it is no stranger to it. In other words, an investigation is published. If it is not rigorously investigated, it can hardly be published. Therefore, for a specific individual, the chances of acceptance of a scientific article by any journal are directly proportional to the degree of development of his competencies in the field of scientific research.

The citable documents showed a predominance, a result that coincides with Gonzalez-Argote⁽¹¹⁾ in his study on Latin American scientific production on digital medical history. He states that this data represents

a strength because he assumes that they are publications related to the results of relevant scientific research that, generally, provide new knowledge and have a greater impact.

Regarding the citations, Fornaris-Cedeño et al.⁽¹²⁾ found that 2009 was the year with the highest number of citations in Cuban scientific production on neuroscience and neurology. These results are shown with certain temporal proximity to those obtained by the present study.

Journal papers report research work. These papers refer to or 'cite' earlier relevant work and the new papers will be cited later, in their turn. The more citations a paper accumulates the more it is considered having 'impact'. Therefore, citation counts are recognised as a measure of impact, and can be seen as an indicator of the strength of the innovative research from a group, an institution, a country or a region. Most impact indicators do not use simple counts of citations; they use average (normalised) citation counts for defined groups of papers, as individual papers may have varying or unusual citation profiles. Citation rates differ across subject areas and over time. For example, citations in biological sciences occur more rapidly and plateau at a higher level than citations in physical sciences or mathematics, and citation rates are generally higher for natural sciences than for social sciences. In addition, older papers have more time to accumulate citations than more recent ones.⁽⁶⁾

Regarding self-citations, values higher than those identified by Fornaris-Cedeño et al.⁽¹²⁾ in said study, a total of 373 self-citations were identified. On this subject Salvador-Oliván et al.⁽¹³⁾ comment that there are times when self-citation is justified, but other times an excessively high rate of self-citation is detected or they are unjustified, as they are not related to previous works. Authors' self-citations provide valuable information about the scientific communication process, but if you want to evaluate the impact of a work and / or author, external citations are more relevant, since they reflect the impact on the scientific community.

Mishra and col.⁽¹⁴⁾ comments that opportunity is a major factor driving self-citation. An author cannot legitimately self-cite without having produced work to cite; and a paper on a novel topic will have fewer papers to reference. The choice among citable papers is bounded. Thus, the more self-authored papers one has available, the more opportunity one has for self-citation. When a paper has few references, each is more likely to be a self-citation compared to those with normal or a high number of references. Second, self-citation is the hallmark of highly productive authors, of any gender, who cite their novel journal publications early in similar venues. As a result, papers by authors with short, disrupted, or diverse careers lack the initial boost in visibility gained from self-citations.

Among the limitations of the study, it's worth mentioning the absence of bibliometric indicators and indices as the impact factors. It should be noted that the SCImago Journal Rank and the H index were not studied as part of the analysis.

CONCLUSIONS

Cuban scientific production on infectious diseases has a marked upward trend, however it is necessary to increase scientific training in these areas in order to improve quality and impact and thus increase the number of citations. Self-citations maintain values higher than those found in other subject areas and a tendency to decrease.

DECLARATION OF AUTHORSHIP

CESF: conceptualization; data curation; formal analysis; research; methodology; project management; writing - original draft

EZF: supervision; means; formal analysis; conceptualization

EHR: supervision; means; formal analysis; conceptualization; data curation

DECLARATION OF CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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