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Brief Report

Bibliometric profile and collaborative networks in scientific research on systemic lupus erythematosus in Latin America, 1982–2018[☆]



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ABSTRACT

Objective: To analyse the scientific production and collaboration networks on publications in systemic lupus erythematosus in Latin America.

Materials and methods: Bibliometric study between 1982 and 2018 of journals indexed in Scopus. Data were analysed by annual production and a co-occurrence analysis of the collaboration between countries with VOSviewer was plotted.

Results: 3843 related documents on systemic lupus erythematosus were recorded between 1982 and 2018 in Scopus. An increasing trend was observed, with a significant increase in the last 20 years, the original articles being the highest percentage (75.4%). Eleven Latin American countries were identified in collaboration with 29 extra-regional countries, with Brazil, Mexico and Argentina having the highest production and scientific collaboration, mainly with the United States and Spain.

Conclusion: In Latin America, there is a sustained increase in research on systemic lupus erythematosus. Brazil and Mexico generated more than half the publications and are the main collaboration network together with Argentina.

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Perfil bibliométrico y redes de colaboración en investigación científica sobre lupus eritematoso sistémico en Latinoamérica, 1982-2018

RESUMEN

Objetivo: Analizar la producción científica y redes de colaboración a partir de las publicaciones sobre lupus eritematoso sistémico en Latinoamérica.

Materiales y métodos: Estudio bibliométrico de revistas publicadas entre los años 1982 y 2018 e indizadas en Scopus. Se analizaron datos por producción anual y se representó gráficamente, mediante VOSviewer, un análisis de coocurrencia de la colaboración entre países.

Resultados: Se registraron 3.843 documentos sobre lupus eritematoso sistémico entre 1982 y 2018 en Scopus. Se observó una tendencia en aumento, con un incremento significativo en los últimos 20 años, siendo los artículos originales los de mayor porcentaje (75,4%). Se identificaron 11 países latinoamericanos en colaboración con 29 países extrarregionales, siendo Brasil, México y Argentina quienes tuvieron la mayor producción y colaboración científica, principalmente con Estados Unidos y España.

Conclusión: En Latinoamérica existe un incremento sostenido en investigación sobre lupus eritematoso sistémico. Brasil y México generaron más de la mitad de las publicaciones y son la principal red de colaboración junto con Argentina.

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Palabras clave:

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Introduction

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease that affects multiple organs and is clinically and serologically heterogeneous. Worldwide its reported incidence stands at from 1 to 31.9/100,000 per year, at it is more common in mixed race populations.¹

In spite of the advances made in diagnosis and treatment, its corresponding rates of morbimortality are still high. It mainly affects developing countries such as those in Latin America (LA), due to their socioeconomic and genetic characteristics, as these play a major role in the disease and lead to unfavourable outcomes.²

Given the problematic nature of SLE, it is important not only to analyse the trends in scientific production, but also to examine international collaboration with other countries. This is particularly so for this disease, as it requires a multidisciplinary approach as well as access to more specialised technology, with the participation of experienced authors in this field. The benefits of this will arise in terms of citation and impact, as well as better control of the disease.³

Bibliometric study identifies publishing tendencies in common fields of research, allowing researchers to improve the alignment of their investigative consultations to areas where evidence is lacking and to recognise the scientific production of each country and the collaboration it involves. However, there may be little research into this disease in LA, as Brazil and México are the only countries in the region which frequently produce material on this health problem.⁴

Due to the above considerations and given the incidence and resulting outcomes of the disease in LA populations, it would be relevant to analyse the trends in scientific production on this subject, using bibliometric analysis and studying collaboration.

Materials and methods

Documents published in journals indexed in Scopus from 1982 to 2018 were analysed bibliometrically. Given the history and start of diagnostic criteria in 1982, this year was considered to be the key point to commence searching the literature on SLE.⁵

Source of information

Scopus (Elsevier, the Netherlands) was selected, as it is considered to be the main multidisciplinary bibliographical database in the world. This is so not only in terms of quality, as it also has a broader coverage of citations and journals, including 100% of those which are indexed in Medline. It also records the affiliations of all authors, which is fundamental for analysis of collaborative networks.⁶

Search strategy

The search strategy included different entries, based on medical subject headings (MeSH) for “*lupus erythematosus, systemic*” and LA countries (Appendix A, additional material 1). Scopus was searched in July 2019, restricted only to the type of sources in journals, i.e.: original papers (defined as papers with the following structure: abstract, introduction, methods, results and discussion; or an equivalent structure) and other types of documents (reviews, letters, conference documents, notes, editorials, short surveys and errata). Congress minutes were excluded, as were books, series of books and commercial publications.

Analysis

Search data were imported into Microsoft Excel 2019 (Microsoft Corp, United States), and bibliometric indicators were shown for

annual production and type of scientific publication. Statistical analysis was applied using the Student t-test to determine the significance of annual production. A visualisation map was shown using version 1.6.0 of VOSviewer (Leiden University, the Netherlands) to develop concurrence analysis of collaboration between countries. Interpretation of the graph is based on the size of the circle, the thickness of connecting lines and the distance between terms (countries or key words). The size of the circle is the scale of the total number of occurrences or productivity, and its colour will depend on groups based on the coincidence of terms; the thickness of connecting lines indicates the strength of links numerically, while proximity suggests stronger collaboration.⁷

Ethical considerations

Data were downloaded from available research publications, so that no ethical approval was needed.

Results

Our final search resulted in 3843 documents from 1982 to 2018 (Appendix A, additional material 2) about SLE in LA. An increasing tendency was found, with higher production in the year 2018 (267 documents). The annual average amounted to 35.4 documents per year, with an annual growth rate of 11%. In the last 20 years there was a significant increase in average scientific production in comparison with 1982–1998 (168.7 vs 35.4; $P < .005$). The greatest number of publications were original papers ($n = 2899$; 75.4%) and review papers ($n = 523$; 13.6%), while the smallest number produced corresponded to letters ($n = 206$; 5.3%) and other types of document ($n = 215$; 5.5%) (Fig. 1).

In the last 37 years 40 countries with at least 10 published documents were registered in Scopus, where 11 Latin American countries were recorded as having collaborated with 29 countries outside the region. The countries with the highest production (shown as percentages) and scientific collaboration (with more than 35 countries) were: Brazil (43.1%), México (29.4%), Argentina (10.8%), Colombia (9.8%) and Chile (4.1%), in collaboration mainly with the United States, Spain, the United Kingdom and France; while the countries with the least scientific collaboration (with fewer than 12 countries) were: Cuba (1.2%) and Uruguay (0.7%) (Fig. 2).

Discussion

At LA level, research into SLE in the last 5 years has increased considerably in comparison with previous years.⁴ This is associated with the complexity of the disease and the opening up of new fields of knowledge, such as translational or epigenetic research.⁸

Brazil and México were the countries where production and scientific collaboration were highest. This result is probably not a coincidence and may be explained in different ways. Firstly, both countries have the highest amount of scientific production in different fields within LA, principally in Medicine⁹ and Public Health.¹⁰ Secondly, both countries have their own SLE guidelines, prepared by the academic – scientific institutions such as the Brazilian Society of Rheumatology¹¹ and the Mexican College of Rheumatology.¹² Thirdly, SLE is a major problem in Brazil, where mortality trends have not improved consistently; this may be one of the reasons that would drive the need for research in this field. Fourthly, in the case of México, ethnic differences are known to be important in the pathogenesis and complications associated with SLE, and México is a multiethnic country,¹³ which would also be a reason for the special interest in researching this subject. Fifthly, it is probable that there is a connection with the sociodemographic data of these countries, as both of them have the highest total popu-

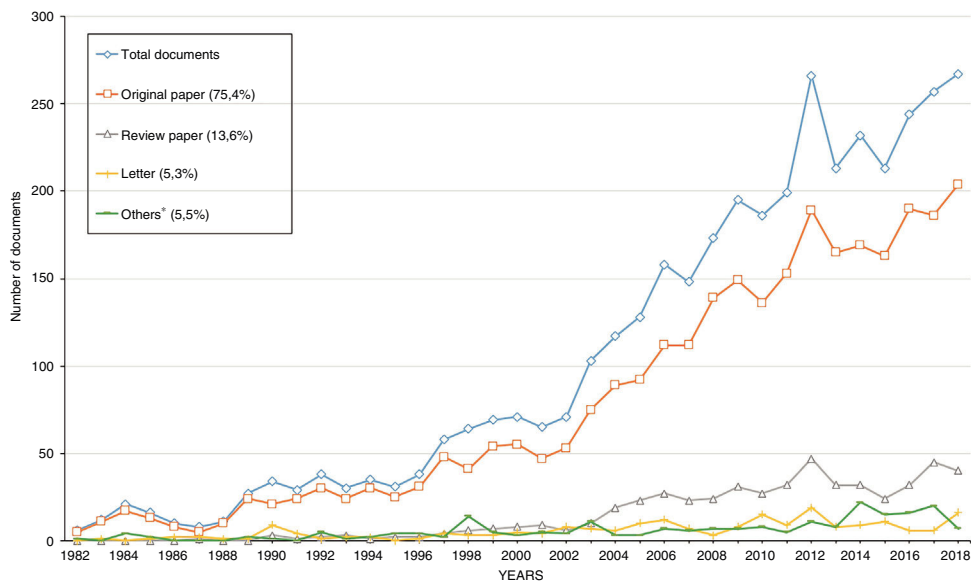


Fig. 1. Overall scientific production tendency in Latin American countries with publications on systemic lupus erythematosus, 1982–2018. * Others: documents from congresses, notes, editorials, short surveys and errata.

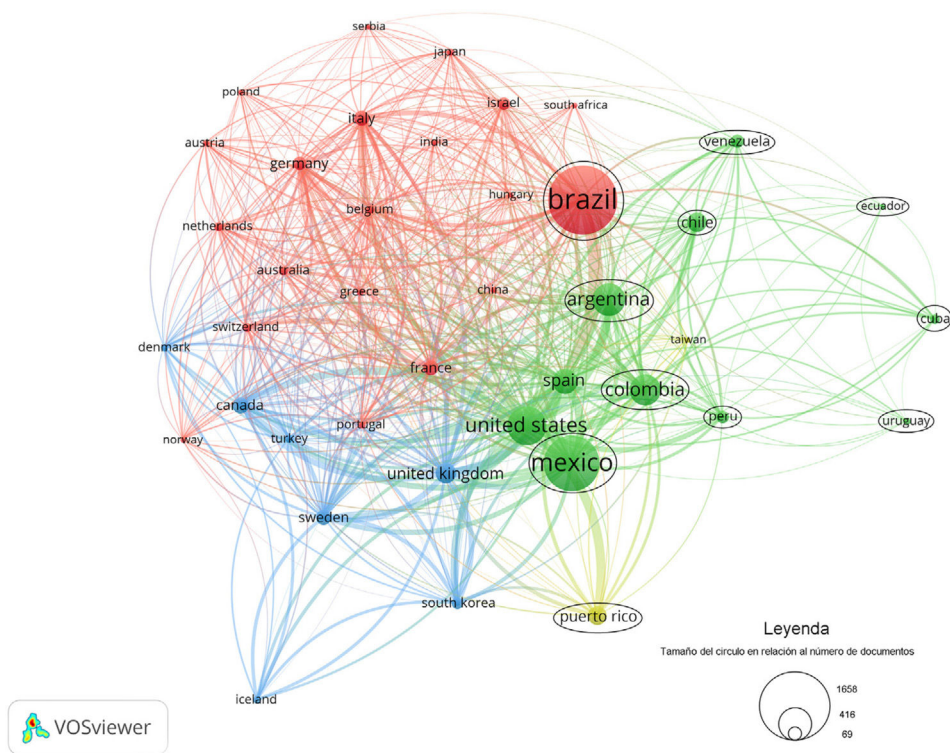


Fig. 2. Latin American countries that had collaborated with foreign countries in the publication of papers on systemic lupus erythematosus. Analysis was weighted according to the number of documents, and 40 countries were included.

lations, the highest GDP and the highest percentage of GDP devoted to research and development in LA.¹⁴

On the other hand, it has to be said that the publication of original papers largely contributes to the generation of new knowledge,³ so that their publication in high impact journals would make them more visible and increase the number of citations (CiteScore & Scimago Journal Ranking). Likewise, obtaining financial support and scientific collaboration make it possible to share resources, skills and experience in interventions, achieving better results than would have been the case working individually. This could explain the good scientific performance of Brazil, México and Argentina

in comparison with other LA countries,¹⁵ and their collaboration, mainly with the United States and Spain, both of which have specialised rheumatic disease centres and a good number of scientific publications about SLE.⁴

Some limitations should be mentioned. First, we do not include studies indexed in databases other than Scopus, which may lead to an underestimate of the actual total number of publications. Nevertheless, the Scopus database has greater advantages in terms of precision, citations and summaries of peer-reviewed literature in comparison with other databases.⁶ Second, there may be studies by Latin American authors that have not included their filiation in

a LA institution, so that probably they have not been included in this analysis.

Conclusions

This paper offers interesting information on the scientific production on SLE in LA, and it finds a growing tendency. Brazil and México generated more than half of the publications in question, and they are the main sources of collaboration with Argentina. However, it is necessary to strengthen the collaborative capacity of other LA countries.

Conflict of interest

The authors have no conflict of interests to declare.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.reumae.2020.01.004](https://doi.org/10.1016/j.reumae.2020.01.004).

References

1. Stojan G, Petri M. Epidemiology of systemic lupus erythematosus: an update. *Curr Opin Rheumatol*. 2018;30:144–50. <http://dx.doi.org/10.1097/BOR.0000000000000480>.
2. Yelin E, Yazdany J, Trupin L. Relationship between poverty and mortality in systemic lupus erythematosus. *Arthritis Care Res*. 2018;70:1101–6. <http://dx.doi.org/10.1002/acr.23428>.
3. Katz JS, Martin BR. What is research collaboration? *Res Policy*. 1997;26:1–18. [http://dx.doi.org/10.1016/S0048-7333\(96\)00917-1](http://dx.doi.org/10.1016/S0048-7333(96)00917-1).
4. Li BZ, Pan HF, Ye DQ. A bibliometric study of literature on SLE research in PubMed (2002–2011). *Lupus*. 2013;22:772–7. <http://dx.doi.org/10.1177/0961203313491850>.
5. Low ESH, Krishnaswamy G, Thumboo J. Comparing the 1997 update of the 1982 American College of Rheumatology (ACR-97) and the 2012 Systemic Lupus International Collaborating Clinics (SLICC-12) criteria for systemic lupus erythematosus (SLE) classification: which enables earlier classification of SLE in an urban Asian population? *Lupus*. 2019;28:11–8. <http://dx.doi.org/10.1177/0961203318811599>.
6. Falagas ME, Pitsouni EI, Malietzis GA, Pappas G. Comparison of PubMed, Scopus Web of Science, and Google Scholar: strengths and weaknesses. *FASEB J*. 2008;22:338–42. <http://dx.doi.org/10.1096/fj.07-9492LSF>.
7. Van Eck NJ, Waltman L. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*. 2010;84:523–38. <http://dx.doi.org/10.1007/s11192-009-0146-3>.
8. Foma AM, Aslani S, Karami J, Jamshidi A, Mahmoudi M. Epigenetic involvement in etiopathogenesis and implications in treatment of systemic lupus erythematosus. *Inflamm Res*. 2017;66:1057–73. <http://dx.doi.org/10.1007/s00011-017-1082-y>.
9. Santa S, Solana VH. Scientific production in Latin America and the Caribbean: an approach using the data from Scopus, 1996–2007. *Rev Interam Bibliotecol*. 2010;33:379–400.
10. Zacca-González G, Chinchilla-Rodríguez Z, Vargas-Quesada B, de Moya-Anegón F. Bibliometric analysis of regional Latin America's scientific output in Public Health through SCImago Journal & Country Rank. *BMC Public Health*. 2014;14:624. <http://dx.doi.org/10.1186/1471-2458-14-632>.
11. Klumb EM, Silva CAA, Lanna CCD, Sato EI, Borba EF, Brenol JCT, et al. Consenso da Sociedade Brasileira de Reumatologia para o diagnóstico, manejo e tratamento da nefrite lúpica. *Rev Bras Reumatol*. 2015;55:1–21. <http://dx.doi.org/10.1016/j.rbr.2014.09.008>.
12. Xibillé-Friedmann D, Pérez-Rodríguez M, Carrillo-Vázquez S, Álvarez-Hernández E, Aceves FJ, Ocampo-Torres MC, et al. Clinical practice guidelines for the treatment of systemic lupus erythematosus by the Mexican College of Rheumatology. *Reumatol Clin*. 2019;15:3–20. <http://dx.doi.org/10.1016/j.reumae.2018.03.003>.
13. Álvarez-Sandoval BA, Manzanilla LR, González-Ruiz M, Malgosa A, Montiel R. Genetic evidence supports the multiethnic character of Teopanaczo, a Neighborhood Center of Teotihuacan, Mexico (AD 200–600). *PLOS ONE*. 2015;10:e0132371. <http://dx.doi.org/10.1371/journal.pone.0132371>.
14. The World Bank. Research and development expenditure (% of GDP). Washington: The World Bank Group; 2019. Available from: https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?most_recent_value_desc=true [accessed 20 October 2019].
15. Ciocca DR, Delgado G. The reality of scientific research in Latin America: an insider's perspective. *Cell Stress Chaperones*. 2017;22:847–52. <http://dx.doi.org/10.1007/s12192-017-0815-8>.