In Reply to the Letter to the Editor Regarding "Neurosurgery Research Productivity in Latin American and Caribbean Countries: A Bibliometric and Visualized Study"

Through you, we thank Marín-Castañeda et al for your interest in our scientific research article published in this journal under the title "Neurosurgery Research Productivity in Latin American and Caribbean Countries: A Bibliometric and Visualized Study".[1] Likewise, we would like to take the opportunity to resolve the comments sent by the readers, saying that our article has methodological limitations and biased results.

1. According to the readers our results underestimate the scientific production on neurosurgery in Latin America and the Caribbean (LAC). As an argument, the readers have described 3 bibliometric studies that evaluated Latin American scientific production on specific topics related to the field of neurosurgery (spine surgery, and functional and stereotaxic neurosurgery).[2-4] However, it should be noted that these studies used bibliographic databases such as Scopus and Medline and did not consider the Web of Science (WOS), which was the bibliographic data source in our study. Each bibliographic database has particular characteristics in terms of the number of indexed journals, languages of the publications, coverage and coverage period, among others.[5] These differences lead to discrepancies in the collection of indexed literature between the Scopus, Medline, and WOS bibliographic databases, which translates into a dissimilar number of publications between the bibliometric studies. In addition, this problem was identified as a limitation of our study as follows: "Regarding the limitations of this study, it should be noted that this study was carried out in a single database (WOS), which does not include the production of other databases such as LILACS, Medline, or Scopus". Therefore, the comparison made by the readers regarding the number of publications is not adequate and it should be considered that the studies cited used databases other than that used in our study.

2. In relation to the search strategy used in our study, the readers state that there is a lack of specific terms related to neurosurgical disorders and procedures, which would generate unrepresentative results. In addition, the readers cite a bibliometric study, which used 49 keywords in their search strategy,[6] unlike our study (3 keywords). In this regard, it should be noted that the objective of the study cited by the readers was focused on analyzing the scientific production on specific topics in the field of neurosurgery (stereotactic and functional neurosurgery), in contrast to our study which focused on the most common topics in this field. This approach has been used in 2 bibliometric studies on neurosurgery. The first study was published in WORLD NEUROSURGERY journal under the title "A Bibliometric Analysis of Neurosurgery Research Productivity in Arab Countries Between 2005 and 2019", in which the authors used a single term (neurosurgery) to build their search strategy,[7] while the second recently published study used a search strategy composed of 2 general terms on neurosurgery (neurosurgery OR "neurological surgery").[8] It should be noted that the objective of both studies was similar to ours and are delimited to a specific region (Arab countries and Southeast Asia).[7,8] In this sense, the absence of specific terms is based on the objective of our study, in which we seek to analyze the scientific production on neurosurgery in a specific region such as LAC, and we do not focus on specific topics as stated by the readers.

3. Regarding the database used in our study, the readers state that the best database for bibliometric analysis is Scopus due to its coverage. We would like to point out that the choice of the WOS database was based on what was described by Donthu et al, who observed that Scopus and the WOS offer a high quality and quantity of indexed literature, and therefore, recommended its use for bibliometric analyses.[9] Likewise, since the previously mentioned databases have their own bibliometric data format, they recommend using a database (Scopus or WOS) to avoid inappropriate combination of data, possible human errors and a lack of standardization of the data.[9] We should also mention that the WOS is a bibliographic database which covers articles published since 1900 and a total of 170 million records (https://clarivate.com/webofsciencegroup/) and is therefore widely used in bibliometric studies. To limit its use, we performed a PubMed search and obtained more than 4000 records related to bibliometric studies that have used the WOS as a bibliographic data source (**Table 1**). Within these articles, we identified bibliometric studies published in WORLD NEUROSURGERY that only included the WOS as the database.[10-12] Therefore, the choice of the WOS database is based on its literature coverage and its wide use in bibliometric studies of various thematic fields.

4. The readers state that the search carried out in our study was delimited to a specific period of time (2006–2021), and that this delimitation generated the exclusion of Latin American authors and studies that were published before this period. We must point out that our search did not have time restrictions, as can be seen in Table 1 of the Supplementary Material of our study. On the other hand, we did consider carrying out a search strategy with time restrictions (a time frame from 1990 to 2006), when executing the search strategy in the WOS; however, we did not identify studies that have been published during the aforementioned time period. (**Table 2**). In relation to the exclusion of some Latin American authors, the readers cited several studies published in the 1940s,[13,14] 1950s,[15] and 1960s.[16] Taking this into account, we performed a manual

Table 1. Search Strategy of the Bibliometric Studies Using the Web of Science as a Bibliographic Data Source

Database	PubMed Date: December 31, 2022		Results
Search strategy	#1	(Bibliometrics[MeSH] OR Bibliometric*[tiab] OR scientometric*[tiab]) AND ("Web of Science"[tiab] OR WOS[tiab] OR "Web of Knowledge"[tiab] OR ISI[tiab])	4036

Table 2. Search Strategy with Time Restriction

Database	Web of Science Date: December 31, 2022		Results
Search strategy	#1	(TS=(Neurosurge* OR Neurosurgical Procedures OR Neurologic Surgical Procedure) AND CU=(Antill* OR Antigua and Barbuda OR Anguill* OR Aruba* OR Bahama* OR Barbado* OR Belize OR Belice OR Bermuda* OR Caymand Island* OR Haiti* OR Martinique* OR Saint Kitts and Nevis OR Saint Lucia OR Saint Vincent and the Grenadines OR Trinidad and Tobago OR Turks and Caicos Islands OR Virgin Islands OR Argentin* OR Bolivia* OR Brazil* OR Brasil* OR Colombia* OR Colombia OR Chile* OR Ecuador* OR Guiana* OR OR Guyan* OR Paraguay* OR OR Peru* OR Surinam* OR Uruguay* OR Venez* OR Belize* OR Costarric* OR Costaric* OR Costa Ric* OR Salvador* OR El Salvador OR Guatemal* OR Guatemala OR Hondur* OR Nicaragu* Panam* OR Mexic* OR Cuba* OR Dominic* OR Haiti* OR Jamaic* OR Puerto Ric* OR Puertorric* OR Puertoric*) AND PY=(1990–2006)	0

search of each of the studies cited by the readers in the WOS database, but these studies were not indexed in the previously mentioned database. Additionally, the readers carried out a search of the articles published by Velasco F in PubMed and obtained a total of 34 articles between 2006 and 2021. To identify the differences between the bibliographic databases, we carried out an author search in Scopus during the same period (PREFNAMEAUID ("Velasco, F.#7102038155") AND ALL (neurosurgery) AND PUBYEAR >2005) and obtained a total of 38 articles. In this sense, the readers should consider that each database has a different literature coverage, which could impact the inclusion or exclusion of Latin American authors and scientific production.

5. In relation to the inclusion criteria, the readers mention that a good alternative would be to include only articles that have first and corresponding authors with Latin American affiliation, since they state that among the 10 most cited articles, authors with this affiliation are in 11th position. We would like to point out that the inclusion criteria of our article were the following: "had at least 1 author with affiliation from a country that belongs to LAC". This inclusion criterion has been used in other bibliometric studies carried out in LAC[17] and other regions,[7,8] which as inclusion criteria delimited articles that had at least 1 author with affiliation belonging to the region evaluated. In relation to the position of the authors within the manuscript, according to the International Committee of Medical Journal Editors, all the authors of any manuscript must meet a minimum number of authorship criteria to be included in a manuscript,[18] therefore, the position should not imply a limitation in a bibliometric study.
6. Regarding the results reported by the readers who try to corroborate our findings, some limitations should be considered: 1) the search was carried out in the Scopus database, which has dissimilar characteristics to WOS and does not allow make a proper comparison, 2) the readers state that they used a search strategy that was previously implemented in another bibliometric study, however, it must be considered that the mentioned study had another objective based on specific topics of neurosurgery (functional and stereotaxic neurosurgery), 3) the complete search strategy is not evidenced in the manuscript, which limits its reproducibility and prevents corroboration of its results, and 4) the readers only mention the total number of publications obtained with the search strategy (n = 14,385 articles); however, they do not mention the total number of publications obtained after screening by title and abstract. In this sense, their findings lack specifications that make it impossible to demonstrate how the analysis was carried out and make an inadequate comparison of our findings when using a database with dissimilar characteristics to the one we used.
7. Finally, the readers mention that an article on neurosurgical bibliometrics that does not include at least one neurosurgeon only leads to meaningless data collection. Given this assertion, we state that while the inclusion of a specialist in a field such as neurosurgery would be useful, the absence of a specialist in the context of our study does not invalidate the systematic development of a bibliometric analysis. In contrast, previous studies that used an approach and search strategy similar to our study included neurosurgeons among the authors,[7,8] and thus, the absence of a specialist would not be a limitation in the development of a bibliometric study.

In conclusion, the readers should consider that our study had a different objective than that stated in the response letter and was carried out in a single database (WOS), which has particular characteristics, and generates dissimilar results to those of other bibliographic databases. We hope that the rationale for our article is satisfactory to the aforementioned readers and the WORLD NEUROSURGERY Editorial Board.

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