



ORIGINAL

Visibility and impact of the scientific production on cranial nerve teaching and learning published in Scopus

Visibilidad e impacto de la producción científica sobre enseñanza aprendizaje de los pares craneales publicada en Scopus

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ABSTRACT

Introduction: the study of the nervous system can be challenging for students in the basic cycle of medical sciences. This study is specifically focused on the teaching-learning process of the cranial nerves.

Objective: the aim of this study is to describe the visibility and impact of scientific production related to the teaching-learning process of the cranial nerves in Scopus.

Method: a bibliometric analysis of articles on the teaching-learning process of the cranial nerves published between 2017 and 2021 in the Scopus database was carried out. Production, visibility, and impact variables were analyzed, including the number of documents, number of citations, and weighted citation impact.

Results: a total of 64 articles were published, with the highest production in 2019 (25 %; n = 16). The articles received a total of 282 citations, with 30,6 % of them corresponding to 2017. The highest weighted citation impact value was reported in 2017 (1,3). Collaborative international articles accounted for 13,3 %, while single authorship represented 7,2 %. National collaboration works had a higher average citation per publication (4,9; n = 163) and a better weighted citation impact index (1,14).

Conclusions: the study found a low scientific production on the teaching-learning of the cranial nerves, with a decreasing trend and a predominance of multiple authorship, mainly national and institutional. The impact index of publications was found to be low based on their citations.

Keywords: Bibliometrics; Central Nervous System; Neuroscience; Teaching-Learning Process; Cranial Nerves.

RESUMEN

Introducción: el estudio del sistema nervioso constituye un elemento generalmente dificultoso para estudiantes del ciclo básico de las ciencias médicas, siendo un contenido de especial interés el proceso enseñanza-aprendizaje de los pares craneales.

Objetivo: describir la visibilidad e impacto de la producción científica en Scopus sobre enseñanza aprendizaje de los pares craneales.

Método: se realizó un análisis bibliométrico de los artículos sobre enseñanza aprendizaje de los pares craneales en la base de datos Scopus entre 2017 y 2021. Se estudiaron variables de producción, visibilidad e impacto, como el número de documentos, número de citas y el impacto de citas ponderadas.

Resultados: se publicaron un total de 64 artículos, con un pico de producción en el año 2019 (25 %; n=16). Los artículos recibieron un total de 282 citas, de las cuales el 30,6 % corresponden al año 2017. El mayor valor

de impacto de citas ponderado se reportó en 2017 (1,3). El 13,3 % de los artículos se redactó en colaboración internacional, y el 7,2 % contó con autoría única. Los trabajos de colaboración nacional presentaron una mayor media de citas por publicación (4,9; n=163) y mejor índice de impacto de citas ponderadas (1,14)

Conclusiones: se encontró una baja producción científica sobre la enseñanza - aprendizaje de los pares craneales, con tendencia a decrecer, con predominio de la autoría múltiple, principalmente nacional e institucional. Se encontraron un bajo índice de impacto de las publicaciones según sus citas.

Palabras clave: Bibliometría; Sistema Nervioso Central; Neurociencias; Proceso Enseñanza Aprendizaje.

INTRODUCTION

Traditional teaching methods are based on the teacher exposing a large amount of information that students receive passively and are generally unable to assimilate and use.⁽¹⁾

Education in health sciences demands a great diversity of teaching scenarios, understood by this not only in classrooms and laboratories but also in workspaces that provide care services based on an adequate teaching accreditation process.⁽²⁾

The high degree of computerization achieved in the health sector and research training from undergraduate,⁽³⁾ makes it necessary to apply the advantages of Information and Communication Technologies to the educational teaching process.

The publication of a scientific article constitutes a fundamental step in the investigative process. Different factors affect this, ranging from the quality of the manuscript, its results and design, the authors' research interests, and the interests of the journal in which it is submitted.⁽³⁾

According to the Scimago Journals and Institutions Ranking⁽⁴⁾, in 2021, scientific production on neurosciences was concentrated in Great Britain, the United States, and Germany. The leading journals were: Nature Neuroscience, with an h-Index of 437 and 210 documents, and in second place, The Lancet Psychiatry, with an h-Index of 107 and 294 papers. Both journals belong to the first quartile (Q1) in Scopus due to the impact of their publications.

According to the authors' experience, scientific production in neurosciences is generally low compared to other areas, a fact proportional to the difficulty of acquiring a postgraduate degree and specializing in this subject. This has generated a dilemma regarding the availability of documents on the study and learning on any topic in neuroscience, as it is a specialized area but tends to produce short bibliography, such is the case of the morpho-functional characteristics of the cranial nerves.

In response to the above, the present investigation was carried out to characterize the visibility and impact of scientific production on the teaching and learning of the cranial nerves in the Scopus database.

METHODS

A bibliometric, observational, descriptive, and retrospective study of the articles published in journals indexed in Scopus regarding the teaching-learning of the cranial nerves between 2017 and 2021 was carried out.

The database was accessed on September 10, 2022. The data set was downloaded in RIS format and exported to SciVal. All articles on teaching-learning of the cranial nerves published between 2017 and 2021 in journals indexed in Scopus were included, regardless of their language or area of knowledge.

The following search formula was used:

TITLE-ABS("Cranial Nerves") AND (TITLE-ABS(Learning) OR TITLE-ABS(Teaching)) AND (LIMIT-TO (PUBYEAR,2017) OR LIMIT-TO (PUBYEAR,2018) OR LIMIT-TO (PUBYEAR,2019) OR LIMIT-TO (PUBYEAR,2020) OR LIMIT-TO (PUBYEAR,2021)).

The indicators were studied:

Number of documents (Ndoc), percentage of documents (% doc), number of citations (Ncit), number of authors (Naut), type of collaboration (international, national, institutional, without collaboration), and citations per article. The weighted citation impact index and the quartile of the journals (Q1, Q2, Q3, and Q4) and the SCimago Journal Rank (SJR) were obtained using SciVal.

RESULTS

One hundred seventeen articles were published, with a production peak in 2019 (25 %; n=16) and a tendency to decrease scientific production on the subject until 2021 (18,75 %; n=12). The articles received 285 citations, most of which were in 2017 (Ncit=89, average of 9,9 citations per article), with a general average of 4,5 citations per article (figure 1).

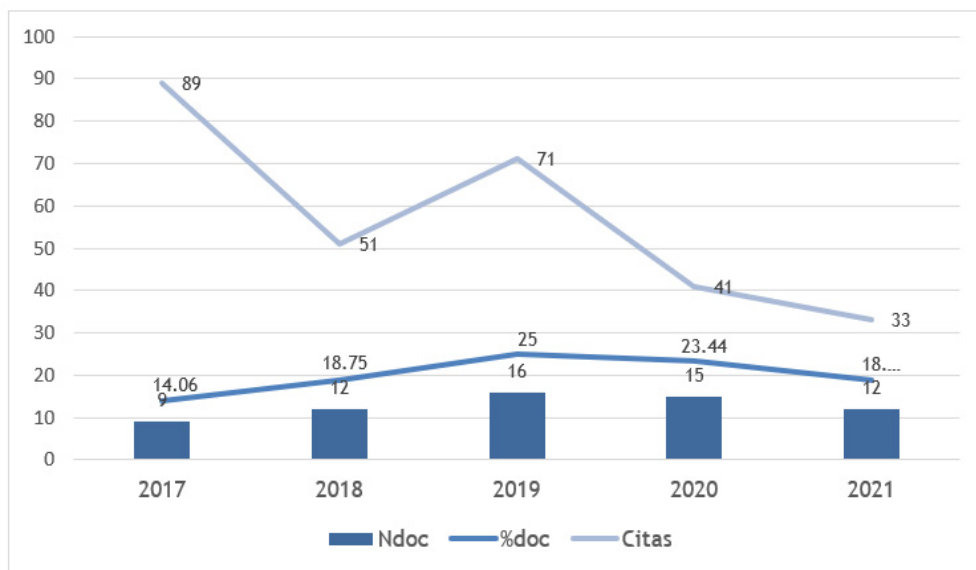


Figure 1. Articles' distribution in Scopus on teaching-learning of the cranial nerves according to the publication year

Figure 2 shows how only the articles published in 2017 (1,3) have a weighted citation impact index more significant than one, while the articles corresponding to 2018 only presented 0,27.

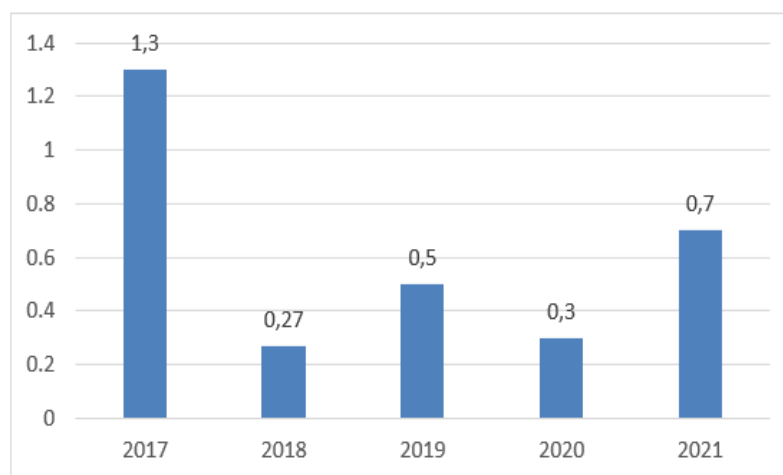


Figure 2. Articles' distribution in Scopus on teaching-learning of the cranial nerves according to the weighted citations impact

11,5 % of the articles were written in international collaboration, and 6,6 % had sole authorship. The national collaborative works presented a higher average number of citations per publication (7; n=167) and a weighted citation impact index (0,95) (table 1). 3,2 % of the articles had academic-corporate collaboration.

Table 1. Articles' distribution in Scopus on teaching-learning of the cranial nerves according to authorship collaboration

Type of author collaboration	Ndoc	%	Ncit	Average number of citations per publication	Weighted Field Citation Impact
International collaboration	7	11,5	37	5,3	0,68
National collaboration	24	39,3	167	7	0,95
Institutional collaboration	26	42,6	65	2,5	0,28
No collaboration	4	6,6	16	4	0,23

It was found that 39 % (Ndoc=23) of the articles were published in Q1 Scopus journals, 20,3 % (Ndoc=12) in Q2 journals, 18,6 % (Ndoc=11) in Q3 journals, and 22 % (Ndoc=13) in Q4. The most productive journals were

Neurology (Ndoc=6; Ncit=21; Naut=21), Anatomical Science Education (Ndoc=3; Ncit=23; Naut=10), Insights into Imaging (Ndoc=3; Ncit=75; Naut =13) and Journal of Neurological Surgery, Part B: Skull Base (Ndoc=3; Ncit=13; Naut=12).

DISCUSSION

Within human anatomy, teaching the cranial nerves has become one of the most significant challenges for health sciences students due to the complexity and breadth of the contents. Therefore, bibliometric studies have acquired greater relevance for the scientific community due to their contributions to the knowledge of the state of an area or research topic.⁽⁵⁾

Torres et al.⁽⁶⁾, in their study on the international panorama of scientific production on neuroeducation, 2002 - 2021, found 418 records in 271 journals, with an annual growth rate of 11,69 %. The countries most productive were the United States and Spain.

Rodríguez⁽⁷⁾, in his study on neurology and neurosurgery publications, had a sample of 221 articles. In contrast, Perodin et al.⁽⁸⁾, in their research on the publications of the Neuroscience Center of Havana, presented a sample of 250 articles.

The differences in terms of the sample size of the present study and those found are evident, the authors consider that it would be more effective to establish comparisons with studies on the same subject, but no bibliometric investigations were found in this specific thematic area. Garces et al.⁽³⁾, Rodríguez⁽⁷⁾, Perodin et al.⁽⁸⁾ and other authors describe the neuroscientific production in their different studies as deficient so that the area chosen by the authors in this study is not exempt from said results.

In search of causes that justify the low availability of papers on the subject, reference could be made to the study by Perodin et al.⁽⁸⁾, who propose in their review of manuscripts and bibliometric analysis of publications from the neuroscience center, that the themes most abundant were Neuroinformatics, Molecular Biology, Neurochemistry and Neurocognitive. With a more significant number of works in the period 2018 - 2020, in addition, from the sample chosen for the research, 42 articles were rejected by the journal due to methodological problems that made it impossible to advance in the editorial process.

In a way, the above could be a valid argument. However, it loses strength when contrasted with the high level of computerization that medical science careers have internationally. The authors consider that the low availability of documents on teaching and learning of cranial nerves is probably due not to developing work by academic councils but rather to a weak culture of socialization of the results of research and innovation projects.

Currently, a large part of the science and technology systems use citation-based metrics to assess the quality of an article or journal. The citations that an article receives depend on an essential set of factors. Among them, to mention a few, are language, article quality, used statistics and exposed results, journal indexing, academicians' interest in consulting this journal, and journals and authors' dissemination strategies.⁽³⁾

For his part, Aldave⁽⁹⁾, on the scientific production of pediatric cranioencephalic trauma in Latin America, states that 63,48 % of the publications are from the last ten years, the articles that had an international collaboration had a median factor of impact of 1,21; while those that did not have international collaboration presented a 2,74. Diéguez et al.⁽¹⁰⁾ found a maximum weighted citation impact index of 0,126 in 2016; in their scientific impact estimation study of the Mexican journal *Archivos de Neurociencias*.

In the present study, the weighted citation impact index decreased until 2020. Its values show how the articles' display and level of disclosure were below adequate.

Barrera et al.⁽¹¹⁾ found a low collaboration between the prominent authors in their statistical analysis, evolution, and trend in research in neuroscience and consumer behavior in Scopus. Also, Moreno⁽¹²⁾, Urrea et al.⁽¹³⁾ also point out poor collaboration between the authors in their studies, a fact contrary to what was found in the present investigation.

CONCLUSIONS

A low scientific production on teaching-learning of the cranial nerves was found, with a tendency to decrease, with a predominance of multiple authorship, mainly national and institutional. A low-impact index of the publications was found according to their citations.

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CONFLICTS OF INTEREST

No conflicts of interest exist.

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