COVID-19 is an emerging, rapidly evolving situation, and scientists all around the world are focused on finding and developing treatments for this infection. Their efforts have led to a number of scientific publications since the start of the coronavirus outbreak, which was declared as a pandemic by the World Health Organization; 147,535 scientific articles have been published (as indexed in PubMed on June 22, 2020). This was considered by Science as "one of the greatest explosions of scientific literature of all time." In part, this event reflects editors’ efforts to reduce the peer review time and increase the speed of publications, without affecting the quality of research.1,2

This article aims to analyze and map the articles regarding COVID-19 published in the journal International Archives of Otorhinolaryngology (IAO) from a bibliometric perspective.

Methods

Initially, we included 24 COVID-19 documents published in the journal IAO. For this purpose, we used the search terms “COVID” OR “Coronavirus” OR “SARS-CoV-2” OR “2019-nCoV” in the Scopus database and exported the data in CSV format: citation information, bibliographic information, and abstract & keywords. Subsequently, we included four more documents manually, which were still in the publication phase, totaling 28 documents. All data were retrieved on June 22, 2020.

We used the VosViewer software (version 1.6.16) to analyze country collaboration and the co-occurrence of keywords. We used Google Drive Word Cloud to check the most frequent words in the full text of the manuscripts.3,4

The Contribution of IAO to Publications on COVID-19

In early 2020, the editor-in-chief of the IAO journal and the team pledged to rapidly follow the submissions of COVID-19 articles and publish them online shortly after acceptance and editorial production.

On April 13, 2020, the IAO published its first articles on COVID-19; a total of 28 documents were published including nine (32.14%) original research articles, seven (25%) editorials, four (14.29%) systematic reviews (including meta-analysis), four (14.29%) letters to the editor, two (7.14%) opinion articles, and two (7.14%) update articles. The average period between submission and acceptance was 46 days and that between acceptance and online publication was 83 days (Table 1).

Of the 28 published articles, Brazil had the highest number of publications with six (45.71%) documents followed by the United States with four (11.43%) and India with three (8.57%; Fig. 1). To analyze international cooperation in terms of COVID-19 articles, i.e., when two or more countries participated in the same study, we built a collaboration network using the VosViewer software. Our dataset involved six countries; different colors indicate different groups, size of the circle represents the number of publications, and thickness of the line represents the strength of collaborations between the countries that it connects (Fig. 2). Figure 3 shows the 15 affiliations/institutions that had the highest participation in these studies.

To analyze the co-occurrence of keywords, we used VosViewer to view the most commonly used terms. We entered all keywords (author + index keywords) that occurred more than twice in the final analysis. The most frequent keywords were
| Year | Volume Issue | Type       | Title                                                                 | Country                      | Scopus Citation | Submission | Acceptance | Published online | Time from submission to acceptance (days) | Time from acceptance to publication (days) |
|------|--------------|------------|----------------------------------------------------------------------|------------------------------|-----------------|------------|------------|-------------------|-------------------------------------------|------------------------------------------|
| 2020 | 24(2) Editorial | High Risk of COVID-19 Infection for Head and Neck Surgeons | Brazil                        | 25                           |                |            |            | 04/13/2020        |                                           |                                           |
| 2020 | 24(2) Editorial | Otorhinolaryngologists and Coronavirus Disease 2019 (COVID-19)  | Brazil                        | 10                           |                |            |            | 04/13/2020        |                                           |                                           |
| 2020 | 24(3) Original Research | Effect of the COVID-19 Pandemic on the Activity of Physicians Working in the Areas of Head and Neck Surgery and Otorhinolaryngology | Brazil                        | 5                             | 04/23/2020 | 04/24/2020 | 05/22/2020 | 1 28             |                                           |                                          |
| 2020 | 24(3) Editorial | Prevention of COVID-19 Infection in Neck Breathers, Including Laryngectomies | United States                 | 1                             |                |            |            | 06/12/2020        |                                           |                                           |
| 2020 | 24(3) Editorial | Why We Need to Use and which Mask Types are Effective against the Novel Coronavirus (COVID-19)? | Brazil                        | 1                             |                |            |            | 06/23/2020        |                                           |                                           |
| 2020 | 24(3) Original Research | Novel Changes in Resident Education during a Pandemic: Strategies and Approaches to Maximize Residency Education and Safety | United States                 | 1                             | 05/28/2020 | 06/03/2020 | 07/31/2020 | 6 58            |                                           |                                          |
| 2020 | 24(3) Update Article | Chloroquine and COVID-19: Should We Care about Otoxicity? | Brazil                        | 1                             | 05/24/2020 | 06/02/2020 | 07/31/2020 | 9 59            |                                           |                                          |
| 2020 | 24(3) Opinion Article | Proposal of Research Model for the Detection of COVID-19 among Asymptomatic Carriers | Jamaica, Barbados, India      | 1                             | 04/30/2020 | 05/03/2020 | 06/02/2020 | 3 30            |                                           |                                          |
| 2020 | 24(3) Letter to the Editor | Olfactory and Taste Disorders in Patients with SARS-CoV-2 Infection | India                        | 1                             |                |            |            | 07/31/2020        |                                           |                                           |
| 2020 | 24(3) Update Article | The COVID-19 Pandemic and Planetary Health. A Critical Review of Epidemiology, Prevention, Clinical Characteristics and Treatments for Oral, Head and Neck Health Professionals. Do We Have a Roadmap? | Brazil, United States, Switzerland | 0                             | 06/04/2020 | 06/11/2020 | 07/31/2020 | 7 50            |                                           |                                          |
| 2020 | 24(3) Letter to the Editor | Olfaction and COVID: The little we know and what else we need to know | Brazil                        | 0                             |                |            |            | 06/15/2020        |                                           |                                           |
| 2020 | 24(3) Letter to the Editor | The Italian Society Indication for Rhinologists during Covid-19: Italy Phase 2 | Italy                        | 0                             | 05/07/2020 | 05/11/2020 | 06/19/2020 | 4 39            |                                           |                                          |
| 2020 | 24(4) Systematic Review | COVID-19 Infection and Its Influence in Otorhinolaryngology-Head and Neck Surgery | Spain, Venezuela, United States | 3                             | 06/29/2020 | 07/05/2020 | 09/24/2020 | 6 81            |                                           |                                          |
| 2020 | 24(4) Systematic Review | Head and Neck Practice in the COVID-19 Pandemics Today: A Rapid Systematic Review | Brazil                        | 1                             | 06/03/2020 | 06/25/2020 | 09/30/2020 | 22 97           |                                           |                                          |
| 2020 | 24(4) Editorial | Brazil | 0 |                |            |            |            | 20/10/2020        |                                           |                                           |
Table 1 (Continued)

| Year | Volume Issue | Type              | Title                                                                                                                                  | Country          | Scopus Citation | Submission       | Acceptance       | Published online | Time from submission to acceptance (days) | Time from acceptance to publication (days) |
|------|--------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|------------------|------------------|------------------|------------------------------------------|------------------------------------------|
| 2021 | 25(1)        | Systematic Review | "Green July" 2020 and Another Good Reason to Quit Smoking: Help to Stop Spreading SARS-COV-2 and Save Lives!                          | Indonesia        | 5               | 09/11/2020       | 09/24/2020       | 11/26/2020       | 13                          | 63                                        |
| 2021 | 25(1)        | Original Research | Anosmia/Hyposmia is a Good Predictor of Coronavirus Disease 2019 (COVID-19) Infection: A Meta-Analysis                                | Italy            | 2               | 07/18/2020       | 08/08/2020       | 02/01/2021       | 21                          | 177                                      |
| 2021 | 25(1)        | Original Research | Percutaneous Tracheostomy in COVID-19 Critically Ill Patients: Experience from 30 Consecutive Procedures                           | Brazil           | 2               | 09/18/2020       | 11/16/2020       | 02/01/2021       | 59                          | 77                                        |
| 2021 | 25(1)        | Original Research | Impact of the COVID-19 Pandemic on Physicians Working in the Head and Neck Field                                                        | Brazil, Argentina| 1               | 09/16/2020       | 11/10/2020       | 02/01/2021       | 55                          | 83                                        |
| 2021 | 25(1)        | Editorial         | Coronavirus (COVID-19): Yesterday, Today, and Always                                                                               | Brazil           | 0               | "               | "               | 02/01/2021       | "                          | "                                        |
| 2021 | 25(2)        | Editorial         | COVID-19: Priority Use of N95 Mask or Double Mask                                                                               | Brazil           | 0               | "               | "               | 05/04/2021       | "                          | "                                        |
| 2021 | 25(2)        | Letters to the Editor | Is Early Traumatic Facial Nerve Surgery a Priority during the COVID-19 Pandemic?                                               | Iran             | 0               | 09/21/2020       | 12/07/2020       | 03/15/2021       | 77                          | 98                                        |
| 2021 | 25(2)        | Original Research | Barrier for Particle Dispersion Control During Mastoidectomy                                                                  | Brazil           | 0               | 07/24/2020       | 08/26/2020       | 02/19/2021       | 33                          | 177                                      |
| 2021 | 25(2)        | Systematic Review | Auditive and Vestibular Changes Related to the Use of Hydroxychloroquine and Chloroquine: An Integrative Review                  | Brazil           | 0               | 08/22/2020       | 11/08/2020       | 03/29/2021       | 78                          | 141                                      |
| 2021 | 25(3)        | Opinion Article   | Tips and Pearls for Tracheostomy during COVID-19 Pandemic                                                                        | India            | "              | 12/27/2020       | 05/28/2021       | "              | 152                         | "                                        |
| 2021 | 25(3)        | Original Research | The Pattern of Anosmia in Non-hospitalized Patients in COVID-19 Pandemic: A Cross-sectional Study                                 | Egypt            | "              | 15/09/2020       | 07/01/2021       | "              | 114                         | "                                        |
| 2021 | 25(3)        | Original Research | The Impact of the COVID-19 Pandemic on Head and Neck Surgery Training: A Brazilian National Survey                                 | Brazil           | "              | 04/12/2020       | 15/02/2021       | "              | 73                          | "                                        |
| 2021 | 25(3)        | Original Research | Analysis of Ear Nose Throat Manifestations in COVID-19 Patients                                                                  | Egypt            | "              | 25/09/2020       | 14/02/2021       | "              | 142                         | "                                        |
| MEDIAN| -            | -                 | -                                                                           | -                | 2.5            | -                | -                | -                | 46.05                          | 83.86                                    |

*Information not available.
**Insufficient time to accumulate citation.
In addition, we created a full-text word cloud (title, abstract, keywords, and manuscript body) to show the most frequently used words in the manuscripts. The most frequent terms were “COVID” (n = 668), “patients” (n = 645), and “pandemic” (n = 204; Fig. 5).

For the citation metrics, we considered 24 documents (published in the editions from April 2020 to 2021) and excluded four documents published in this edition (July 2021) because they did not allow sufficient time to accumulate citations. The 24 documents, according to the Scopus database (on June 22, 2021), received a total of 60 citations (average 2.5 citations per article) (Table 1). The average number of citations of COVID-19 articles was higher than the average number of citations received by the IAO journal in 2020, citations per document 2 years = 1.191 (according to the Scimago database). This value indicates the number of citations received by the documents of a journal divided by the total number of documents published in that journal.

Final Comments

In this study, we used descriptive bibliometric analysis to understand the profile of authors and the topics and to monitor the evolution of citations. “Hot” and urgent topics like this one usually lead to a significant increase in the number of publications and citations; therefore, these documents require monitoring, and bibliometric analysis provides a guide for the important topics and trends for future research.
Conflict of Interest
The authors have no conflict of interests to declare.

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