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# Analyzing the Effect of the COVID-19 Pandemic on the Oral and Maxillofacial Surgery Literature

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The COVID-19 pandemic has dramatically altered our world. Many of these changes directly impacted the clinical practice of oral and maxillofacial surgery. Somewhat less immediately apparent is the effect of COVID-19 on the oral-maxillofacial surgery literature. From new infection control protocols, to the aftermath of delays in care, to the sequela of prolonged prone positioning, oral and maxillofacial surgeons have been actively contributing to the literature throughout the pandemic.<sup>1</sup> This study aims to discern the effects of COVID-19 on the oral-maxillofacial surgery literature and reflect on the implications on the specialty going forward.

## Methods

Five journals devoted exclusively to the practice of oral-maxillofacial surgery with the highest impact factors in 2020 from the *Journal Citation Reports* were selected. These included *International Journal of Oral and Maxillofacial Surgery*, *Journal of Oral and Maxillofacial Surgery (JOMS)*, *Journal of Cranio-maxillofacial Surgery*, *British Journal of Oral and Maxillofacial Surgery (BJOMS)*, and *Journal of Stomatology Oral and Maxillofacial Surgery*. An advanced PubMed search was designed to look for all

articles published in these journals in 2020, which yielded a total of 2,023 articles. Articles were subsequently screened and sorted into COVID-19 related and non-COVID-19 related studies. Titles containing “COVID,” “SARS,” “pandemic,” “corona,” “COVID-19,” “2019 nCoV,” “2019 novel coronavirus,” or “SARS-CoV-2” were considered to be related to COVID-19. Two studies were found to be duplicates, and were subsequently removed.

Several article factors including journal of publication, country of origin, number of authors and/or institutions, word and/or reference count, subspecialty of oral-maxillofacial surgery to which the article pertains, article type, study design, month of publication, and time to publication were assessed. In addition to the data above, distribution and overall impact of articles was evaluated through number of citations accrued by an article and the Altmetric Attention Score (AAS), which is a weighted calculation of the attention an article receives online (Altmetric, London). Mann-Whitney and  $\chi^2$  tests were used to assess continuous and categorical variables respectively. Kruskal-Wallis tests were used to compare Altmetric scores and citations. Research methodology reflects earlier works in the plastic surgery literature.<sup>2</sup> Due to the nature of data acquisition from the literature, this

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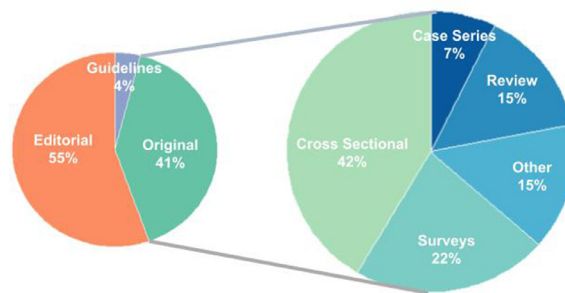
study did not require approval from the University of Alabama at Birmingham Institutional Review Board.

**Results**

A total of 103 articles (5% of total articles for the year) were published in the oral-maxillofacial surgery literature pertaining to the COVID-19 pandemic. The *British Journal of Oral and Maxillofacial Surgery* published the greatest proportion of COVID-19 related articles when compared to all other journals (11 vs 3%,  $P < .001$ , Fig 1). Studies had an average of 4 total authors and 2 institutions; 8 first authors had more than 1 article published that addressed the pandemic. Most articles were published by authors from the United Kingdom ( $n = 41$ ), followed by the United States ( $n = 29$ ).

Mean time from article submission to publication was 25 days. The majority of articles were published early in the pandemic, with the highest peaks being in April ( $n = 20$ ), May ( $n = 22$ ), and August ( $n = 18$ ). Study types included editorials ( $n = 56$ ), original articles ( $n = 41$ ), and guidelines ( $n = 4$ ) (Fig 2). Of the original articles, the majority were cross-sectional studies ( $n = 17$ ). Studies covering broadly general oral-maxillofacial surgery topics ( $n = 67$ ) were published with much higher frequency than more specific topics such as trauma and/or reconstruction, pathology, orthognathic and/or cleft and/or craniofacial, etc.

Analysis of average AAS demonstrated that COVID-19 related articles garnered significantly more media distribution than non-COVID-19 related articles (5.59 vs 1.74,  $P < .001$ ). When considering specific



**FIGURE 2.** Article and study type.

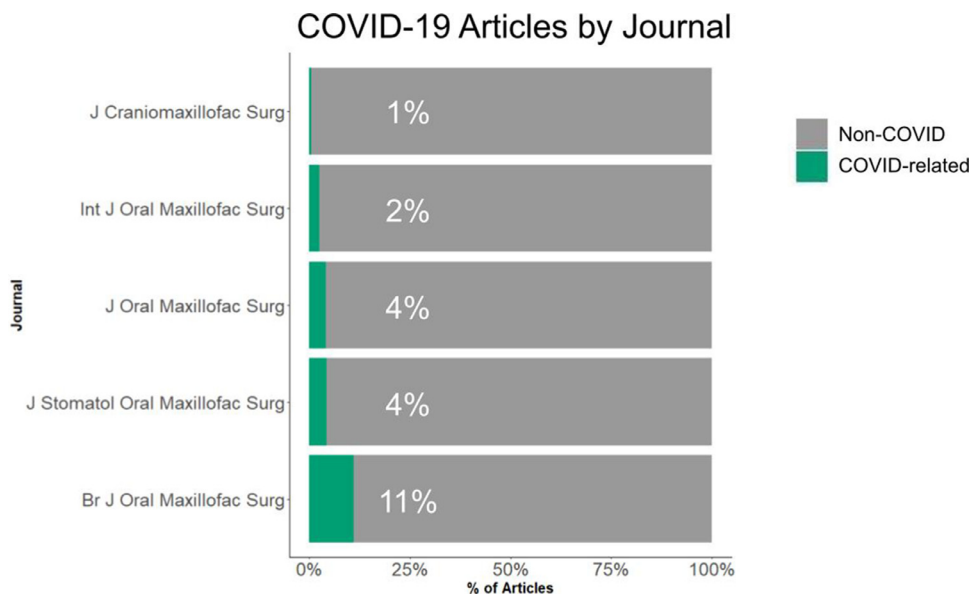
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journals, the BJOMS demonstrated higher AAS compared to the other journals (7.89 vs 3.06,  $P = .039$ ). Comparisons of more traditional bibliometrics such as article citations revealed that COVID-19 related articles produced more citations than non-COVID-19 related articles (3.99 vs 0.65,  $P < .001$ ). No differences in citations among journals were noted.

**Discussion**

Examination of the COVID-19 related oral-maxillofacial surgery literature revealed several unique findings.

Traditional bibliometrics such as citations and newer measures such as AAS have been studied extensively in the oral-maxillofacial surgery literature.<sup>3</sup> COVID-19 related articles garnered significantly greater AAS and citations when compared to non-COVID-19 studies. Our findings reflect the impact



**FIGURE 1.** Percentage of COVID-19 articles published by journal.

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and relative importance of COVID-19 related research to the oral-maxillofacial surgery community during the course of the pandemic.

In 2019, average article review time to final decision was 6.7 weeks for JOMS and 13.2 weeks for BJOMS (Elsevier, Amsterdam). In stark contrast, COVID-19 related articles were not only reviewed, but published in 25 days, also considerably faster than COVID-19 related research analyzed in other medical fields.<sup>2</sup> Reflecting this 25-day turnaround, spikes in article publication corresponded to approximately a month after peaks in global COVID-19 cases in March and July. Contributors and publishers alike played a role in the rapid dissemination of pertinent COVID-19 related information to the oral-maxillofacial surgery community.

While the impact of the COVID-19 pandemic has been recently studied in the dental literature, the present study is the first to specifically analyze the oral-maxillofacial surgery literature. Dentistry has been active in the publication of COVID-related articles, although mostly in the form of case reports, communications, and other studies with low levels of evidence.<sup>4,5</sup> Similarly, our study corroborates these findings with the majority of articles classified as either editorials or low evidence original studies in the oral-maxillofacial surgery literature. Perhaps studies with overall less complexity led to the faster review times identified above.

As revealed by the citation and AAS data, COVID-19 related articles have remained popular throughout

the pandemic. With persistent global outbreaks and the emergence of novel virus strains, COVID-19 will continue to be relevant in the foreseeable future. Dramatically reduced publication times and continued value placed on this topic will hopefully transition to the production of COVID-19 related studies with higher levels of evidence, leading to direct clinical applications. Collaboration between institutions, particularly in regards to COVID-19 related policies and clinical management may be the next step. Regardless of when this occurs, the current response to the pandemic, as chronicled in the oral-maxillofacial surgery literature, demonstrates the resilience and dedication of our specialty during the past challenging year.

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