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# Scientific Landscape of Dental Literature in 2018

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#### **Editorial**

## Scientific Landscape of Dental Literature in 2018

In the information age, human medical knowledge continues to grow exponentially, leading us to what could be best described as a knowledge tsunami. In 1950, medical knowledge doubled approximately every 50 years, by 1980, it doubled every 7 years, and by 2010, to a mere 3.5 years. Even more startling, in 2020 human medical knowledge will double in a stunning 73 days. [1,2]

Nowadays dental professionals face unprecedented information overload and must somehow manage it. Text mining, network visualization, and big data management techniques will help us to analyze and summarize exponentially growing knowledge in field of dentistry. In an intriguing effort, the American Academy of Restorative Dentistry has implemented a strategy to cope with dental information overload by publishing an annual review of selected scientific literature focused on seven different areas — prosthodontics, periodontics, dental materials, occlusion and temporomandibular disorders, sleep-disordered breathing, oral medicine, and oral and maxillofacial surgery and dental caries. [3]

Following our 2017 attempt, [4] in this editorial we aimed to provide a summary of the scientific landscape of 2018 dental

literature using mapping approaches and making them both manageable and practically useful for busy dental professionals.

On 3 October, 2019, PubMed was searched via the query "2018/1/1" [PDAT]: "2018/12/31" [PDAT] AND jsubsetd [text] NOT /2019/[PDAT] to find all 2018 dental articles. Complementary data were extracted from Web of Science using relevant PubMed identifier. Author keywords co-occurrence and co-authorship network analysis were employed for scientific mapping. Bibliometric data were visualized through VOSviewer (http://www.vosviewer.com/, Leiden University's Centre for Science and Technology Studies). [5] PubMed PubReMiner was used for text mining. [6]

A total of 13,222 records were found in PubMed and 10,991 records in Web of Science. According to PubMed results, the US (1395), UK (1361), Brazil (1239), China (1221), and India (652) published the most articles. *Journal of Craniofacial Surgery* (802), *Journal of Oral and Maxillofacial Surgery* (449) and *British Dental Journal* (419) published the most articles. In 2018, 18.3% of dental articles were open access, despite the fact that 28% of all scholarly publications were

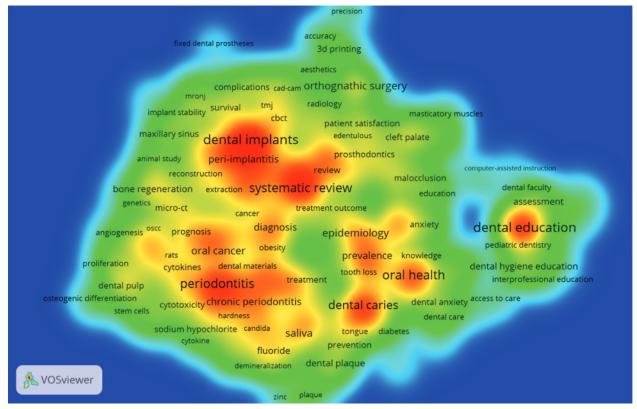


Figure 1: Hot topics among 2018 dental articles



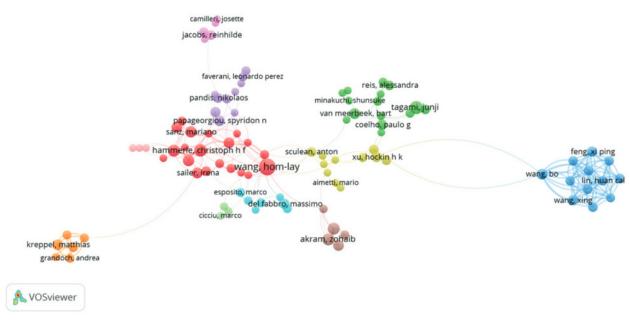


Figure 2: Co-authorship network visualization among 2018 dental articles

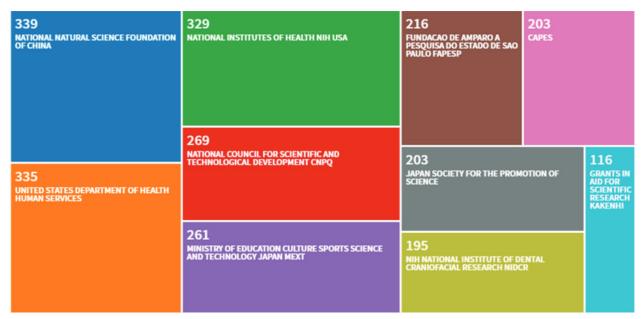


Figure 3: Top ten funding agencies related to 2018 dental articles

open access.<sup>[7]</sup> Author keywords co-occurrence network analysis showed that dental implant, periodontitis, dental education, and systematic review were the most popular keywords [Figure 1]. Interestingly, periodontitis was among the hot topics received the most online attention in 2018.<sup>[8]</sup>

Co-authorship network analysis showed Romina Brignardello-Petersen (Department of Health Research Methods, Evidence, and Impact, McMaster University) and Hom-Lay Wang (Department of Periodontics and Oral Medicine, University of Michigan) had the most influence on the network considering number of articles [Figure 2]. Web of Science data analysis showed these to be the most

active funding agencies for dental articles published in 2018 [Figure 3]: National Natural Science Foundation of China (339), United States Department of Health and Human Services (335), and National Institutes of Health USA (329).

Systematic review was a popular topic among 2018 dental articles [Figure 2], an important and encouraging finding given the growing emphasis on evidence-based dentistry. Yet, consistent with 2017 results, [4] ground-breaking issues such as artificial intelligence/machine learning, nanotechnology, and genomic medicine were not observed among 2018 hot topics. Instead, 3D printing and micro-CT were cutting-edge technologies seen among hot topics.

Kolahi, et al.: Scientific landscape of dental literature

Another noteworthy finding is that the National Natural Science Foundation of China funded the greatest number of dental articles in 2018 [Figure 3]. This outcome is not particularly surprising given that China's total spending on research and development rose that year to a robust record \$254 billion. Clearly, support for research efforts remains a high budgetary priority for the Chinese government, resulting in China's continued growth as a scientific power. [9]

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#### **Conflicts of interest**

There are no conflicts of interest.

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