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Jafar Kolahi
David G. Dunning
Edward F. Rossomando

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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 js subset [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.
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. 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, some 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.
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.

Jafar Kolahi1, David G. Dunning2, Edward F. Rossomando3

1Independent Research Scientist, Associate Editor of Dental Hypotheses, Isfahan, Iran, 2Department of Oral Biology, College of Dentistry, University of Nebraska Medical Center, Lincoln, Nebraska, USA, 3School of Dental Medicine, University of Connecticut, Mansfield, Connecticut, USA

Address for correspondence: Jafar Kolahi, No. 24, Faree 15, Pardis, Shahin Shahr, Isfahan 83179-18981, Iran. E-mail: kolahi_jafar@yahoo.com

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