

Dental research and COVID-19: The beauty of science and its current and future challenges

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Dear Editor,

Throughout this time of the COVID-19 pandemic, even with all the restrictions imposed by quarantine worldwide, it has been observed that while they have been disregarded numerous times by many rulers,¹ other aspects have attracted attention. Organizations, institutional funds, companies, famous and unknown individuals, as well as anonymous entities, have voluntarily donated money, food, and other types of help and services (*e.g.*, crowdfunding) to those most in need around the world, often risking their own lives.² Within science, the situation is very similar. The relentless work that scientific journals have done to avail this current scenario is formidable. They have been able to analyze and publish research papers in record time. The actions of thousands of researchers are also notable, who have abandoned their personal interests or community study ventures to collaborate and devote themselves to investigate COVID-19 and seek to reduce the pandemic impacts.

The position of science at this time is evident, as well as the importance of scientific dissemination to better understand what is happening during this crisis. In the last 46 days (between March 21 and May 13, 2020), when we searched in PubMed the keyword “Coronavirus,” “COVID-19,” or “SARS-CoV-2,” 10,584 scientific papers were found, which was a daily average of 199.7 papers. These studies discussed several aspects of the COVID-19 pandemic, including the mental health of people and health care providers, public policies, drug development and vaccines, appropriate use of testing, telemedicine, and obstetric care (<https://www.ncbi.nlm.nih.gov/pubmed/>).

When searching the scientific literature for dental publications within this context, although high-quality studies are found, the number is still limited. There are recent cases of publications being revised after publication because of low methodological rigor and biased interpretations. In this regard, journals should apply rigorous review criteria since these publications may impact public health actions. A total of 566 scientific articles were found in this period when we searched the keywords “Coronavirus,” “COVID-19,” or “SARS-CoV-2” and “Dentistry,” “Mouth,” “Oral,” “Head,” “Neck,” “Dent*,” “Tooth,” or “Teeth.” Of these research papers, 181 were specific to dentistry and were grouped into the following themes: a) Rapid detection of SARS-CoV-2 in saliva (n = 9); b) Dental education and telemedicine (n = 11); c) Attitudes and practices of dental practitioners (n = 4);



d) Gustatory impairment (n = 15); e) Dental care: operator considerations and clinical aspects (n = 17); f) Aspects related to oral, head, and neck cancer (n = 46); g) Professional guidelines (n = 3); h) Endodontic therapy (n = 2); i) Ethical and moral decisions (n = 2); j) Pediatric dentistry (n = 2); k) Management of orthodontic emergencies (n = 1); l) Diagnosis and management of patients with head and neck maxillofacial surgery (n = 22); m) Future challenges for dental and oral medicine and monetary implications for dental practices (n = 2); n) Transmission routes of SARS-CoV-2 and controls in dental practice (n = 26); o) Osteonecrosis (n = 2); p) Knowledge and apprehension of dental patients (n = 2); q) Oral vesiculobullous lesions and acute oral mucosa disease (n = 2); r) Inhibitory role of saliva (n = 1); s) 3D-printed individualized face masks (n = 3); t) Use of dental radiography (n = 1); u) SARS-CoV-2 infections in Charcot-Marie-Tooth (n = 1); v) Diagnosis approach (n = 1); w) Analgesic use (n = 1); x) Toothbrushing against coronavirus (n = 1); y) Acute parotitis, sialadenitis, and salivary gland disease (n = 3); and z) Mental health (n = 1). Of all these subjects, the most frequently mentioned was head and neck cancer, where an emphasis was found especially regarding clinical management during crises and concerns about delays in diagnosis (<https://www.ncbi.nlm.nih.gov/pubmed/>).

Considering the excellence of dental research worldwide, the current modest scientific production probably reflects the pandemic evolution speed, with all financial and structural efforts focused on improving the understanding of the disease, developing public health measures to control the pandemic, care for patients, and implementing preventive methods and effective therapies.

When we look at the diversity of issues related to dentistry/dental research and the pandemic, we can make some reflections: a) dental schools and specialty associations need to draw deep lessons from the crisis and dental education methodologies; b) dental research practices should be reviewed and redirected, particularly regarding the expressive representation of world dental research; c) readjustment and improvement of clinical protocols of dental care, especially related to biosafety issues; d) the perception of difficulties that dentists around the world are facing because of the suspension of dental care and financial losses; e) the need to expand and improve options for teleradiology and virtual assistance; f) attention to all accumulated demands for dental care because of interruption of elective dental treatments; g) difficulty diagnosing and maintaining treatment for patients with oral lesions, the most prominent being head and neck cancer; and h) expansion of interdisciplinary and multi-professional activities.

Finally, this unique period in the modern history of humanity will make us think and act quickly while accomplishing profound changes in clinical and research activities knowing how to draw the appropriate learnings from this pandemic. We should remember that epidemics throughout history have provided significant insights, but only when we comprehend the past and react wisely.³

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