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LETTER TO THE EDITOR

The Impact of the COVID-19 Pandemic on Online Oral Medicine Education as Viewed Through Increased Engagement in The Oral Cavity: Portal to Health and Disease



To the Editor:

On March 11, 2020, the World Health Organization officially declared coronavirus disease 2019 (COVID-19), the disease caused by the highly contagious respiratory virus SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), a global pandemic.¹ Following this declaration, and in recognition of the rapid spread of the disease worldwide, many educational, clinical, and other work environments suspended operations and transitioned to remote work. This included suspension of elective medical and dental care in many parts of the United States, as recommended by the American Dental Association and Centers for Medicare & Medicaid Services, and recommendations by the United States Centers for Disease Control and Prevention to cease normal educational operations. This impacted all levels of education, including in-person medical and dental education, which transitioned instead to online instruction.² This unforeseen disruption forced all individuals, educational environments, and patient care settings to quickly adapt and determine

appropriate ways to fulfill their missions in virtual settings.³

Though most medical and dental education has traditionally been offered synchronously and in person, the shift to online education intensified demand for easily available, high-quality materials. The immediate nature of the closures also put a premium on resources already available. Though limited options for alternatives to traditional teaching and learning had previously been developed,⁴ students, educators, and those at home from clinical work environments had more time to increase their knowledge in areas of interest and application to their current and future work. This included students at all levels, practitioners across health care disciplines, patients, support staff, and allied professionals.

The Oral Cavity: Portal to Health and Disease (TOC) is a massive open online course developed by Penn Dental Medicine and distributed on the Coursera platform. TOC has been freely available since September 17, 2017. Global participation and reception of the course as a resource for oral medicine education has been covered previously.⁵ Since March 1, 2020, in parallel with the spread of COVID-19 and the need for alternate sources of education, TOC has experienced a precipitous increase in participation. Between March 1 and September 1, 2020 (the first 6 months of the COVID-19 pandemic), TOC received 22,474 unique visitors, of whom 7,006 enrolled (151% of enrollments from course launch to March 1, 2020). During those 6 months, 817 learners completed the material, compared to 513 between September 17, 2017, and March 1, 2020 (159%).

The all-time maximum number of course visitors (5,750), enrollments (2,202), and learners starting the material (1,177) occurred during March 2020, corresponding to the initiation of many global work and movement restrictions. In May 2020, 198 learners completed the course, which was the all-time maximum, showing continued engagement with the course over time (Figure 1). During this period, TOC experienced consistently high levels of engagement, with a maximum of 156 daily and 1,440 monthly active learners (Figure 2). These numbers represented a significant increase over historical levels of daily and monthly engagement, with average learner participation in the course remaining elevated over baseline levels throughout this 6-month period. Notably, these increases corresponded to no changes to marketing or visibility or adjustments to course structure or content.

Between March 1 and September 1, 2020, TOC was rated 4.9/5 stars, with 96% of learners rating the course “thumbs up” and 54 leaving new reviews. These

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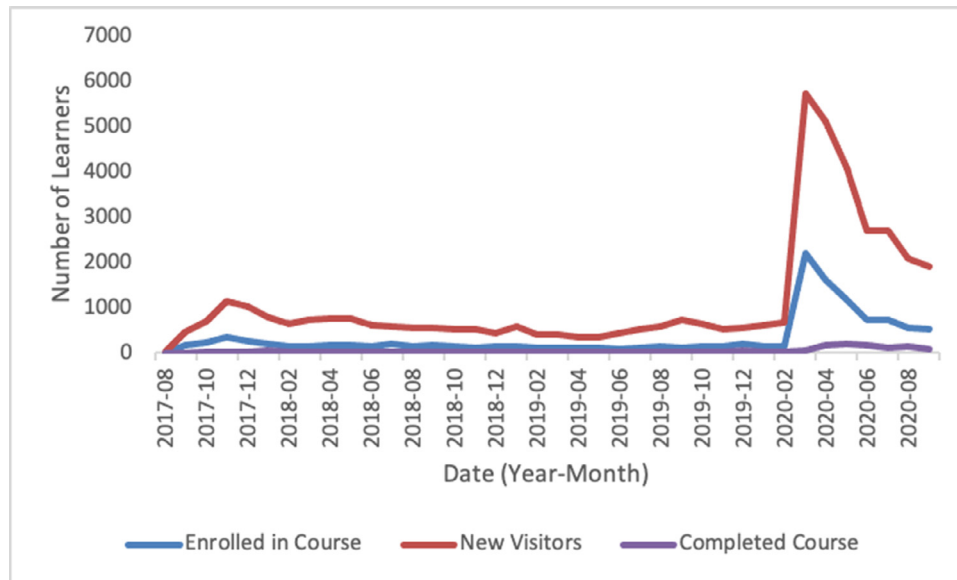


Fig. 1. Learner engagement with The Oral Cavity: Portal to Health and Disease from course introduction to September 1, 2020, showing steady levels of new visitors, enrollments, and course completions over time with course visitors and enrollments increasing exponentially during the COVID-19 pandemic, suggesting strong demand for this variety of oral medicine education over time and particularly in concert with global limitations to activity.

reviews reflected the benefit of the course material and availability during the pandemic (i.e., “Excellent mode of learning [*sic*] during quarantine,” “Great course! Really well organized, info presented is current and presented in a clear and concise manner. Good way to continue your education as an oral health professional, especially now that we are on lock-down and there isn’t much to do. I can say I came out of quarantine with a certificate!”).

Increased participation and positive reception of TOC during the COVID-19 pandemic may reflect both increased demand for virtual educational materials during global lockdowns and overall demand for information in oral medicine topics. TOC had previously been available and received positive reception, which allowed it to serve as a trusted and vetted resource without need for new content development.^{2,6} This availability and increased global spread

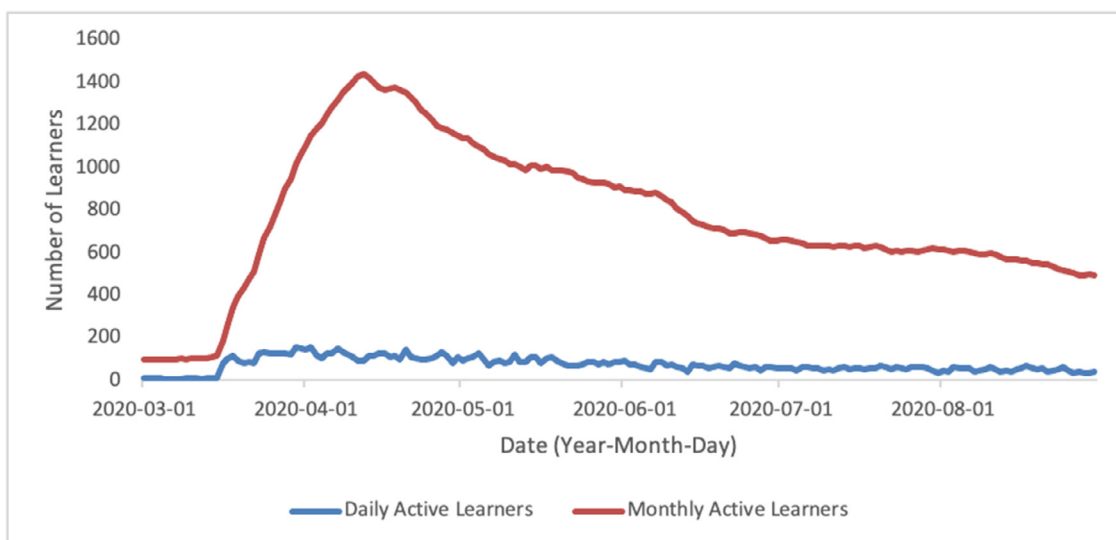


Fig. 2. Daily and monthly active learners in The Oral Cavity: Portal to Health and Disease between March 1 and September 1, 2020, showing significant increase over baseline levels, which accelerated in mid-March 2020 and remained elevated during the first 6 months of the COVID-19 pandemic.

of the course may expand global understanding of oral medicine topics, has provided learners at all levels (students, practitioners, allied health professionals, and patients) the opportunity to better understand the scope and capabilities of oral medicine specialists, and can increase awareness and appreciation for the care provided in the field. As clinical and educational environments return to normal operations, TOC continues to be available and may continue to serve as a resource on these topics for interested parties.

DISCLOSURE

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REFERENCES

1. World Health Organization. WHO director-general's opening remarks at the media briefing on COVID-19—11 March 2020. Available at: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020>. Accessed September 25, 2020.
2. Iyer P, Aziz K, Ojcius DM. Impact of COVID-19 on dental education in the United States. *J Dent Educ.* 2020;84(6):718-722.
3. Desai BK. Clinical implications of the COVID-19 pandemic on dental education. *J Dent Educ.* 2020;84(5):512.
4. Spanemberg JC, Simões CC, Cardoso JA. The impacts of the COVID-19 pandemic on the teaching of dentistry in Brazil. *J Dent Educ.* 2020;84(11):1185-1187.
5. France K, Hangorsky U, Wu C-W, Sollecito TP, Stoopler ET. Analysis of The Oral Cavity: Portal to Health and Disease, a massive open online course in oral medicine. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2020;130(6):659-666.
6. Saeed SG, Bain J, Khoo E, Siqueira WL. COVID-19: finding silver linings for dental education. *J Dent Educ.* 2020;84(10):1060-1063.