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Impact of coronavirus disease 2019 (COVID-19) on the ophthalmology training of Canadian medical students



The coronavirus disease 2019 (COVID-19) pandemic has disrupted medical education across the globe due to unique logistical challenges and physical-distancing protocols.¹ For this reason, medical educators have had to adapt to these unprecedented times at a rapid rate. Concerns with ophthalmology's representation in medical school curricula were identified before the 2020 pandemic.²⁻⁴ An increasingly crowded medical curriculum has led to the erosion of ophthalmology education for undergraduate medical students.⁵ American medical educators in ophthalmology reacted to the current climate through innovative ways such as virtual clerkships and nationwide online curriculum resources.⁶ Steps must be taken to prevent the consequences of any further decline in the quality of ophthalmology training in Canada, a concern amplified in the current pandemic environment.

Methods

An online survey was sent to undergraduate ophthalmology leads at all 17 Canadian medical schools. Qualitative questions relating to curriculum delivery, clinical rotations, and assessment were addressed in the survey (Table 1).

Using established interpretive description methodology,⁷ we analyzed data with an inductive, iterative, comparative approach that allowed data and observations to be grouped into themes, based on similarity of content. More specifically, data and observations were initially grouped by one investigator (C.P.), then reviewed and challenged by the other investigators (C.L., A.M., and N.N.), leading to discussion and re-analysis of the original data. This iterative process continued through several cycles of discussion and reanalysis until all were satisfied that the groupings adequately summarized the stakeholders' experiences. Finally, we identified patterns within the groupings to develop overarching interpretations of the themes. Member checking was performed by having several interview respondents review the identified themes. This study received approval from the Queens University ethics review board.

Results

Eleven of 17 undergraduate medical education leads gave consent to take part and responded to the online survey (response rate 64.7%). Thematic analysis of the survey responses generated 3 major themes. Example quotations from respondents are listed in Table 2.

Theme 1: Preclerkship Lecture Material and Assessments Moving to Virtual Delivery

At the time of the survey, all 11 of the respondents noted that the delivery of preclerkship ophthalmology curriculum at their institution was online. For 9 of the 11 of the schools (82%), this material had previously been delivered in person. However, only 2 of 11 (18%) reported a change in assessment (tests, exams etc.) from in-person to online.

Theme 2: Impact on Clinical Experience (Clinical Skills Teaching and Clerkship Rotations)

Before the pandemic, all programs taught preclerkship clinical skills in person. Currently, 4 of the 11 (36.4%) have moved online, 2 (18.2%) continue in-person teaching, and 5 (45.4%) were unsure how preclerkship clinical skills will be delivered.

Theme 3: The Call for Online Curricular Resources

When asked where Association of Canadian University Professors of Ophthalmology could provide support, 5 of 9 respondents (55%) requested the development of online curricular resources. Of the 5 who requested these curricular resources, 3 mentioned the possibility of a nationally available database that could be integrated into the existing curriculum.

Table 1—COVID-19 Ophthalmology Curriculum Survey Questions

1. What is your university?
2. What is your role in the undergraduate ophthalmology curriculum?
3. How will the curriculum be delivered to PRECLERKS (eg, lectures, CBL, etc.)? Is this the same or different from pre-COVID?
4. How will curriculum be delivered in CLINICAL SKILLS for PRECLERKS? Is this the same or different from pre-COVID? (*If there is no allocated clinical skills in pre-clerkship at your school, please put "N/A"*)
5. How will the curriculum be delivered to CLERKS? Is this the same or different from pre-COVID?
6. Before COVID, did your school have a mandatory ophthalmology clinical rotation for all medical students (ie, clerkship)?
7. What is current COVID plan for teaching these ophthalmology clinical rotations for CLERKS (eg, less clinical volume, more telehealth, etc.)?
8. What are the current restrictions (if any) on VISITING elective medical students occurring at your home institution? (eg, in-province, out-of-province)
9. What restrictions is your home institution placing on away electives for your own medical students?
10. What changes are currently instituted for medical students to participate in clinical care (ie, observerships, selectives, electives)?
11. Are there any changes to how assessments are conducted (eg, written exams, observations of clinical performance, work-based assessments, OSKIE's etc.)? If so, how are these assessments being done?
12. Please list any other educational or experiential changes your institution has implemented for UGME teaching in relation to COVID-19.
13. Please list any areas that ACUPO can support and/or advocate for UGME ophthalmology curriculum delivery.

CBL, case-based learning; ACUPO, Association of Canadian University Professors of Ophthalmology; UGME undergraduate medical education.

Table 2—COVID-19 Ophthalmology Curriculum Survey Example Responses. Quotations from ophthalmology curriculum leads in responses to survey questions representing the 3 identified themes

Theme	Example Survey Responses
Theme 1: Preclerkship lecture material moving to virtual delivery	Quote 1: "We will be using remote and/or digitally based delivery at least fall 2020." Quote 2: "Lectures - online; CBL - online, dissection lab and E-modules discussion – online." Quote 3: "Lectures will be delivered by zoom. For many students who didn't attend lecture pre-COVID, this isn't any different than what they would have received, as they watched recorded lectures online."
Theme 2: Impact on clinical experience (clinical skills teaching and clerkship rotations)	Quote 1: "We have reorganized the teaching sessions that are given on direct ophthalmology on models. The groups have been reduced to allow distancing." Quote 2: "In-person small group clinical skills were cancelled for students in 2020 and it is not yet clear what will happen in 2021." Quote 3: "Currently the second-year medical student in-person clinical skills session was postponed to the fall (TBD). Videos are available created by the department for medical students to watch."
Theme 3: The call for online curricular resources	Quote 1: "National virtual curriculum with clinical videos ± lectures so each institution doesn't have to reinvent the wheel. Nationwide virtual opportunities for ophthalmology-bound medical students to learn about other schools and programs (ie, a standardized approach or timing)." Quote 2: "It would be great to have a national online curriculum (ie, shared database of lectures, test questions, online videos that could be integrated into existing curriculum time)." Quote 3: "High-quality interactive sessions for clinical skills learning - right now combination of video and video conferencing modality but this does not appear to be sufficient in learning slit lamp examination or direct ophthalmology skills."

CBL, case-based learning.

Conclusion

Social distancing due to the COVID-19 pandemic has dramatically changed the landscape of undergraduate ophthalmology education across all Canadian medical schools. The most significant changes are the delivery of online lectures to preclinical students, a shift for some schools to online clinical skills delivery, and the lack of elective opportunities for students outside their home institution. There are obvious implications and many unanswered questions that these changes will bring, for example:

- Will online lectures provide new challenges and continued erosion of ophthalmology education? Or will they provide more widely accessible resources?
- How can "virtual" clinical skills in ophthalmology be delivered to teach proper eye examination skills?
- What will be the effects of elective restrictions on students potentially interested in ophthalmology residency?

The survey results also highlight how the pandemic may create opportunity for innovation. For example, the expansion of nationally available online curricular resources such as the Canadian Ophthalmology Society's "practice resource center" is an area of ongoing desire.⁸ Perhaps the current disruption with its move to significant online learning is the catalyst to drive Canadian educators to move toward this goal.

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Footnotes and Disclosure

The authors have no proprietary or commercial interest in any materials discussed in this article.