

Undergraduate ophthalmology education in Canadian medical schools: a cross-sectional survey



In recent years, concerns have been raised about the adequacy of ophthalmology education in Canadian medical schools. A 2009 survey of recent Canadian medical school graduates reported that the majority of graduates believed that they did not obtain sufficient ophthalmology knowledge or skills during medical school.¹ To improve undergraduate ophthalmology training, it is necessary to have an understanding of the current curricula in Canadian medical schools. The last study to describe the ophthalmology training provided in preclerkship and clerkship in Canada was conducted in 1998, and therefore an updated evaluation was warranted.²

We conducted a survey-based study of the 17 Canadian medical schools. An online survey, designed using the

Qualtrics Online Survey Software (Qualtrics, Provo, UT), was distributed via email to representatives at each medical school, and follow-up was performed with emails and phone calls. The survey was adapted from 3 previous studies conducted in the United Kingdom, Asia/Australia, and Canada; the Medical Council of Canada (MCC) medical expert learning objectives; and the International Council of Ophthalmology (ICO) curriculum guidelines.²⁻⁶ This study was approved by the Health Sciences Research Ethics Board at Queen's University (OPH-226-18).

The survey was completed by 14 of 17 Canadian medical schools (82%). One school did not devote any time to ophthalmology in its curriculum. The remaining 13 schools all devoted time to ophthalmology in preclerkship. The median number of hours devoted to ophthalmology in preclerkship was 20 with considerable variability between schools (range 0–100). The most common teaching style was lecture followed by clinical experience and small group/problem-based

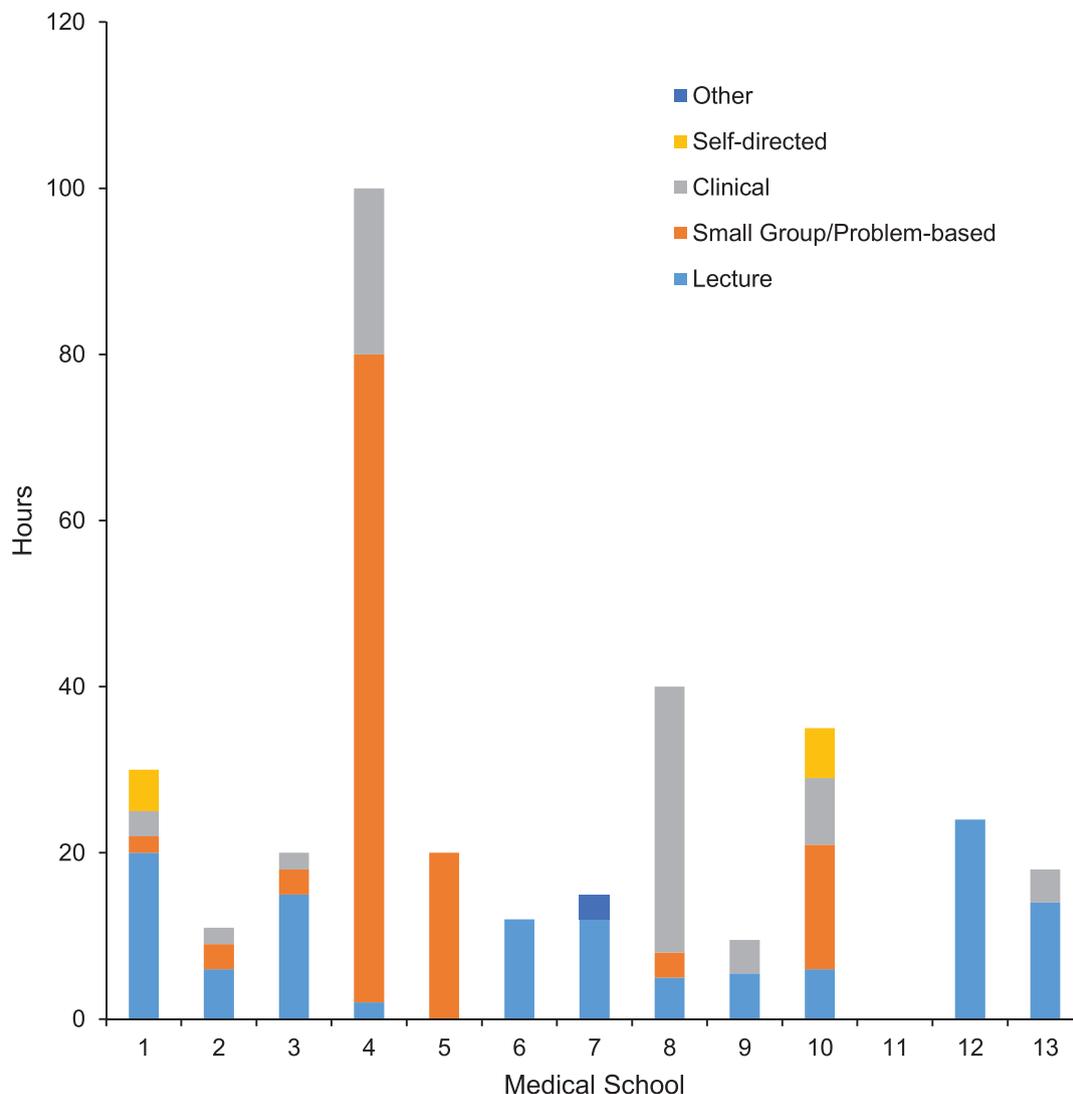


Fig. 1—Preclerkship curricular time by teaching style at each medical school.

learning (Fig. 1). Seven schools also offered an ophthalmology rotation as part of their core clerkship. The percentage of students who participated in the rotation was variable (median 100%, range 10%–100%), because some schools offered ophthalmology as a selective rotation, whereby only a subset of the medical school class completed the rotation. The most common duration was 1 week (median 1 week, range 0.2–4 weeks), and the most common teaching settings were general clinics, specialty clinics, and emergency clinics (Fig. 2). The MCC objectives (eye redness, diplopia, strabismus and amblyopia, acute vision loss, and chronic vision loss) were well addressed by all of the schools, with the exception of the one aforementioned school that did not devote any time to ophthalmology in preclerkship or clerkship (Table 1). There was greater variability with regard to the ICO topics and clinical skills; however, the majority were still addressed by most schools (Table 1).

In 1998, the median number of hours devoted to ophthalmology in preclerkship was 16 (range 1–45), and 7 of 16 medical schools (44%) had mandatory clerkship rotations. Therefore, the amount of curricular time devoted to ophthalmology has overall remained relatively stable over the past 20 years. However, the majority of Canadian medical students are still not being exposed to ophthalmology in a clinical environment, which is likely contributing to the previously reported deficiencies in the understanding of ophthalmology. Previous studies have advocated for the nationwide adoption of a minimum 1 week core ophthalmology clinical rotation that is based jointly on the ICO guidelines and the unique perspectives of Canadian medical schools.^{1,7} Our results certainly lend further support to this proposal. Future research to determine the structure and feasibility of this clinical rotation is warranted.

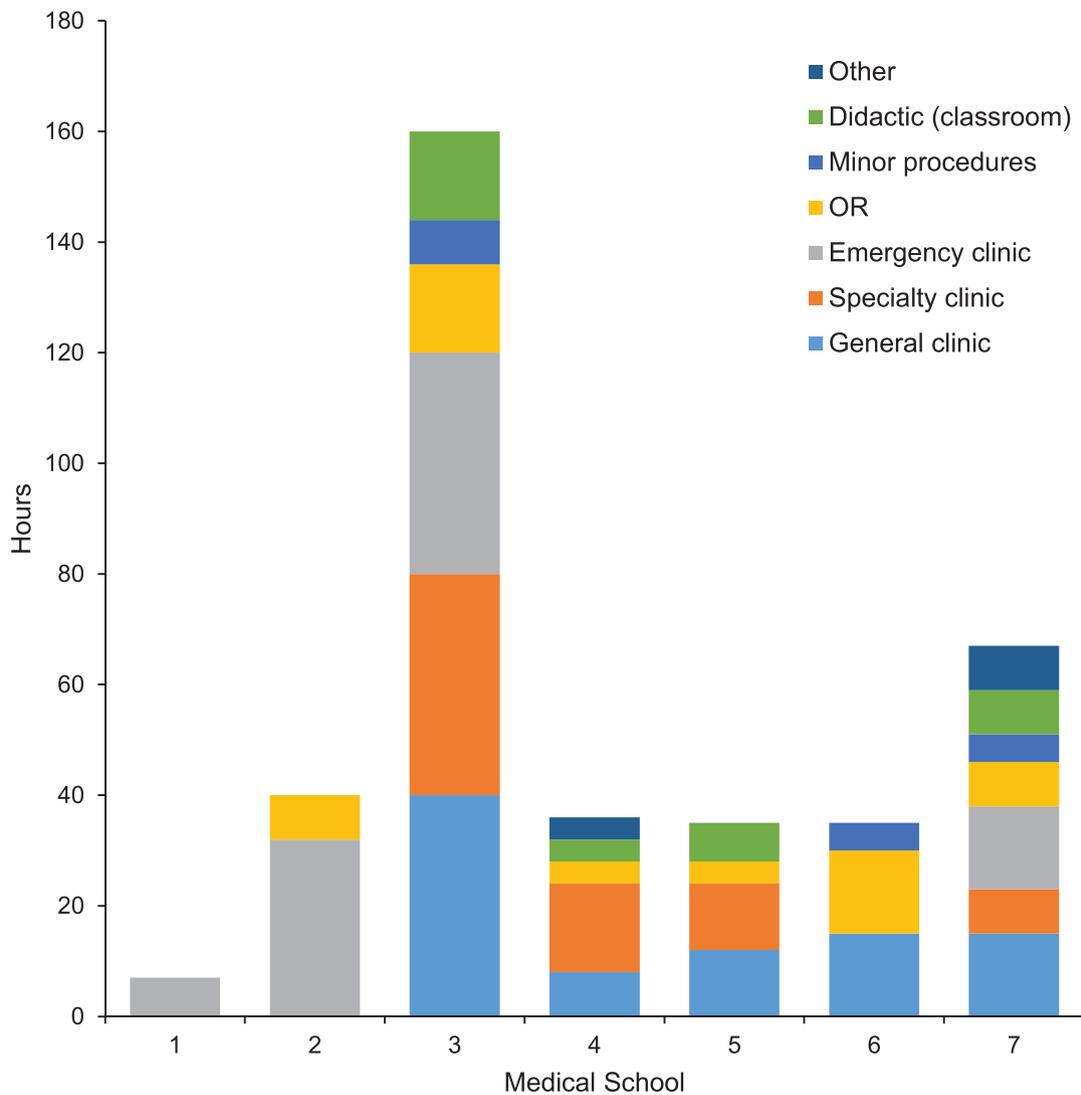


Fig. 2—Composition of clerkship rotations at each medical school.

Table 1—Learning objectives addressed by Canadian medical schools

MCC objectives, n (%)	
Eye redness	13 (93)
Diplopia	12 (86)
Strabismus and amblyopia	13 (93)
Acute vision loss	13 (93)
Chronic vision loss	13 (93)
ICO topics, n (%)	
Fundamentals and principles of ophthalmology (anatomy and examination)	11 (79)
Cornea and external diseases (red eye)	12 (86)
Lens and cataract	11 (79)
Neuro-ophthalmology	9 (64)
Vitreoretinal diseases	10 (71)
Glaucoma	12 (86)
Pediatric ophthalmology and strabismus	11 (79)
Disease of the eyelid, lacrimal system, and orbit	10 (71)
Ocular manifestations of systemic diseases	9 (64)
Intraocular tumours	6 (43)
Refraction and contact lens	4 (29)
Refractive surgery	2 (14)
ICO clinical skills, n (%)	
Visual acuity testing	12 (86)
External inspection with a penlight	10 (71)
Slit lamp examination	10 (71)
Pupillary reaction testing	11 (79)
Ocular motility testing	10 (71)
Direct ophthalmoscopy	12 (86)
Pupillary dilation	7 (50)
Intraocular pressure measurement	7 (50)
Anterior chamber depth assessment	8 (57)
Confrontation field testing	10 (71)
Upper lid eversion	7 (50)
Fluorescein staining of the cornea	9 (64)
Red reflex	9 (64)
Cover testing	7 (50)

MCC, Medical Council of Canada; ICO, International Council of Ophthalmology.

Jeffrey M. Mah,* Lorne Bellan,† Stephanie A. Baxter‡

*University of Ottawa, Ottawa, ON.; †University of Manitoba, Winnipeg, Man.; ‡Queen's University, Kingston, Ont.

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Correspondence to:

Stephanie A. Baxter, MD: baxters@queensu.ca.

References

1. Noble J, Somal K, Gill HS, Lam W-C. An analysis of undergraduate ophthalmology training in Canada. *Can J Ophthalmol* 2009;44:513–8.
2. Bellan L. Ophthalmology undergraduate education in Canada. *Can J Ophthalmol* 1998;33:3–7.
3. Baylis O, Murray PI, Dayan M. Undergraduate ophthalmology education – a survey of UK medical schools. *Med Teach* 2011;33:468–71.
4. Fan JC, Sherwin T, McGhee CN. Teaching of ophthalmology in undergraduate curricula: a survey of Australasian and Asian medical schools. *Clin Exp Ophthalmol* 2007;35:310–7.
5. Medical Council of Canada. Examination Objectives Overview. <https://mcc.ca/objectives/>; 2019 [accessed 1 April 2019].
6. International Council of Ophthalmology. Principles and guidelines of a curriculum for ophthalmic education of medical students. *Klin Monbl Augenheilkd* 2006;223(Suppl 5): S1–19.
7. Gostimir M, Sharma RA, Bhatti A. Status of Canadian undergraduate medical education in ophthalmology. *Can J Ophthalmol* 2018;53:474–9.

Supplementary Materials

Supplementary material associated with this article can be found in the online version at doi:[10.1016/j.jcjo.2020.08.009](https://doi.org/10.1016/j.jcjo.2020.08.009).

Footnotes and Disclosure

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