



Mapping the Current State of Canadian Medical School Oncology Interest Groups

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Abstract

Cancer is the leading cause of mortality in Canada. Undergraduate medical education therefore must ensure adequate oncology education for all physicians and inspire some to make oncology their career specialty, in an effort to ensure public care needs are met in the future. Medical student-led oncology interest groups (OIGs) are a subset of specialty interest groups that supplement formal didactic and clinical learning to increase exposure to oncology and access to mentors. We conducted a survey of OIG leaders to ascertain their goals, activities, barriers, future directions, and perceptions about employment prospects. OIG leaders from 12/17 Canadian medical schools responded. Medical oncology was the most represented specialty in OIGs. Half of OIGs had faculty mentors. Self-reported goals were to increase exposure to oncology disciplines ($n = 12$), assist students with career selection ($n = 11$) and finding mentors ($n = 7$), and enhance oncology education ($n = 10$). OIGs held on average 5 events per year (range 1–12). Reported barriers were finding time to plan events, declining student interest over academic year, and limited funding. Many OIGs showed interest in more standardized resources about oncology disciplines ($n = 9$), access to presentations ($n = 10$), more funding ($n = 7$), and collaboration ($n = 7$). Employment in many oncology specialties was perceived poorly, and the most important career selection considerations were ease of employment, practice location, and partner/family preference. Our survey highlights common goals, barriers, and perceptions in OIG medical student leaders across Canada and provides guidance for future interventions.

Keywords Oncology interest group · Survey · UGME · Undergraduate medical education

Background

Cancer remains a leading cause of morbidity and mortality in Canada, with an estimated 1 in 2 Canadians developing cancer in their lifetimes. In 2019, it is estimated 220,400 Canadians will develop cancer, and 82,100 or about 1 in 4 people will die from their cancer [1]. Despite being a leading public health concern, it has been recognized that undergraduate medical education (UGME) curricula in Canada, and around the world, continue to contain gaps in oncology education, with significant heterogeneity between schools in the amount of content and subjects covered [2, 3]. Studies have shown that graduating medical students have misconceptions about cancer treatments [4, 5]. An important role of UGME is to provide students with exposure to and information about a wide range of career options. This is especially important for careers and specialties that are not part of the mandatory clinical experience for students.

Oncology is rarely a mandatory clinical experience for medical students. As such, alternate methods of gaining exposure to oncology as a career are needed. One way of gaining

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exposure to oncologic specialties in UGME is through oncology interest groups (OIGs). OIGs, generally medical student-led, are a subset of specialty interest groups that supplement formal didactic lectures and clerkship rotations by increasing exposure of medical students to various disciplines, connect students with potential mentors, increase awareness of topics, and provide unique opportunities to practice clinical skills [6–8]. Previous research shows that OIGs promote interest in pursuing oncology electives, increase confidence in breaking bad news, and increase awareness of oncology-related disciplines [8].

The current state of OIGs in Canada remains unexplored, and no formal evaluation of them has been conducted. Given that oncology continues to be underrepresented in formal UGME curricula [9, 10], we sought to examine OIGs through a cross-sectional survey of their leaders. We explored the perceived role of OIGs in increasing awareness and facilitating mentorship, barriers faced by OIG leaders, as well as their perceptions of employment in oncology disciplines.

Methods

This survey was initiated by members of the Canadian Radiation Oncology Foundation (NM, AC, JC, RH, EV, AB) in partnership with the Canadian Association of Radiation Oncology board members (XX, XX) (MB, PI) and its Education Committee (XX, XX) as part of their educational outreach initiative. The aim of the survey was to characterize the activity level of Canadian OIGs, resources available, barriers to function, and perceptions of employment in oncology disciplines. A waiver was obtained for this study from the institutional research ethics board.

Questionnaire Development

Through literature review and consultation with staff radiation oncologists, survey questions were developed to reflect five domains of interest: OIG activities, goals, barriers, future directions, and job perceptions. Questions were selected to help identify current shortcomings of OIGs, in order to guide future areas for improvement. The survey consisted of multiple choice, Likert scale, and free text questions. The full survey is included in the [Appendix](#).

Survey Distribution

Contact information of medical student(s) who were OIG leaders across all 17 Canadian medical schools was obtained, in fall 2018, with permission from UGME offices via email. The survey was disseminated electronically to the OIG leaders using Google Forms, and reminders were sent once to nonresponders. Responses were collected from January 2019 to April 2019. No personal or individual data were collected.

Data Analysis

Data were analyzed descriptively with percentages or means with standard deviations where appropriate.

Results

Complete survey responses were obtained from 12 of 17 Canadian medical schools, corresponding to a response rate of 71%. Six out of 8 provinces with medical schools were represented; no responses were received from Newfoundland and Manitoba. All 12 OIGs held events for medical oncology, with 9 also representing radiation oncology and 8 also representing surgical oncology. A few also held events specific for palliative care ($n = 2$), gynecologic oncology ($n = 2$), and hematologic oncology ($n = 1$). Half ($n = 6$) of OIGs had formal faculty mentors, with the majority ($n = 5$) of these mentors being medical oncologists. None of the OIGs declared collaborating with OIGs from different medical schools nor within their medical school year-to-year. Only 2 schools had oncology-related rotations as part of their core clerkship rotations.

Goals of OIGs

Self-reported main goals of OIG events were to increase exposure to oncology specialties ($n = 12$), assist students with career selection ($n = 11$), enhance oncology education ($n = 10$), and help students find resident/staff mentors ($n = 7$). Four OIGs directly promoted career networking through mentorship programs, staff shadowing databases, and newsletters containing faculty research postings. Other OIGs did not have networking as a formal mandate but connected students to staff and residents as opportunities arose.

Activities of OIGs

On average, OIGs held 5 events per year, ranging from 1 to 12. The most common events held by OIGs included specialty introduction talks ($n = 11$), discussion panels ($n = 5$), departmental tours ($n = 5$), trainee meet and greets ($n = 5$), and hands-on workshops ($n = 4$). Examples of less common events included skills sessions (e.g., breaking bad news), curriculum review sessions, opportunities to connect with staff for shadowing, and holding booths at other events. Event attendance varied greatly from school to school and event type, with specialty introduction presentations attracting anywhere from 10 to 90 participants. The most common method OIGs used to promote their events was social media (i.e., Facebook; $n = 9$), followed by club fair booths/presentations at the beginning of the year ($n = 6$) and emails ($n = 6$).

Barriers Reported

The most significant barriers as reported by OIG leaders preventing them from hosting a greater number of events were difficulty finding time to plan events, declining student interest as the academic year progressed, and limited funding (Fig. 1). Funding for OIGs varied greatly across Canada in terms of amount and source. On average, OIGs received approximately \$450 CAD per year for operating budgets, with one group receiving “less than \$100” and one receiving \$1800. The majority of funding came from each medical school’s respective student associations. Three OIGs received funding from the American Society of Clinical Oncology (ASCO) and one from the American College of Physicians (ACP).

Future Directions

When asked what improvements would be most useful for future years, 9 respondents wanted increased access to resources about oncology specialties such as pamphlets and presentations, 8 wanted an increase in funding, and 7 felt that collaboration with other OIGs across Canada would be helpful. Five OIG leaders felt that more faculty support would be beneficial, and 4 were interested in holding more events. If

offered the chance to collaborate on and share materials nationally, 10 OIGs leaders felt that presentations on specialty information and oncology topics would be helpful. In addition, 8 felt that shared brochures would be of benefit.

Job Perceptions

OIG leaders were surveyed regarding general perceptions on job markets at their schools. Using a Likert scale ranging from 1 (poor job market) to 5 (great job market), the average scores were lowest for radiation oncology, followed by surgical oncology, gynecologic oncology, medical oncology, and palliative care (Fig. 2). When asked about perceptions of the job market in 5–7 years, OIG leaders reported higher scores, but the ranking did not change: radiation oncology scored the lowest average score, followed by surgical oncology, gynecologic oncology, medical oncology, and palliative care. In order of most to least important, OIG leaders reported the following considerations in career selection: ease of employment, practice location, partner/family preference, call burden, career advancement, flexible hours, autonomy, residency application competitiveness, length of training, city size, debt accumulation (the total amount of debt accrued during medical training), and patient population (Fig. 3).

Fig. 1 Limiting factors for Oncology Interest Groups (OIGs) to hold more events, ranging from 1, not a barrier, to 5, a significant barrier

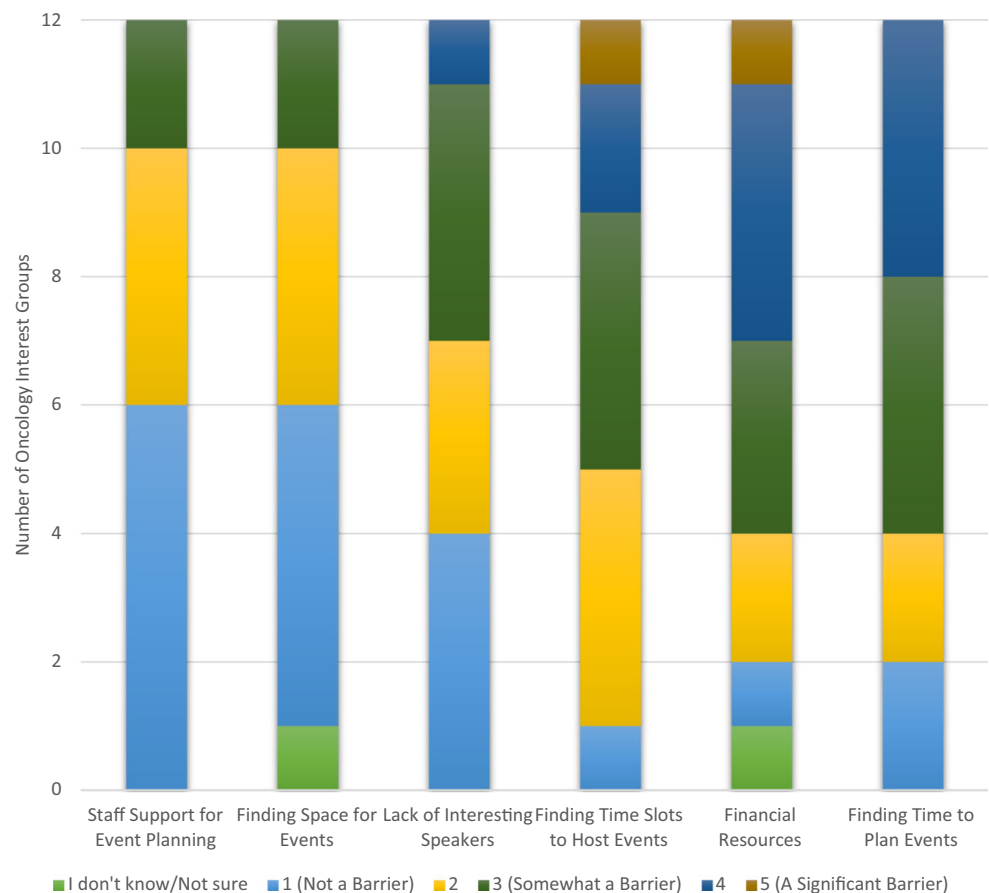
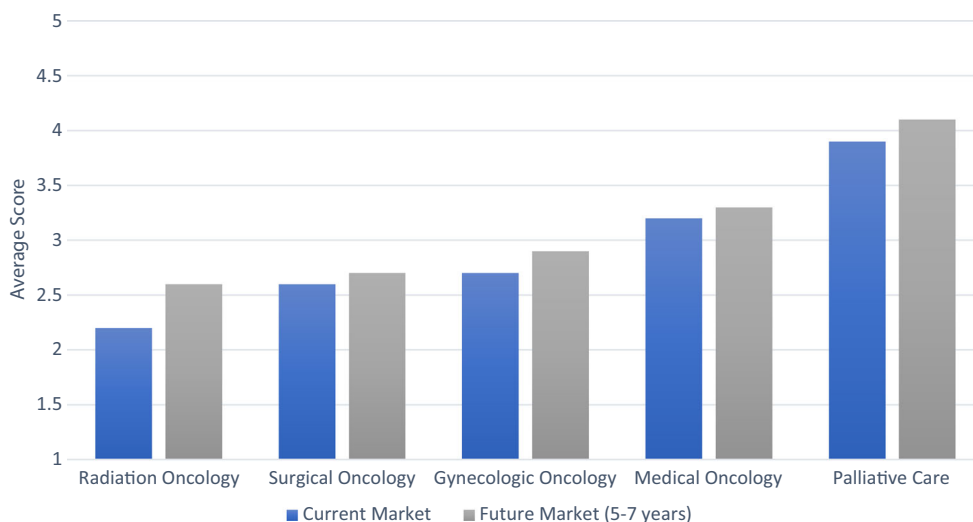


Fig. 2 Current and future oncology job market perceptions according to surveyed oncology interest group (OIG) leaders ranging from 1, poor, to 5, great



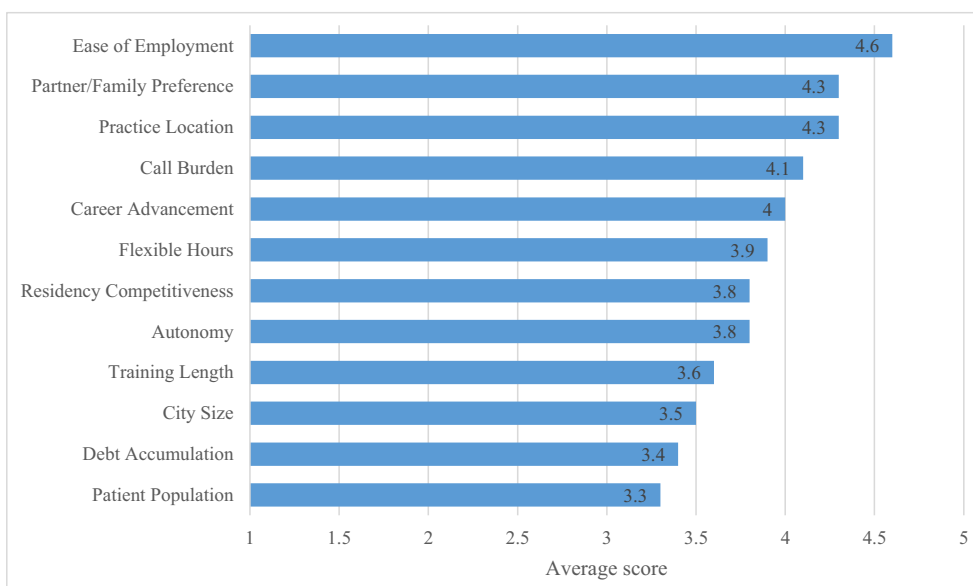
Discussion

OIGs play an important role in increasing exposure to oncology disciplines by supplementing formal UGME curricular components. To our knowledge, this study is the first to document the state of OIGs across medical schools at a national level. We show that OIGs across the country have similar goals, but heterogeneity exists in terms of available resources and events held. Our data is in keeping with the state of oncology education reported in literature [2–4, 9, 10], revealing heterogeneity in exposure to many oncology specialties including radiation, surgical, gynecologic, and hematologic oncology, as well as palliative care. When planning an interdisciplinary palliative oncology curriculum, Head et al. reported several barriers including educational isolation of certain disciplines, lack of funding to initiate or maintain efforts, logistical problems such as space and scheduling, and few or no

advocates within an institution [11]. A set of standardized oncology education goals for Canadian medical students were published in 2016, with the input of 34 oncology educators across 14 Canadian medical schools [12]. While it is unclear to what extent these goals have been implemented, OIGs can play a crucial role in reinforcing the concepts outlined. Given that OIGs have been shown to impact student interest [8, 13], exposure to mentors, and comfort level with oncology-related topics, this highlights an opportunity to standardize OIG activities and resources, as well as increase collaboration between groups to bolster exposure and mentorship in the wide variety of oncology specialties available.

We also found a lack of coordination between OIGs across different medical schools, as well as within medical schools from year-to-year. This may be attributed to turnover of OIG leadership and lack of infrastructure to serve as a repository for resources. While assessing the specific composition of

Fig. 3 Factors considered by applicants when selecting a career in oncology, ranging from 1, not important, to 5, very important



OIGs was not a part of our survey, however based on observations, these typically involve a committee of 2–3 medical students, who retain the role for a period of 1–2 years. These challenges may contribute to the disparity in available educational resources, contacts, and access to mentors between different OIGs as shown by our survey. Moving forward, we believe OIGs across Canada may benefit from developing and sharing standardized educational materials, with the support of residents and staff oncologists. This may be facilitated through an online learning management system. In addition, securing an official faculty mentor who works with the OIG over a period of years may be beneficial, allowing OIGs to build upon previous years' progress and provide ongoing mentorship. It would also increase awareness of available resources, such as those from the American Society of Clinical Oncology (ASCO) [14].

Perceptions about the job market trends in oncology disciplines did not accurately reflect recently published data. Loewen et al. recently reported a modest improvement in labor force trends in radiation oncology in Canada, and Yip et al. reported that the Canadian Medical Oncology workforce will continue to grow with increasing new hires projected to 2026 [15, 16]. Several surgical oncology reports recently have highlighted ongoing workforce challenges [17, 18]. Although not explored in our study, pathology also warrants exposure as an oncology-related discipline and shows promising workforce trends [19]. We believe that an evidence-driven discussion around physician workforce is warranted with medical students and OIGs can serve as an important platform for this discussion.

Our study has some limitations. Our data represents the perspective of the OIG medical student leaders. As a result, we cannot comment on the impact of OIGs as perceived by other medical students, which was not the primary focus of our work. There could also be differences in understanding and interpretation of questions between responders, as our survey was not formally validated as a standardized questionnaire would be. We did not receive answers from five medical schools, and a national strategy to coordinate efforts between OIGs should seek to include all Canadian medical schools. Our study design was primarily from a radiation oncology viewpoint; however, we felt that given the lack of information on the topic, an exploratory survey would be hypothesis generating and could potentially inspire future multidisciplinary projects. Lastly, while our data is from Canadian medical schools, gaps in oncology education have been appreciated in other countries, and the topic appears to be of interest [20, 21].

Despite these limitations, our work emphasizes a few key findings. Our results indicate that despite the efforts of OIGs nationwide to promote oncology as a career choice, a gap in the exposure of medical students to a large array of oncology specialties still exists. While there was significant heterogeneity between the resources available to OIGs, they shared

similar goals and barriers, and there was broad interest in seeking collaboration. Given the importance of cancer and the multidisciplinary nature of its treatment, it behooves medical schools, national societies, as well as education groups to promote collaboration with and between OIGs in order to increase medical student awareness. In the interim, oncology specialties may also benefit from assisting OIGs in implementing standardized high-quality events, providing official mentorship, and exploring opportunities which may increase access to oncology specialists.

Conclusion

OIGs serve an important complementary function to UGME curricula. Among Canadian OIGs, our data reveals heterogeneity in exposure to specialties, resources, and lack of coordination and points to future areas of potential interventions to aid in preparing the physicians of tomorrow for the number one cause of mortality in Canada.

Data Availability All collected data available upon request.

Compliance with Ethical Standards

Conflicts of Interest MG has disclosures unrelated to this work, in funding from Eli Lilly and being on the Bristol Myers Squibb and AstraZeneca ad boards.

Ethics Approval This is an observational study. The institutional research ethics board has confirmed that no ethical approval is required.

Appendix. Survey Questions

- Which oncology specialties do you represent/hold events for? Select all that apply and use “Other” option to give any context as needed.
 - Surgical oncology
 - Radiation oncology
 - Medical oncology
 - Gyne oncology
 - Palliative care
 - Other
- What type of events do you hold? Select all that apply. If other events, please elaborate in “Other”.
 - Introduction to specialty talks
 - Oncology booths at other events
 - Panel discussions
 - Hands-on workshops (e.g., using models, suturing, brachytherapy, etc.)
 - Oncology department visits/tours

- Meeting oncology trainees
 - Other
3. How many events do you hold per year? (free text).
 4. What is the average number of participants you have for your events? Please mention type of event and typical turnout (free text).
 5. What are some benefits you see arising from your OIG activities? If others, please elaborate in “Other”.
 - Enhancing oncology education
 - Exposure to specialties
 - Career selection
 - Exposure to scholarships
 - Finding resident/staff mentors
 - Other
 6. Do you engage in career networking? (e.g., putting interested students in touch with faculty/resident mentors). If so, please describe how you do it. (free text)
 7. What is your approximate annual budget? What are your sources of funding and breakdown? (free text)
 8. Do you have a faculty mentor? (Yes/no)
 9. If you answered yes, what is your faculty mentor’s specialty? If no, write “n/a” (free text).
 10. How do medical students find out about your group’s existence? How do they sign up? (free text).
 11. Do you work with or share content with OIGs at other medical schools? *(Yes/no).
 12. Which medical school OIG(s) are you sharing content with or are working with? (free text).
 13. What are limiting factors for your interest group to hold more oncology events? Rank from most to least significant. *If there are other barriers you have experienced, you will be asked to list them in the next question (Likert scale between 1 and 5, 1 = not at all a barrier, 5 = a significant barrier, with the option of “I don’t know/not sure”).
 - Staff support to guide event planning
 - Financial resources
 - Booking space for events
 - Finding the time to plan events
 - Finding time slots to host events
 - Lack of interested speakers
 14. Are there other barriers you have experienced that have not been mentioned? Briefly describe how would you rank them as well. If none, write “n/a” (free text).
 15. In your experience or in that of your predecessors, what would you like to see change in your OIG?
 - More events
 - More funding
 - More medical faculty support
 - More collaboration with OIGs nationally
 - More resources about oncology specialties and topics (pamphlets, presentations, etc.)
 - Other
 16. Would you be interested in having access to shared resources about oncology topics and specialties for use among all OIGs nationally? Select all that apply.
 - No, not interested
 - Pamphlets
 - Presentations on topics
 - Presentations on specialties
 - Other
 17. Is your OIG aware of the Pam Catton Summer Studentship in Radiation Oncology? (Yes/no).
 18. At your medical school, is exposure by way of clinical rotation in oncology... (check all that apply).
 - A mandatory part of core clinical clerkship rotations
 - An option as a selective during clinical clerkship rotations
 19. What do you think is the average medical student’s perception of the current job market in the following specialties? (Likert scale between 1 and 5, 1 = poor, 5 = great, with the option of “I don’t know/not sure”).
 - Surgical oncology
 - Radiation oncology
 - Medical oncology
 - Gynecological oncology
 - Palliative care
 20. What do you think is the average medical student’s perception of the job market in the following specialties in 5–7 years? (Likert scale between 1 and 5, 1 = poor, 5 = great, with the option of “I don’t know/not sure”).
 - Surgical oncology
 - Radiation oncology
 - Medical oncology
 - Gynecological oncology
 - Palliative care
 21. How important are the following to the average medical student on whether to pursue a career in oncology? (Likert scale between 1 and 5, 1 = not at all important, 5 = very important, with the option of “I don’t know/not sure”).

- Practice location
 - Flexible work hours
 - Patient population
 - City size
 - Burden of call duties
 - Spouse/partner/family preferences
 - Ease of employment after training
 - Level of autonomy
 - Opportunities for career advancement
 - Competitiveness of residencies
 - Length of training
 - Debt accumulation
22. Please give us any comments you would like to share or suggestions you have for us. (free text)

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