Oncology Education for Family Medicine Residents: A National Needs Assessment Survey

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Abstract

Background This study aimed to determine the current state of oncology education in Canadian family medicine training programs (FMTPs) and examine opinions regarding optimal oncology education in these programs. Methods A survey was designed to evaluate ideal and current oncology teaching, educational topics, objectives, and competencies in FMTPs. The survey was sent to Canadian family medicine (FM) residents and program directors (PDs). Results A total of 150 residents and 17 PDs affiliated with 16 of 17 Canadian medical schools completed the survey. The majority indicated their programs do not have a mandatory clinical rotation or block in oncology (79% residents, 88% PDs). The amount of oncology education received by residents during their training was thought to be less than ideal by 80% of residents and 71% of PDs, with only 7% of residents feeling adequately prepared to care for cancer patients as family physicians. Residents believed the best way to learn oncology is through clinical experiences alone, while PDs indicated case-based and didactic teaching were also important. Residents and PDs agreed the most important topics to learn are performing pap smears, cancer screening, breaking bad news, cancer prevention and palliative care. According to residents, other important topics such as appropriate cancer patient referrals, managing cancer complications and post-treatment surveillance were only taught at frequencies of 52%, 40% and 36%, respectively. Conclusions Current FMTP oncology education is suboptimal, although the degree differs in the opinion of residents and PDs. This study provides a curricular framework to improve FM oncology education.

Background

Approximately 40% of Canadians will develop cancer in their lifetime and 30% will die from cancer (1). Due to the high prevalence of cancer, nearly all family physicians are involved in the screening, management, post-treatment surveillance, and palliation of cancer patients. According to the 2010 National Physician Survey, approximately 84% of family physicians reported having managed patients with cancer (2).

Despite the growing need for cancer care in family practice, there is little focused oncology teaching in undergraduate medical education and postgraduate family medicine (FM) residency training in Canada (3,4). In 2009, one survey study of family medicine program directors and academic co-ordinators found that only 12.5% of respondents reported more than one week of cancer education in their FM training program and 75% indicated that only 1% to 5% of their entire FM curriculum focused on cancer (3). In another study, cancer education was also thought to be inadequate in their training program by 57% of FM residents (4). These residents believed that cancer is the least adequately taught subject compared to all other medical subspecialty-related diseases (4).

The purpose of this national survey study was to assess in detail the current state of oncology education in Canadian FM residency training programs and to determine the optimal topics and potential curricular interventions for educating family medicine residents regarding cancer.

Methods

This national needs assessment survey study was approved by the University of Calgary Conjoint Health Research Ethics Board. Data collection was completed from May 1 to August 31, 2017.

Survey and Data Collection

The post graduate medical education (PGME) surveys were designed to evaluate ideal and current oncology teaching, topics, objectives and competencies in FM PGME. Two separate surveys were developed specifically for FM residents and FM program directors (PD) (see Appendix A and B for the survey questions).

The surveys were initially developed by a group of Canadian physicians, including: a FM residency PD, a chair and sitting member of the Family Physician Cancer Care Committee of the College of Family Physicians of Canada and Physicians, a general practitioner oncologist, five medical oncologists, two radiation oncologists, and one surgical oncologist. Prior to distribution, the surveys were assessed for face and content validity by this group and pilot-tested with a group of 5 general practitioners. All surveys were available in both English and French.

A self-administered web-based survey was created to determine the opinions of FM residents and PDs regarding oncology education in their residency training programs. Residents in FM training programs are classified into postgraduate years, including year 1 (PGY-1), year 2 (PGY-2), and sometimes year 3 (PGY-3). The first component assessed demographics and asked whether a formal oncology curriculum is currently taught at the respondents' FM residency program and whether a set of learning objectives or competencies are provided to the residents. The survey then inquired about currently-taught oncology topics, teaching methods employed, and perceived adequacy of the education in oncology. The next component of the survey included questions surrounding the optimal teaching methods for oncology education oncology to FM residents and the most important oncology topics to be learned (using free text and drop down menu response options). Finally, respondents were asked about the usefulness of a national set of standardized learning goals, objectives and competencies in oncology for FM residency training programs.

Canadian FM residency PDs from all 17 FM residency programs were contacted by e-mail and asked to complete the survey. Some family medicine training programs were identified to have more than one PD (e.g. one in charge of the urban program and another in charge of the rural program). In such cases, each PD was asked to complete the survey. The PDs were also asked to forward a web link to the resident version of the survey to all of their FM residents. PDs were asked to indicate the total of number of residents who would receive the survey in order to determine response rates. We attempted to enhance the response rate by sending subsequent reminders and offering coffee cards to those who completed the survey. A second reminder invitation was sent to PDs.

Statistical Analysis

The survey was conducted using the website www.surveymonkey.com (© 1999-2019 SurveyMonkey). Following completion, aggregate data was transferred to a password-protected computer for analysis. Statistical analysis was performed using the Microsoft Excel software application (version 15.0: Microsoft Corp., Redmond, WA, U.S.A.). The response frequencies and descriptive statistics were calculated where appropriate.

Results

The demographic characteristics of the FM resident and PD respondents are shown in Table 1. A total of 19 family medicine PDs were identified from the 17 Canadian medical schools and 17 completed the PD survey (response rate = 87%). They represented 16 of the 17 medical schools with FM training programs. The 17 program directors agreed to distribute the resident survey link to a total of 902 FM residents, of which 150 completed the survey (response rate = 17%). Figure 1 shows the geographic distribution of respondents across Canada. A total of 17 FM programs were represented with responses from PDs and/or residents from all areas of Canada. Although it was not possible to disseminate the survey to one Western Canadian FM training program, due to logistic barriers, we were still able to obtain survey responses from this institution's program directors.

Table 2 summarizes key findings with regards to the current state of oncology teaching in Canadian FM training programs (all raw response data from residents and program directors are available in Additional File 1 and

Additional File 2, respectively). Based on these survey results, it appears that none of the FM training programs currently have a mandatory oncology rotation. Five PDs (29%) report having oncology learning objectives and competencies, but many residents are unaware that these exist. More PDs than residents report that there is currently adequate oncology education (18% vs 7%, respectively), and residents are being adequately prepared for their role in caring for cancer patients (13% vs 7%, respectively).

The most common instructional method was informal clinical teaching around cases on rotation (e.g. bedside teaching) by family physicians, as reported by 88% of PDs (Table 3). However, only 49% of residents reported receiving formal oncology teaching (e.g. lecture-based, problem-based learning) in their family medicine clinics. Oncology teaching through didactic lectures and small group/case-based learning were reported by 76% of PDs. Yet, only 36% to 37% of residents reported learning oncology through these teaching methods. PDs and residents agreed that the optimal methods for teaching oncology to FM residents is preferentially through clinical exposure, followed by didactic teaching, and also small group/case-based learning (Table 4).

Table 5 shows that based upon the survey results, the most important oncology topics for FM residents to learn in descending order of mean perceived importance, accompanied by the perceived prevalence of current teaching of each topic. The topics thought to be most important by residents with a mean rating of 4.5 out of a 5-point Likert scale or higher were: performing pap smears, cancer screening, breaking bad news, cancer prevention, approach to a patient with increased risk of cancer and palliative care. The PDs generally agreed that these topics are most important, but also included providing psychosocial support and performing a skin biopsy as areas of importance. There was general consensus between PDs and residents that all of these topics are being taught to residents (ranging between 87% - 100% frequency, per item). However, other important topics, including appropriate referral to cancer specialists, post-treatment surveillance for recurrence, managing common cancer complications, and managing common treatment side effects were only taught with frequency rates of 73%, 47%, 40% and 47%, respectively, according to PDs.

According to PDs, five cancer disease sites viewed to be of greatest educational importance for FM residents are breast (100%), lung (93%), colorectal (80%), prostate (73%), and cutaneous (73%). Residents stated that breast (93%), lung (90%), colorectal (83%), prostate (73%), and cutaneous (30%) cancers were of greatest interest to them.

When asked whether a set of standardized national oncology learning goals, objectives and competencies for family medicine would be useful 62% of residents and 53% of PDs agreed. Only 3% and 12%, respectively, disagreed while the others were unsure.

Discussion

This study is the first to describe in detail the current state of FM residency training oncology education in Canada. There is general agreement among the residents and PDs who responded that current oncology education in family medicine does not prepare the residents for their role in caring for cancer patients as family physicians. PDs believe that oncology education is delivered in FM clinics, didactic lectures and small groups at a much higher rate compared to the residents. There is better agreement between PDs and residents regarding the optimal methods to teach oncology to FM residents and the most important oncology topics to be taught.

The main result of our study is consistent with previous studies, which have shown that oncology education in non-oncology medical training programs is thought to be suboptimal by the majority of FM residents and PDs (3,4). In contrast to Tam et al.'s sample of 7 PDs and 93 residents, our study uniquely differs from the previous publication (4)

in that there was participation from 89% of PDs and a larger number of family medicine residents (n = 150), who represent nearly all of Canada's family medicine training programs. It is interesting to note that previously in 2011, 43% of FM PDs and 14% of residents believed oncology education was inadequate, which is much higher than the 18% and 7%, respectively, found in this current survey. Although it is difficult to draw a comparison between these two studies, this may indicate that only modest progress has been achieved to improve cancer education for these FM residents over the last 6 years despite the findings from the previous study.

Findings from a study in the United States appear to reflect a similar trend regarding FM residency education in oncology. In a survey of 77 family and internal medicine residents, 81% expected to care for cancer survivors in their future practice, but only 27% of the residents reported formal education in adult cancer survivorship care (5). This resulted in only 13% feeling comfortable in their role as a primary care provider for adult cancer survivors. These findings are congruent with our Canadian FM residency training results, which indicate that the deficiency in FM oncology education is not unique to Canada and may be potentially reflective of the state of FM oncology education in other countries.

The present study also details the importance of specific oncology topics to be included in national competencies and also suggests the perceived optimal methods of teaching these topics in the FM residency training curriculum. In addition, it appears that additional topics, such as appropriate referrals to cancer specialists, post-treatment surveillance of cancer, managing common cancer complications and common treatment side effects, are topics of perceived educational importance that are infrequently taught. FM training programs can likely improve oncology education for their residents by focussing on increased teaching of these specific topics (6).

To ensure that comprehensive oncology education, which addresses the current needs of patients and the healthcare team, is provided consistently to all FM residents across Canada, a set of standard oncology competencies for graduation FM residents could help residency programs address the gap in training identified in this study. The previous study also found that there was broad support for a standard set of oncology objectives among FM PDs and FM residents (71% and 93%, respectively) (4). This study shows continued support for the development of oncology education competencies, which would help inform the FM training programs and the FM residents of the essential oncology topics and experiences to be learned during residency training. National oncology education competencies for family medicine residents could certainly be created using a similar Delphi process that was used to develop the Canadian Oncology Goals and Objectives for Medical Students in 2014 through a national Delphi process (7,8).

Limitations

Given the ambitious national focus of this survey study, the results from the FM resident survey may be limited by self-selection bias, where FM residents, who have more of an interest in cancer care, were more likely to respond. Also, it was not possible to disseminate the survey to one Western Canadian FM training program, due to logistic barriers. We were still able to summarize the opinions and experiences of 150 FM residents, which is the largest cohort in the published literature on this topic, despite the lower response rate. The lower response rate by FM residents may also be mitigated by the fact that we can be confident in the accuracy of our results from the PD survey. For this group, there was a high response rate of 87%, and the responses represented 88% of the FM residency training programs across Canada. An additional limitation is the fact that there are differences in responses by FM residents from the same training program, which may be secondary to recall bias or having different experiences with various clinical preceptors during their training.

Conclusions

Currently, Canadian family medicine residency oncology education is suboptimal, although the degree differs in the opinion of residents and program directors. This study provides the basis for a potential curricular framework to improve FM oncology education. This study sets the ground work upon which we may further develop and determine standardized oncology learning goals and competencies for family medicine residents that can be implemented in their training programs.

List Of Abbreviations

Family medicine training programs (FMTPs)

Family medicine (FM)

Program directors (PDs)

Post graduate medical education (PGME)

Postgraduate year 1 (PGY-1), year 2 (PGY-2), year 3 (PGY-3)

Declarations

Ethics approval and consent to participate: Ethics approval was granted from Health Research Ethics Board of Alberta (HREBA) – Cancer Committee (CC) at the University of Calgary, Tom Baker Cancer Centre (Ethics ID: HREBA.CC-17-0096). Participants were informed that if they completed the online survey their consent to participate in the study is implied.

Consent to publish: Not Applicable.

Availability of data and materials: Additional files 1 and 2 provide the raw data of survey responses.

Competing interests:

Steven M. Yip: advisor and sponsorship Pfizer, advisor Bayer

Daniel E. Meyers: no competing interests

Jeff Sisler: no competing interests

Keith Wycliffe-Jones: no competing interests

Edward Kucharski: no competing interests

Christine Elser: no competing interests

Claire Temple-Oberle: no competing interests

Silvana Spadafora: no competing interests

Paris-Ann Ingledew: no competing interests

Meredith Giuliani: advisor AstraZeneca, research grant Eli Lilly, travel funding Elekta

Sara Kuruvilla: advisor and received honoraria from BMS, BI and Astrazeneca

Nureen Sumar: no competing interests

Vincent C. Tam: no competing interests

Funding: Department of Oncology, University of Calgary.

AUTHOR CONTRIBUTIONS

Author	Concept-ualization	Method-ology	Data acquisition	Formal analysis	Writing-original draft	Writing-review	Editing	Final Approv-al	Guarantor of work
SMY	x	x	x	x	x	x	x	x	x
DEM		x		x		x	x	x	
JS		x		x		x	x	x	
KWJ		x		x			x	x	
EK		x		x			x	x	
CE		x		x			x	x	
CTE		x		x			x	x	
SS		x		x			x	x	
PAI		x		x			x	x	
MG		x		x			x	x	
SK		x		x			x	x	
NS		x		x			x	x	
VCT	x	x	x	x	x	x	x	x	x

Acknowledgements: Not Applicable.

References

1. Canadian Cancer Society's Advisory Committee on Cancer Statistics: Canadian Cancer Statistics 2016. Toronto, Ontario, Canadian Cancer Society, 2016.
2. College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada. National physician survey. 2010 [cited 2019 January 25]. Available from: nationalphysiciansurvey.ca
3. Cheung W, Fishman P, Verma S. Oncology education in Canadian undergraduate and postgraduate training programs. Journal of Cancer Education. 2009;24,284-290.

4. Tam VC, Berry S, Hsu T, North S, Neville A, Chan K, Verma S. Oncology education in Canadian undergraduate and postgraduate medical programs: A survey of educators and learners. Curr Oncol. 2014;21,e75-88.
5. Susanibar S, Thrush CR, Khatri N, Hutchins L. Cancer survivorship training: A pilot study examining the educational gap in primary care medicine residency programs. J Cancer Surviv. 2014;8,565-570.
6. Frenk J, Chen L, Butta ZA, et al. Health Professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010;376(9756),1923-58.
7. Tam VC, Ingledew PA, Berry S, et al. Developing Canadian oncology education goals and objectives for medical students: a national modified Delphi study. CMAJ OPEN. 2016;4(3),e359-e364.
8. Tam VC. Oncology Goals and Objectives for Medical Students. Canadian Oncology Education Group. 2015 [cited 2019 January 25]. Available from: https://s3.amazonaws.com/l39gg632kcb0ewpfj-sites-default-files/Trainee+Resources/Canadian+Oncology+Goals+and+Objectives+for+Medical+Students+(Final)+April+1+2015.pdf

Tables

Table 1: General characteristics of survey respondents

Characteristic	*Surveyed group [n (%)]*	
	Residents (N=150)	**PDs (N=17)**
Gender		
Male	36 (24%)	5 (29%)
Female	111 (74%)	12 (71%)
Other	3 (2%)	0 (0%)
Program year		
PGY-1	32 (21%)	N/A
PGY-2	113 (75%)	N/A
PGY-3	5 (3%)	N/A
Number of years in practice		
<10	N/A	2 (12%)
10-20	N/A	4 (24%)
>20	N/A	11 (65%)
Area of current clinical practice*		
Comprehensive care	116 (77%)	12 (71%)
Focused in oncology	3 (2%)	1 (6%)
Focused in other area	31 (21%)	4 (24%)
Location of current practice/training		
Urban	103 (69%)	5 (29%)
Rural	25 (17%)	0 (0%)
Both	22 (15%)	12 (71%)

*Anticipated area of practice listed for residents

Table 2: Status of current oncology education in family medicine training programs

Question	*Surveyed group [n (%)]*	
	Residents (N=150)	PDs (N=17)
Is there a mandatory oncology clinical rotation/block?		
Yes	10 (7%)	0 (0%)
No	118 (79%)	15 (88%)
Unsure	2 (1%)	0 (0%)
No Response	20 (13%)	2 (12%)
Are there oncology learning objectives/competencies?		
Yes	17 (11%)	5 (29%)
No	66 (44%)	9 (53%)
Unsure	47 (31%)	1 (6%)
No Response	20 (13%)	2 (12%)
Is the oncology education provided adequate?		
Yes	10 (7%)	3 (18%)
No	120 (80%)	12 (71%)
Unsure	0 (0%)	0 (0%)
No Response	20 (13%)	2 (12%)
Does your PGME adequately prepare you to care for cancer patients?		
Yes		
No	11 (7%)	2 (13%)
Unsure	74 (49%)	3 (18%)
No Response	45 (30%)	10 (59%)
	20 (13%)	2 (12%)

Table 3: Current methods of oncology teaching to family medicine residents

Method of oncology teaching	*Surveyed group [n (%)]*	
	Residents (N = 150)	PDs (N = 17)
Didactic lectures from family physicians?		
Yes	56 (37%)	13 (76%)
No	62 (41%)	1 (6%)
Unsure	11 (7%)	1 (6%)
No Response	21 (14%)	2 (12%)
Didactic lectures from oncologists?		
Yes	23 (15%)	4 (24%)
No	102 (68%)	9 (53%)
Unsure	4 (3%)	2 (12%)
No Response	21 (14%)	2 (12%)
In clinic by family physicians?		
Yes	73 (49%)	15 (88%)
No	47 (31%)	0 (0%)
Unsure	7 (5%)	0 (0%)
No Response	23 (15%)	2 (12%)
Clinical rotation with general practitioner in oncology (GPO)?		
Yes		
No	25 (17%)	10 (59%)
Unsure	99 (66%)	3 (18%)
No Response	6 (4%)	2 (12%)
	20 (13%)	2 (12%)
Clinical rotation with oncologist (medical, surgical, radiation)?		
Yes		
No	20 (13%)	13 (76%)
Unsure	104 (69%)	2 (12%)
No Response	5 (3%)	0 (0%)
	21 (14%)	2 (12%)
Small group/case-based learning?		
Yes	54 (36%)	13 (76%)
No	63 (42%)	2 (12%)
Unsure	12 (8%)	0 (0%)
No Response	21 (14%)	2 (12%)
Online/web-based learning?		
Yes	8 (5%)	2 (12%)

No	105 (70%)	13 (76%)
Unsure	16 (11%)	0 (0%)
No Response	21 (14%)	2 (12%)
Independent learning?		
Yes	33 (22%)	3 (18%)
No	73 (49%)	8 (47%)
Unsure	23 (15%)	3 (18%)
No Response	21 (14%)	2 (12%)

Table 4*: Optimal method of teaching oncology to family medicine residents*

Optimal Method of Teaching	***Surveyed group [n(%)]***	
	Residents (N=150)	**PDs (N=17)**
Clinical Exposure	84 (65%)	12 (80%)
Didactic Teaching/Lectures from Specialists	37 (29%)	5 (33%)
Small Group/Case-Based Learning	32 (25%)	4 (27%)

*N.B. Survey respondents were allowed to list up to three responses, so responses do not add up to 100%.

Table 5: Oncology topic perceived importance and prevalence of current teaching

Topic	*Surveyed Group*			
	Residents (N=150)		PDs (N=17)	
	*Mean Importance**	*Currently taught*	*Mean Importance**	*Currently taught*
Performing pap smears	4.9	99%	5.0	100%
Screening for common cancers	4.9	100%	4.9	100%
Breaking bad news	4.8	96%	5.0	93%
Cancer prevention	4.7	95%	5.0	93%
Approach to patient with increased risk of cancer	4.7	92%	4.7	93%
Palliative care	4.6	89%	5.0	100%
Approach to diagnosis	4.5	89%	4.7	93%
Providing psychosocial support	4.4	75%	4.8	87%
Performing skin biopsy	4.3	85%	4.9	100%
Appropriate referrals to cancer specialists	4.2	52%	4.3	73%
Post-treatment surveillance for recurrence	4.1	36%	4.0	47%
Managing common complications	4.0	40%	3.6	40%
Managing common treatment side effects	4.0	39%	4.4	47%
Epidemiology of common cancers	3.9	80%	3.2	67%
Prognosis of common cancers	3.8	44%	3.6	20%
Management of long term complications from treatment	3.7	18%	3.4	13%
Management of common cancers	3.5	36%	3.6	40%
Approach to cancer treatment	3.1	34%	3.7	64%
Approach to staging cancer	2.9	24%	2.5	20%
Performing fine needle biopsy	2.8	15%	2.9	21%
Performing bone marrow biopsy	1.8	3%	1.5	0%

*Likert scale out of 5, 5 = very important, 1 = not important

Additional Files

Additional File 1: Residents Survey Raw Data. Survey responses from family medicine residents.

Additional File 2: Program Director Survey Raw Data. Survey responses from program directors.

Figures

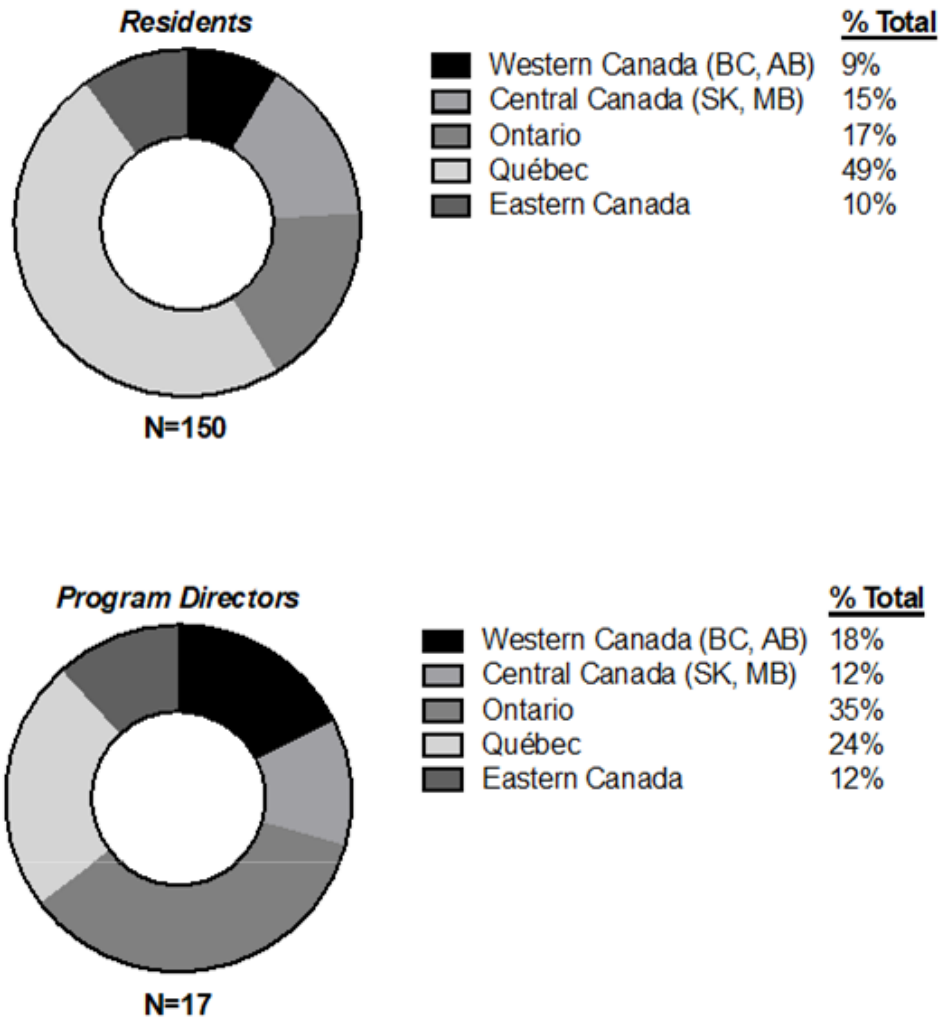

Figure 1

Geographic distribution of survey respondents

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- supplement1.xlsx
- supplement2.xlsx
- supplement3.docx