

The “Brain Drain”: Factors influencing physician migration to Canada

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ABSTRACT

Context: Higher income countries have an average physician density of 300 physicians per 100,000 people. In stark contrast, lower income countries have an average physician density of 17 physicians per 100,000 people. A major cause of this discrepancy is the migration of health-care professionals from lower income to higher income countries, a phenomenon colloquially known as the “brain drain”. **Objective:** To explore factors that led International Medical Graduate (IMG) physicians to leave their home countries and migrate to Canada. **Methods:** An anonymous questionnaire with a mix of open and close-ended questions was sent to 500 randomly selected IMG physicians practicing in Ontario, Canada. Results were analyzed using a mixed-method design utilizing both descriptive statistics and a thematic analysis approach. **Results:** 39 physicians met inclusion criteria and completed the survey. The majority were 50 years or older, and over 60% were male. The most common reason for emigration from their home country was the socioeconomic and/or political situation, and the most common reason for selecting Canada was family issues. **Suggestions for how brain drain could be stemmed** fell into three broad categories: 1) more accurate information about lack of opportunities in Canada, 2) more continuing medical education opportunities in home countries, and 3) address issues such as safety and quality of life in home countries. **Conclusions:** This survey provides insights into the reasons for emigration and immigration for international medical graduates.

The results of this survey can assist stakeholders in working toward appropriate and acceptable solutions to the brain drain.

Keywords: Brain Drain; International Medical Graduates; Migration

1. INTRODUCTION

In many resource-poor nations around the world, shortages of health care professionals exist at levels that limit the ability to provide even basic health care in a consistent manner and resultantly have a direct and meaningful impact on citizens’ health and wellbeing [1]. The World Health Organization has estimated the global health worker shortfall to be over 4.2 million [1]. This statistic is unsurprising considering lower-income countries have average physician densities of 17 per 100,000 population as compared to an average of 300 per 100,000 in high-income countries [2].

While there are several causes for these striking differences in physician supply, one important contributor has been the substantial migration of physicians and other health care workers from lower-income to higher-income countries, a phenomenon colloquially known as “brain drain”. The International Organization for Migration estimates that lower-income countries pay \$500 million (USD) per year to train health care workers who then migrate to higher-income nations [3].

Methods of slowing this mass migration are clearly needed. Health workers who have already migrated may best be able to provide valuable insight as to why the brain drain has reached its current proportions and how both low- and high-income nations could address this issue. In this study, a random sample of International Medical Graduate (IMG) physicians in Ontario, Canada

were surveyed regarding the factors that led them to immigrate and their opinions about how to best stem the brain drain in low-income countries.

2. METHODS

Using the College of Physicians and Surgeons of Ontario (CPSO) registration database, 500 physicians were randomly selected for potential inclusion in the study. Approximately 70% of practicing physicians in Ontario have agreed to the release of their information through the CPSO for study purposes [4]. Criteria for being included in the random selection pool were having an active, independent practice license, having a primary practice address in Ontario, and having graduated from a non-Canadian medical school.

The survey (Appendix 1) consisted of questions in three broad categories: 1) demographics, including the world region in which the respondent was born and attended medical school, 2) factors that led the physician to emigrate from their home country (“push” factors), and 3) factors that led the physicians to immigrate to Canada (“pull” factors). Most questions were closed-ended, but open-ended questions allowed participants to describe any recruitment methods they may have encountered, describe influential push and pull factors, and make suggestions for how low- and middle-income countries could retain physicians and other health professionals. The survey was created based on the existing literature regarding causes of physician migration. It was pre-tested for clarity, relevance of questions and survey length with staff physicians in the St. Michael’s Hospital Department of Family and Community Medicine in Toronto, Ontario who had global health expertise and/or were foreign-trained. It was approximated to take ten minutes or less to complete. The study received approval from the St. Michael’s Hospital Research Ethics Board.

Data collection occurred over a three-month period (August 2012 through October 2012). Initial contact with the five hundred physicians consisted of a mailed information sheet including the link to the anonymous online survey housed by Survey Monkey (www.surveymonkey.com). Each letter was personally addressed to the physician to whom it was mailed and was signed by two of the co-investigators (AL and NT). One month after this initial contact, a personally addressed reminder letter was sent to all physicians. Responses were not tracked as this has been shown to negatively affect physician response rate [5].

Canadian respondents (both those born in Canada and those born elsewhere but raised in Canada) who went abroad for their medical training were excluded from the analysis. We analyzed responses for closed-ended questions using the SAS version 9.3 software package (SAS

Institute, Cary, NC). We performed a thematic analysis whereby free text answers were manually coded using line-by-line coding and grouped into common themes. Investigator triangulation was achieved by allowing each of the three co-authors to independently review and interpret the qualitative data prior to a robust discussion regarding emerging themes.

3. RESULTS

Of 500 mailed surveys, 18 were returned with an incorrect address. We were unable to attain correct addresses in these cases. Of the remaining 482 physicians, 45 (9.3%) completed the survey. Of these, six were excluded because they were either Canadian-born or attended high school in Canada, leaving 39 respondents whose responses were analyzed.

Table 1 describes the demographics of our study participants. Confidence intervals are not provided, as we cannot say with confidence that we have a representative sample. The majority were 50 years or older and over 60% were male. While all world regions are represented in the study population, many physicians were born, raised and/or medically trained in Sub-Saharan Africa, South Asia and the Middle East and North Africa. Respondents had graduated from medical school an average of 31 years prior, had been in Canada an average of 23 years, and had been practicing medicine independently in Canada for 18 years. An average of five years (standard deviation 4.2) passed between the time of arriving in Canada and beginning to practice medicine independently.

A diversity of specialties was represented by the survey respondents, with 23.1% working as family or general practitioners (data not shown). Just over 25% of respondents reported that their current specialty was not the same as the specialty in which they had either been trained or practiced before coming to Canada, but only 20% of this group would prefer to practice in their previous specialty.

Only two survey respondents reported that they were likely to return to their home country to practice medicine, and only five were likely to return to their home country at any point in the future to live (**Table 2**). The minority of respondents (18.0%) had friends or family to whom they send or had sent remittances (data not shown). Four respondents reported experiencing recruitment methods from Canada, the USA, New Zealand and South Africa in their migration process (data not shown).

When questioned about their reasons for emigration, the majority of respondents indicated they left their home countries because of the socioeconomic and/or political situation (**Figure 1(a)**). When asked about reasons for immigration to Canada, 39% stated they chose Canada

Table 1. Demographics of study participants (n = 39).

Demographic	n (%)
Age	
30 - 39	4 (10.3)
40 - 49	7 (18.0)
50 - 59	13 (33.3)
60+	14 (35.9)
Gender (male)	25 (64.1)
World region of birth	
Caribbean (e.g. Barbados, Jamaica)	0 (0.0)
East Asia and the Pacific (e.g. China, Philippines)	2 (5.1)
Eastern Europe and Central Asia (e.g. Russia, Turkey)	3 (7.7)
Latin America (e.g. Mexico, Argentina)	3 (7.7)
Middle East and North Africa (e.g. Iran, Egypt)	5 (12.8)
South Asia (e.g. India, Pakistan)	5 (12.8)
Sub-Saharan Africa (e.g. Nigeria, South Africa)	6 (15.4)
Western Europe (e.g. UK, Portugal)	3 (7.7)
World region of high school attendance	
Caribbean (e.g. Barbados, Jamaica)	1 (2.6)
East Asia and the Pacific (e.g. China, Philippines)	1 (2.6)
Eastern Europe and Central Asia (e.g. Russia, Turkey)	3 (7.7)
Latin America (e.g. Mexico, Argentina)	3 (7.7)
Middle East and North Africa (e.g. Iran, Egypt)	5 (12.8)
South Asia (e.g. India, Pakistan)	4 (10.3)
Sub-Saharan Africa (e.g. Nigeria, South Africa)	6 (15.4)
Western Europe (e.g. UK, Portugal)	4 (10.3)
World region of medical school	
Caribbean (e.g. Barbados, Jamaica)	1 (2.6)
East Asia and the Pacific (e.g. China, Philippines)	1 (2.6)
Eastern Europe and Central Asia (e.g. Russia, Turkey)	3 (7.7)
Latin America (e.g. Mexico, Argentina)	3 (7.7)
Middle East and North Africa (e.g. Iran, Egypt)	4 (10.3)
South Asia (e.g. India, Pakistan)	5 (12.8)
Sub-Saharan Africa (e.g. Nigeria, South Africa)	6 (15.4)
Western Europe (e.g. UK, Portugal)	4 (10.3)
Years since medical school graduation (mean, standard deviation)	30.8 (10.6)
Years since arrival in Canada (mean, standard deviation)	23.2 (11.4)
Years since initiation of independent practice (mean, standard deviation)	18.2 (12.4)

Missing data included in analyses.

Table 2. Likelihood of return to home country at any point in the future, n (%).

	Very likely	Somewhat likely	Neither	Somewhat unlikely	Very unlikely
Return to practice	0 (0.0)	2 (5.1)	3 (7.7)	2 (5.1)	28 (71.8)
Return to live	0 (0.0)	5 (12.8)	3 (7.7)	4 (10.3)	23 (59.0)

Missing data included in analyses.

for family-related issues e.g. marriage to a Canadian (**Figure 1(b)**). Just under 44% of respondents indicated some level of agreement with wanting to emigrate from their home country (push factors), with 28.2% strongly agreeing, while 51.3% agreed that they wanted to immigrate to Canada (pull factors), with 10.3% strongly agreeing (**Table 3**). Small sample size precluded any meaningful cross-tabulation analyses or subgroup comparisons.

Suggestions from respondents on how lower-income countries could stem brain drain fell into three broad themes: 1) provide more accurate information about the opportunities (or lack thereof) in Canada; 2) offer more continuing medical education opportunities in home countries; and 3) address issues around safety, quality of life, low-quality medical systems and political strife in home countries. One respondent noted that the Canadian consulate often stated that Canada needed doctors but never

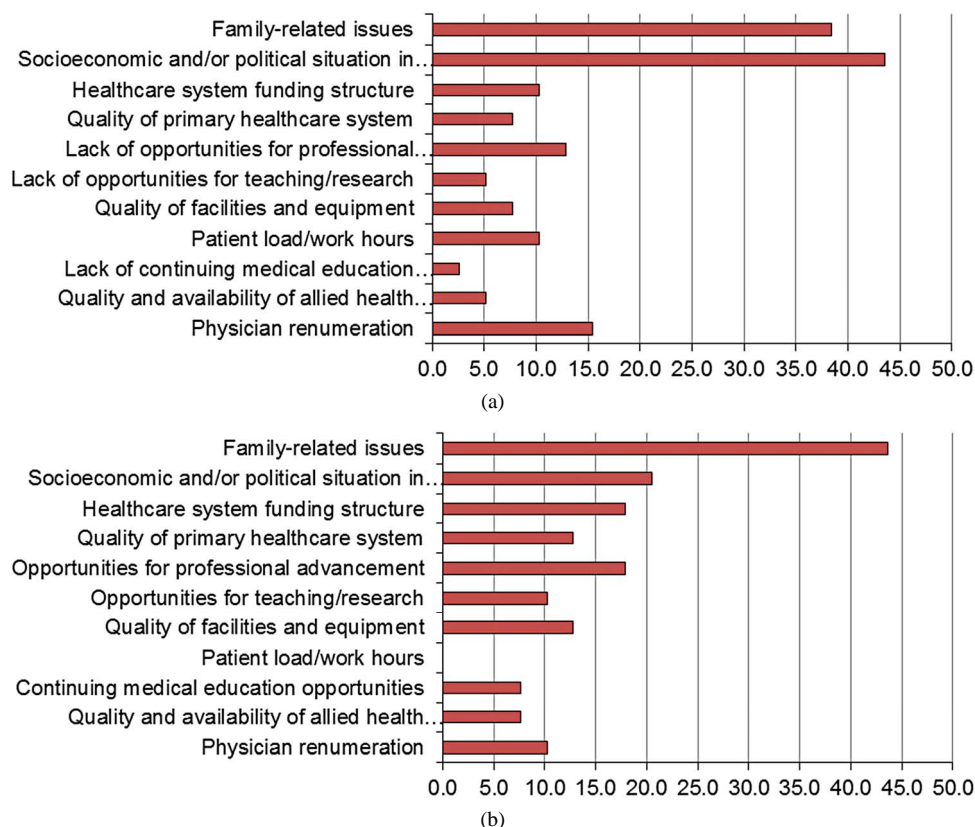


Figure 1. (a) Reasons for emigration; (b) Reasons for immigration.

Table 3. Agreement with wanting to emigrate from home country and wanting to immigrate to Canada, n (%).

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Wanted to emigrate	11 (28.2)	6 (15.4)	10 (25.6)	2 (5.1)	6 (15.4)
Wanted to immigrate	5 (12.8)	16 (41.0)	10 (25.64)	2 (5.1)	3 (7.7)

Missing data included in analyses.

explained that, “many of the doctors that were coming to Canada would not be able to work here, and would be here selling pizza, credit cards, driving taxi...”. Another suggested that low-income countries need to “remove the feeling of isolation” by encouraging visiting physicians from high-income countries to provide education on the latest medical advances. As one physician stated:

It's all about quality of life. There will always be a small, dedicated percentage of physicians will work their whole lives under terrible conditions because they feel they have a calling to dedicate their lives to the sick. There is also a small non-dedicated percentage who feel that medicine simply gives them a licence to get rich. Between these two extremes, there is (in my opinion) a majority of physicians who enjoy practicing their profession but whose primary concern in life is still their own family and the betterment of their family circumstances. Physicians will stay in a low-income country if they feel appreciated and rewarded for what they do, and if they and their family feel safe.

4. DISCUSSION

Through a survey of a random sample of foreign-trained physicians in independent practice in Ontario, we have highlighted some key issues for consideration by health care policy planners whose aim is to stem mass physician migration. Our results suggest that foreign-born and foreign-trained physicians in Ontario are more strongly pushed than pulled into migrating, often settling in Canada as opposed to other countries for family reasons, but leaving their home countries due to unfavorable socioeconomic and political climates. Addressing these issues will require governmental support from the highest levels to make the practice of medicine more appealing for physicians considering migration. Our results indicate that high-income countries like Canada can do their part by contributing to continuing medical education opportunities in resource-poor nations and clearly communicating the limited opportunities for employment within the healthcare sector that exist within their borders.

Interestingly, the modal response as to where our respondents were from was Sub-Saharan Africa. Although our small sample size precludes any extrapolation to the demographics of all foreign-born physicians in Ontario, this finding is consistent with the literature that indicates that Sub-Saharan Africa is one of the areas hit hardest by health worker migration [6-9]. For example, South Africa's estimated loss of returns from investment for physicians who have migrated is US\$1.41 billion [10] and the World Health Organization estimates that 25% of doctors trained in Africa are working in high-income countries [11]. Unfortunately, Sub-Saharan Africa is also the area with the highest HIV prevalence in the world and arguably in greatest need of health care workers [12, 13].

Defendants of mass migration have argued that the home country benefits from the departures as health care workers send large amounts of money back home [7,14]. Although remittances from all migrant workers are the second-largest source of external funds for low-income countries [15], we did not find a high level of remittances within our study population. This might reflect that the family and friends of IMGs may be in a relatively higher socioeconomic bracket in the home country than the general populace. The literature argues that knowledge acquired abroad can be brought back home [9,16]; however, our results suggest that physicians rarely intend to return home, especially to practice medicine.

A review of the literature found three recent studies that explored physician brain drain. Syed *et al.* found that medical students in Pakistan considered moving abroad because of poor remuneration and poor quality of training (*i.e.* push factors) [17]. Kaushik *et al.* collected data on graduates of a medical school in India and found that better quality graduates (as defined by the number of awards they received) were more likely to migrate [18]. The number of physicians who returned was miniscule. Hagander *et al.* surveyed 66 surgeons practicing in the USA (denominator unknown) who were from low- and middle-income countries and, in contrast to our results, the most influential factors for migration were related to professional reasons as opposed to socioeconomic factors [19]. In addition, 56% of respondents had returned to their home countries at some point to contribute to clinical work, research and education. The difference in findings is not clear but may be related to specifics around the speciality of surgery.

Limitations

This study has several limitations. Most notably, our response rate was quite low and our respondents accordingly may not be a representative sample. For example, many of our respondents were males over the age of 50

years and had been in the country for an average of approximately 20 years. Their experience might not reflect that of IMGs who have arrived in Ontario in more recent years. Also, respondents frequently refused to answer certain questions, further decreasing the power of our results. The use of surveys to reach physicians in Canada is known to be problematic [20]. Despite the use of techniques expected to increase response rates, such as a personalized invitation letter [21], an anonymous survey [5], minimal time required for completion, a reminder being sent to all physicians [21], and despite the survey focusing on a topic of relevance to foreign-trained physicians, we achieved a response rate even lower than would be expected from previous studies about survey participation among physicians (14% - 34%) [2,3,22,23]. Our low response rate could reflect the sensitive nature of this issue for many foreign-trained physicians. The low response rate could also suggest that foreign-trained physicians may be less likely to participate in research studies than Canadian-trained physicians, perhaps due to there being less of a culture of research participation in other countries. We could not find any studies in the literature that have addressed response rates among foreign-trained physicians. Incentives might have increased participation rates [21,23-25]; however, due to cost, we were unable to provide monetary incentives. In addition, while the survey was sent via mail, physicians were expected to complete an online survey. Response rates may have been higher with either an emailed invitation combined with an online survey, or a paper survey combined with the mailed invitation. However, it was not possible to obtain physician emails and the use of a paper survey was limited by cost.

While our study has provided some useful data to help understand the issue of physician migration, many questions still remain unanswered. Our results suggest that foreign-trained physicians may be less likely to participate in surveys for research purposes than their Canadian-trained peers. More study is needed to explore if this finding is consistent, and if so, to determine the reasons why. It appears to be difficult to survey large numbers of IMGs; however, with a larger sample size, bivariate and multivariate analyses might provide useful region-specific information. Researchers need to ensure that IMGs are appropriately represented in any physician-relevant study.

Our findings also suggest that future research on physician international migration may benefit from the inclusion of qualitative methods, such as focus groups or interviews. This survey touched upon many personal issues and participants might be more receptive to discussing these issues in person than in a quantitative format. The viewpoints of foreign-trained physicians who have arrived more recently in Ontario and have not yet

obtained a residency position will also be important to explore. Other foreign-trained health professionals, such as nurses, who play an equally important role in health care in both low- and high-income countries are also part of the brain drain phenomenon and it is imperative that their experiences be investigated. The perspectives of physicians who continue to practice medicine in their home countries and choose not to migrate could also provide a crucial piece to the brain drain puzzle.

Finally, two Global Forums on Human Resources for Health have occurred since 2008. These forums were held in an attempt to find ways to improve human health resources at the global level and to achieve the health-related Millennium Development Goals. A Global Code of Practice was born out of the first forum, calling for ethical recruiting, prioritizing public sector spending on health, and fair treatment of migrant workers. It would be informative to receive feedback from migrant physicians on the perceived utility and impact of this code [3,8, 26,27].

5. CONCLUSION

The global shortage of health care workers is not a problem that will go away on its own: in the past thirty years, the number of foreign-trained doctors in countries that are members of the Organization for Economic Cooperation and Development has tripled [3]. Sustainable solutions can be found, but this will only happen if the global community, including researchers, policymakers and health care workers themselves, come together and takes definitive action toward these solutions. The results of this survey can assist these stakeholders in working toward appropriate and acceptable solutions.

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Appendix 1

Thank you for taking part in this study: Factors that Influence Physician Migration to Canada. The purpose of this research study is to explore the factors that have led foreign-born physicians in current practice in Ontario to leave their home countries and migrate to Canada, and to explore ways to stem the large-scale loss of health care workers in many low-income countries. By taking 10-15 minutes to complete the questionnaire, you will assist us in providing this information.

Your consent to participate in this study is demonstrated by your voluntary completion and submission of the survey. If you decide to participate, you can change your mind at any time while completing the survey. However, there will be no option to withdraw data once the survey has been submitted, as there are no identifiers on the survey itself. If you decide to participate, please complete all questions to the best of your ability. If any question on the survey is not applicable to you or you feel uncomfortable answering, please feel free to skip this question. Although we would appreciate your responses to all questions, none of the individual questions are mandatory. The responses will be completely anonymized (i.e. there is no way to link your name to the responses).

1. How old are you?

- 29 or younger
- 30-39
- 40-49
- 50-59
- 60+

2. What is your gender?

- Female
- Male

3. In which region of the world were you born?

- Australia and New Zealand
- Canada
- Caribbean (e.g. Barbados, Jamaica)
- East Asia and the Pacific (e.g. China, Philippines)
- Eastern Europe and Central Asia (e.g. Russia, Turkey)
- Latin America (e.g. Mexico, Argentina)
- Middle East and North Africa (e.g. Iran, Egypt)
- South Asia (e.g. India, Pakistan)
- Sub-Saharan Africa (e.g. Nigeria, South Africa)
- U.S.A.
- Western Europe (e.g. UK, Portugal)

4. In which region of the world did you attend high school?

- Australia and New Zealand
- Canada
- Caribbean (e.g. Barbados, Jamaica)
- East Asia and the Pacific (e.g. China, Philippines)
- Eastern Europe and Central Asia (e.g. Russia, Turkey)
- Latin America (e.g. Mexico, Argentina)
- Middle East and North Africa (e.g. Iran, Egypt)
- South Asia (e.g. India, Pakistan)
- Sub-Saharan Africa (e.g. Nigeria, South Africa)
- U.S.A.
- Western Europe (e.g. UK, Portugal)

5. In which region of the world is the medical school from which you graduated located?

- Australia and New Zealand
- Caribbean (e.g. Barbados, Jamaica)
- East Asia and the Pacific (e.g. China, Philippines)
- Eastern Europe and Central Asia (e.g. Russia, Turkey)
- Latin America (e.g. Mexico, Argentina)
- Middle East and North Africa (e.g. Iran, Egypt)
- South Asia (e.g. India, Pakistan)
- Sub-Saharan Africa (e.g. Nigeria, South Africa)
- U.S.A.
- Western Europe (e.g. UK, Portugal)

6. In what year did you graduate from medical school?**7. In what year did you arrive in Canada?****8. In what year did you begin to practice medicine independently in Canada?**

9. What is your current medical specialty?

- Family or General Practice, including subspecialties (e.g. sports medicine, emergency medicine)
- Internal Medicine, including subspecialties (e.g. cardiology, gastroenterology)
- Surgery, including subspecialties (e.g. vascular surgery, orthopedic surgery)
- Pediatrics, including subspecialties (e.g. pediatric allergy, pediatric infectious diseases)
- Psychiatry
- Obstetrics/Gynaecology

Other (please specify)

10. Is your current specialty the same as the one in which you either trained, or practiced, before coming to Canada?

- Yes
- No

11. In which of the following specialties would you prefer to currently practice if you had a choice?

- Current specialty
- Previous specialty
- Don't know

12. What is the likelihood of you returning to your home country to practice medicine at any point in the future?

- Very unlikely
- Somewhat unlikely
- Neither
- Somewhat likely
- Very likely

13. What is the likelihood of you returning to your home country to live at any point in the future?

- Very unlikely
- Somewhat unlikely
- Neither
- Somewhat likely
- Very likely

14. Remittances refer to the transfer of money from a foreign-born worker to a person or persons in his or her home country, and play a large role in the economy of many countries. Do you have any family members or friends to whom you send or have sent remittances?

- Yes
- No

15. Some high-income countries with low physician supply use recruitment methods to encourage foreign physicians to migrate. Such methods can include offering paid travel costs, guaranteed minimum salaries and assistance with immigration and housing. Before coming to Canada, did you ever encounter recruitment from (please check all that apply):

- Canada
- U.S.A.
- Australia
- New Zealand
- U.K.
- None of the above

Other (please specify)

16. What recruiting methods have you encountered? (Please check all that apply).

- Offers for paid travel costs
- Guaranteed minimum salaries
- Assistance with immigration and housing

Other (please specify)

17. Which (if any) of the following factors led you to EMIGRATE FROM the country in which you trained. Please select all that apply:

- Physician remuneration
- Quality and availability of allied health disciplines (e.g. nursing, social work, physical therapy)
- Lack of continuing medical education opportunities
- Patient load/work hours
- Quality of facilities and equipment
- Lack of opportunities for teaching/research
- Lack of opportunities for professional advancement
- Quality of primary healthcare system
- Healthcare system funding structure (i.e. public vs. private)
- Socioeconomic and/or political situation in home country
- Family-related issues

Other (please specify)

18. Which (if any) of the following factors led you to IMMIGRATE to Canada? Please select all that apply:

- Physician remuneration
- Quality and availability of allied health disciplines (e.g. nursing, social work, physical therapy)
- Continuing medical education opportunities
- Patient load/work hours
- Quality of facilities and equipment
- Opportunities for teaching/research
- Opportunities for professional advancement
- Quality of primary healthcare system
- Healthcare system funding structure (i.e. public vs. private)
- Socioeconomic and/or political situation in home country
- Family-related issues

Other (please specify)

19. Immigrants to Canada often arrive due to a combination of "push" and "pull" factors. Push factors are those factors that make someone want to emigrate FROM a country (e.g. war, crime). Pull factors are those factors that make someone want to immigrate TO a country (e.g. affordable healthcare system, good education system). Please rate your level of agreement with each of the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I wanted to emigrate from my country	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wanted to immigrate to Canada	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Do you have any suggestions for how low- and middle-income countries could retain physicians and other health professionals?

21. Do you have any other comments you would like to add?

Thank you, the survey is now complete!