



Perceptions of bias in the selection of international medical graduate residency applicants in Canada

Perceptions de partialité dans la sélection des diplômés internationaux en médecine aux programmes de résidence au Canada

Maria Mathews, Ivy Bourgeault et Dana Ryan

Volume 14, numéro 2, 2023

URI : <https://id.erudit.org/iderudit/1099334ar>

DOI : <https://doi.org/10.36834/cmej.73320>

[Aller au sommaire du numéro](#)

Éditeur(s)

Canadian Medical Education Journal

ISSN

1923-1202 (numérique)

[Découvrir la revue](#)

Citer cet article

Mathews, M., Bourgeault, I. & Ryan, D. (2023). Perceptions of bias in the selection of international medical graduate residency applicants in Canada. *Canadian Medical Education Journal / Revue canadienne de l'éducation médicale*, 14(2), 16–22. <https://doi.org/10.36834/cmej.73320>

Résumé de l'article

Contexte : Parmi les diplômés internationaux en médecine (DIM) au Canada, il y a des diplômés immigrants et des citoyens ou des résidents canadiens qui ont fait leurs études de médecine à l'étranger (CEE). Ces derniers ont plus de chances d'obtenir un poste de résidence postdoctorale que les DIM immigrants. Des études montrent que le processus de sélection des résidents favorise les CEE au détriment des DIM immigrants. La présente étude explore les sources potentielles de biais dans le processus d'attribution des postes de résidence.

Méthodes : Nous avons mené des entrevues semi-structurées avec les directeurs de programme d'évaluation clinique et de programmes de formation postdoctorale de tout le Canada. Nous les avons interrogés sur leurs perceptions quant au parcours et au niveau de préparation des CEE et des DIM immigrants, quant aux méthodes utilisées par les candidats pour augmenter leurs chances d'obtenir un poste de résidence et quant aux pratiques qui peuvent encourager ou décourager les candidats. Les entretiens ont été transcrits et une méthode de la comparaison constante a été employée pour identifier les thèmes récurrents.

Résultats : Douze (54,5 %) des 22 questionnaires sollicités ont participé aux entrevues. Les cinq facteurs clés susceptibles de procurer un avantage aux CEE sont : la réputation de la faculté de médecine où le candidat a obtenu son diplôme, la date récente d'obtention de ce dernier, la possibilité d'effectuer un stage clinique de premier cycle au Canada, la familiarité avec la culture canadienne et la performance à l'entrevue.

Conclusions : Bien que la sélection équitable soit une priorité pour les programmes de résidence, ils doivent également respecter des politiques visant l'efficacité et l'atténuation des risques médico-légaux qui avantagent involontairement les CEE. Il faut déceler les facteurs qui sous-tendent ces biais potentiels pour renforcer le caractère équitable du processus de sélection.



Perceptions of bias in the selection of international medical graduate residency applicants in Canada

Perceptions de partialité dans la sélection des diplômés internationaux en médecine aux programmes de résidence au Canada

Maria Mathews,¹ Ivy Bourgeault,² Dana Ryan¹

¹Department of Family Medicine, Schulich School of Medicine & Dentistry, University of Western Ontario, Ontario, Canada; ²School of Sociological and Anthropological Studies, Faculty of Social Sciences, University of Ottawa, Ontario, Canada

Correspondence to: Maria Mathews, PhD, Department of Family Medicine, Schulich School of Medicine & Dentistry, University of Western Ontario, 1151 Richmond St, London, ON N6A 5C1; email: maria.mathews@schulich.uwo.ca

Published ahead of issue: Sept 20, 2022; published: April 8, 2023. CMEJ 2023, 14(2) Available at <https://doi.org/10.36834/cmej.73320>

© 2023 Mathews, Bourgeault, Ryan; licensee Synergies Partners. This is an Open Journal Systems article distributed under the terms of the Creative Commons Attribution License. (<https://creativecommons.org/licenses/by-nc-nd/4.0>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is cited.

Abstract

Background: In Canada, international medical graduates (IMG) consist of immigrant-IMG and previous Canadian citizens/permanent residents who attended medical school abroad (CSA). CSA are more likely to obtain a post-graduate residency position than immigrant-IMG and previous studies have suggested that the residency selection process favours CSA over immigrant-IMG. This study explored potential sources of bias in the residency program selection process.

Methods: We conducted semi-structured interviews with senior administrators of clinical assessment and post-graduate programs across Canada. We asked about perceptions of the background and preparation of CSA and immigrant-IMG, methods applicants use to improve likelihood of obtaining residency positions, and practices that may favour/discourage applicants. Interviews were transcribed and a constant comparative method was employed to identify recurring themes.

Results: Of a potential 22 administrators, 12 (54.5%) completed interviews. Five key factors that may provide CSA with an advantage were: reputation of the applicant's medical school, recency of graduation, ability to complete undergraduate clinical placement in Canada, familiarity with Canadian culture, and interview performance.

Conclusions: Although residency programs prioritize equitable selection, they may be constrained by policies designed to promote efficiencies and mitigate medico-legal risks that inadvertently advantage CSA. Identifying the factors behind these potential biases is needed to promote an equitable selection process.

Résumé

Contexte : Parmi les diplômés internationaux en médecine (DIM) au Canada, il y a des diplômés immigrants et des citoyens ou des résidents canadiens qui ont fait leurs études de médecine à l'étranger (CEE). Ces derniers ont plus de chances d'obtenir un poste de résidence postdoctorale que les DIM immigrants. Des études montrent que le processus de sélection des résidents favorise les CEE au détriment des DIM immigrants. La présente étude explore les sources potentielles de biais dans le processus d'attribution des postes de résidence.

Méthodes : Nous avons mené des entrevues semi-structurées avec les directeurs de programme d'évaluation clinique et de programmes de formation postdoctorale de tout le Canada. Nous les avons interrogés sur leurs perceptions quant au parcours et au niveau de préparation des CEE et des DIM immigrants, quant aux méthodes utilisées par les candidats pour augmenter leurs chances d'obtenir un poste de résidence et quant aux pratiques qui peuvent encourager ou décourager les candidats. Les entretiens ont été transcrits et une méthode de la comparaison constante a été employée pour identifier les thèmes récurrents.

Résultats : Douze (54,5 %) des 22 gestionnaires sollicités ont participé aux entrevues. Les cinq facteurs clés susceptibles de procurer un avantage aux CEE sont : la réputation de la faculté de médecine où le candidat a obtenu son diplôme, la date récente d'obtention de ce dernier, la possibilité d'effectuer un stage clinique de premier cycle au Canada, la familiarité avec la culture canadienne et la performance à l'entrevue.

Conclusions : Bien que la sélection équitable soit une priorité pour les programmes de résidence, ils doivent également respecter des politiques visant l'efficacité et l'atténuation des risques médico-légaux qui avantagent involontairement les CEE. Il faut déceler les facteurs qui sous-tendent ces biais potentiels pour renforcer le caractère équitable du processus de sélection.

Introduction

Heightened competition for the limited number of post-graduate residency positions available to international medical graduates (IMG) has resulted in increased debate and inquiry surrounding the need for open and fair selection and admission processes. Prior to the early 2000s, the term 'IMG' was used to describe immigrant physicians who graduated from medical school outside of Canada. However, over the last 20 years, there has been an increase in the number of IMG who are Canadian citizens or permanent residents before attending medical school outside of the country (known as Canadians who studied abroad - CSA).^{1,2} CSA in Ontario were more likely to obtain residency positions than immigrant-IMG.³ A national study in Canada confirmed these findings.⁴ In this study, we examine why CSA are more successful than other IMG in obtaining residency positions.

As of 2019,⁵ to apply for a residency training position in Canada, IMG applicants must be Canadian citizens or permanent residents, have graduated from a recognized medical school, demonstrate proficiency in English or French, and have passed the Medical Council of Canada Qualifying Examination Part 1 (MCC-Q1) and the National Assessment Collaboration (NAC) examination.^{6,7} In addition, a number of provinces require standardized clinical evaluations.⁷ Previous reviews have supported the suggestion of bias in the selection process.^{2-4,8} Bates and Andrew suggest that "post-graduate program directors may be reluctant to consider IMG applicants to their programs because of perceived difficulties in training these physicians."^{9(p43)} Szafran et al.¹⁰ surveyed IMG residency applicants and reported that, despite having less clinical experience, CSA appear to be more successful than immigrant-IMG in obtaining a residency position. The authors suggested that selection interviews may play an influential role in the selection process. In a government commissioned independent review of IMG selection for residency programs in Ontario, Thomas and Cohl² attributed the difference to initial screening criteria that emphasize recent graduation from medical school and clinical experience in North America. Unlike immigrant-IMG, CSA are closer to their undergraduate medical training and more likely to have done clinical rotations in North America as part of their undergraduate medical program.^{1,2} The existing literature has not examined potential sources of bias in the selection process from the perspective of senior leaders (i.e., those who oversee the policies of post-graduate residency selection at medical

schools) and clinical assessment training programs (i.e., programs that pre-screen and assess IMG applicants in the selection and training process).

In this study, we examined the perceptions of senior administrators of clinical assessment and post-graduate training programs using semi-structured interviews to identify factors that may explain the disproportionate selection of CSA.

Methods

Study design

Using a pragmatic approach,¹¹ we conducted semi-structured qualitative interviews with clinical assessment directors and post-graduate medical education assistants or associate deans in Canada.

Participants and recruitment

Through internet searches we identified the names and contact information of each of the five assessment program directors and 17 medical school associate deans across Canada. We contacted each of the assessment program directors and associate deans by email and followed up by telephone to inform them about the study and to ask them to participate. In addition, one post-graduate medical education dean sent an email to counterparts at other universities to encourage them to participate in the study.

We sent invitations to 22 senior administrators (e.g., assistant or associate deans, directors, or the like) of post-graduate medical education and IMG skills assessment/training programs from across Canada. To be included in the study, the administrators must have been in their positions for at least one admission cycle (so that they would have had first-hand experience of the selection and admission process). Administrators who had not been in their positions for one cycle were asked to nominate their predecessor, who we then contacted and invited to participate in the study.

Materials and data collection

After obtaining consent, one of two team members conducted interviews in-person or by phone in English. During the interview we asked about 1) the participant's role; 2) their perception of the background and preparation of CSA relative to immigrant-IMG; 3) examples of what, in their experience, CSA and immigrant-IMG have done to improve their likelihood of passing exams and obtaining residency positions; and 4) examples of formal or informal practices that favour or discourage CSA and immigrant-

IMG in the training and/or licensing process. We also gathered basic demographic data (gender, region, years in position, etc.) to describe participants. Each interview lasted between 20 and 60 minutes and was recorded and transcribed verbatim for analysis. Each transcript was compared to the interview recording to verify the accuracy of the transcription.

Analysis

Frequencies and counts were used to summarize participant demographic data. Using a thematic analysis approach, two members of the research team independently read four transcripts to identify key words and codes which we organized into a preliminary coding scheme. We compared and contrasted our codes, refined the meaning of terms, and developed a unified and robust coding scheme.^{12,13} We recoded and compared the first four transcripts to ensure that the codes were interpreted and applied consistently. We resolved any disagreement in coding through discussion and consensus. Coding disagreements may arise if one coder is more knowledgeable about the study topic than the other.¹⁴ By discussing disagreements, we identified underlying concepts to make more explicit in the code description and interpretation of findings. The final coding template was used to code all of the transcripts using NVIVO (software designed to assist in the organization and management of qualitative data).

We took a number of steps to ensure the rigour of our analyses.¹²⁻¹⁷ During each interview, we member checked to ensure we understood the meaning of participant responses. We kept detailed records of the interview guides, digital recordings, transcripts, field notes, drafts of the coding template, and coding disagreements and their resolutions. We looked for negative cases, and provide thick description and illustrative quotes. To ensure the trustworthiness of interviews using different modes of data collection, we compared the transcripts of the interviews conducted in-person and by telephone and did not find differences in substance and content.¹⁷

Given the small number of potential participants, we took a number of steps to protect confidentiality and guard against inadvertently identifying them in the manuscript. We identified each participant with a unique study ID number and provide limited demographic information. We have also edited quotations (as noted by square brackets) to obscure identifying information. These changes in the quotations were reviewed by a second author to ensure we did not change the meaning of the quotation.

Ethics

This study was approved by the Newfoundland and Labrador Health Research Ethics Board (reference #14.154) and the University of Ottawa Research Ethics Board (reference # H08-15-01). All participants signed consent forms, and consent was verified at the start of the interview. Participants were reminded that participation is voluntary and that they were free to withdraw from the study, without penalty, at any time. To protect confidentiality and ensure that quotations would not reveal the participants' identity, each participant is identified by a numerical code. Where applicable, we edited quotations (indicated by square brackets) to obscure potentially identifying details. Changes were reviewed by a co-author to ensure that we did not change the meaning of the quotation.

Results

Of the 22 senior administrators that received a study invitation, 12 (54.5%) completed an interview. Eleven of the 12 interviews were completed by phone and one was done in-person. Interviews were conducted in English regardless of the language of the university, and ranged in duration from 17 to 52 minutes (mean 30.25). The participants represented all regions (Atlantic, Central, West) of Canada. Twelve participants (50%) were women and four participants (33.3%) had been in their dean/director position for less than five years.

Participants identified five factors that may provide CSA with an implicit or explicit advantage in the selection process: the reputation of the applicant's medical school, recency of graduation from medical school, ability to complete clinical placement prior to admission to a residency program, familiarity with Canadian culture, and performance in interviews.

Reputation of International Medical Schools

Administrators noted that the international medical school where the applicant studied may be an important consideration: *"And it's based on the school of MD, it's not based on citizenship because everyone has to be a citizen or a permanent resident So we basically base it on the school of MD ..."* [ID1]. Selection committees may consider the reputation of different schools and their perception of the nature and quality of the training. For example, one participant suggested *" ... [the selection committee members] feel ... most of the Australian schools are quite solid and a couple of the Caribbean schools produce a*

reasonably good product... some of the other Irish schools and even some of the British schools.” [ID10]

Participants noted that in applications, CSA are not specifically identified and considered as a separate group among the IMG applicants. Nonetheless, it is possible to identify potential CSA by their medical school:

So we basically base it [eligibility as an IMG] on the school of MD and not on where someone was born. But having said that, it does become relatively obvious who individuals are, who might have grown up here and left to go to medical school elsewhere as opposed to having obtained their medical degree prior to immigrating to Canada. [ID1]

Recent graduation from medical school

Most CSA apply for residency programs while still in medical school or soon after graduating. In contrast, immigrant-IMG applicants are older, and generally graduated from medical school a number of years earlier before they immigrated to Canada. As one administrator commented:

I would say that they [CSA] actually have a bit of an advantage over the immigrant-IMGs because they often are...fairly recently out of medical school and not had a big long gap without much clinical exposure. That certainly disadvantages some of our immigrant-IMG population. [ID1]

Institutional policies that exclude applicants based on their graduation from medical school itself may disadvantage older graduates. Another administrator noted that,

A lot of programs will filter out individuals who graduated more than, say, five years ago. And that disproportionately influences new immigrants ...it just takes them time to be able to get to a point where they can apply to a residency program. [ID6]

Ability to complete clinical placements in Canada

One particular advantage CSA enjoy is the ability to complete clinical placements during their undergraduate training. For example, one study participant said:

Well like, the critical difference which I think you might be missing is that an IMG whose already got their MD cannot come and do an elective [at our school] right? Because you have to be a medical student... any CSA trying to get an elective through [our school], is still a student at another university. [ID3]

As students, CSA completing electives in Canada are covered by the insurance and regulatory policies similar to Canadian medical graduates. Immigrant-IMG, as unlicensed physicians without student status, are not eligible for the same opportunities:

... while they are medical students ... it's relatively easy for them to arrange to obtain elective medical school experiences in Canada. Which clearly does give them an advantage over somebody who has immigrated to Canada after receiving their medical degree. Because all those people [immigrant-IMG] can do is observerships and it's not quite the same. [ID10]

The opportunity to complete electives in Canada provides CSA with opportunities to demonstrate their clinical skills in a Canadian setting:

I think what's missing are the opportunities for our immigrant international medical graduates to demonstrate their clinical abilities... It's not that they've been out of the clinical environment; it's just that they don't practice in a clinical environment in a Canadian setting. [ID1]

This participant further observed that electives also enable CSA to demonstrate the recency of their clinical training “Because program directors look at recent clinical experience and it's certainly known that recency of clinical exposure does make someone...more easy to integrate into the clinical environment...” [ID1]

Completing an elective in Canada also allows CSA to introduce themselves to potential residency program leaders and obtain a favourable reference letter. Choosing electives strategically is a common approach also used by Canadian medical students to obtain preferred residency matches:

... even for graduates of Canadian medical schools, it is an advantage when applying to a program if some of the people in the program have had a chance to see you and work with you. [ID6]

Familiarity with Canadian culture

Participants also expressed that CSA may enjoy an advantage over other IMG because CSA may be more culturally competent. In this context, cultural competency includes not only familiarity with English or French (Canada's two official languages), but also an understanding of how the health system and medical education operate in Canada, as well as shared experiences and cultural references with patients. Unlike immigrant-

IMG, CSA do not struggle to connect with and understand their patients, as noted by this participant:

The advantage that the CSAs have over the IMGs is the cultural advantage...Most, if not all, CSAs at least understand the cultural nuances. Whereas the IMGs...struggle with language, they struggle with what people are talking about.... [ID3]

Another participant noted that CSA have a better understanding of how the medical system works:

Canadians who study abroad... they're often acclimatized and familiar with the Canadian medical environment, the Canadian social environment, ...Canadian usual customs and such things. Whereas many immigrants, newly arrived IMGs, don't have that ... they're not familiar with what is being done here in Canada, both medically and culturally. [ID4]

Cultural competency, as described by study participants, may feed the perception that CSA are easier to train, and thus seen as better applicants:

Some program directors looking for a resident who ...will be a successful clinician, who will be an easy resident to care for, and maybe perhaps, subconsciously, they are aware that teaching acclimatization to the Canadian environment, culture and hospital system, medical education system, might be less onerous and therefore it's an easier resident to train. [ID4]

Performance in interviews

Participants indicated that CSA outperform immigrant-IMG in interviews, given that CSA are generally fluent in English or French, have a better understanding of what to expect during an interview, and can draw upon their elective experiences and cultural competency to answer questions. One participant described the performance of CSA ability during interviews in the following terms:

they [CSA] are likely to perform well in interviews on the whole because they know the language and they know the culture and they know the expectations ... than immigrants to Canada who may not have quite the same degree of... cultural fluency. [ID6]

A CSA's exposure to the medical environment in Canada allows them to answer some of the scenario-based questions better than immigrant-IMG who may not have worked or trained in a similar environment:

I think because they have worked in [the] Canadian context,... when we ask them questions around communication, around collaboration, around team skills, empathy and professionalism ... they're [CSA] really familiar with how it actually works in Canada. ...somebody who has trained in India completely and never had any experience in any of these Western cultures, they will, you know, answer questions based on their experiences. Had they had the opportunity to work in the Canadian context, they might answer questions very differently. [ID12]

Moreover, given that there are relatively few other sources of information that distinguish CSA from immigrant-IMG, the interview may receive greater emphasis in the general assessment of applicants:

there's not a lot of other information to help distinguish people...so the interviews become important in the selection process... Canadians who studied abroad [are] more comfortable in interview situations and, given 15 or 20 minutes to prove themselves, might be able to do it better and more easily. [ID6]

Discussion

In the interviews we conducted with senior administrators we identified five key factors that may explain the disproportionate selection rate of CSA over immigrant-IMG applicants. It is important to note that participants did not identify any factor that was *explicitly* designed to advantage one group over another. Indeed, medical schools across Canada have prioritized the implementation of practices in selection policies and procedures that promote equity, diversity, and inclusion of trainees.^{18,19} Nevertheless, post-graduate medical education programs may be constrained by time and resource limitations, institutional priorities, and medico-legal concerns that lead to policies and practices implemented in the name of efficiency (e.g., cut-off dates for medical school graduation) and limiting legal liabilities (e.g., restricting access to clinical placements to undergraduate medical students) that may produce downstream consequences of systematically advantaging one group of applicants over another. Medical schools have recently introduced new policies limiting access of international students to elective placements in Canada. For example, the Association of Faculties of Medicine of Canada has recently implemented a centralized application portal to facilitate the process of medical students applying for electives in Canada.²⁰

Although this has been established primarily with the intent of improving efficiency rather than promoting downstream equity in the IMG selection process, it may unintentionally result in additional barriers for IMG students obtaining elective placements.

Human factors (e.g., relying on the reputation of medical schools), familiarity biases (e.g., selecting trainees that are like oneself), or implicit biases (e.g., expecting that some trainees will be easier to train than others) may inherently favour the selection of CSA into residency programs. Our findings suggest that medical schools can take additional steps to promote fairness and equity, such as developing opportunities for immigrant-IMG to gain Canadian clinical experience (akin to a pre-clerkship placement), recognizing the inherent bias in relying on Canadian experience, and/or more explicitly connecting IMG selection processes to equity, diversity, and inclusion and social accountability goals.

Medical schools in Canada have prioritized the use of objective criteria.^{19,21,22} As an example, post-graduate medical education programs now require IMG applicants to pass the NAC OSCE as a requirement for all IMG residency applications. Researchers are also working to identify predictors of trainee performance in the residency programs;²²⁻²⁵ studies to date have identified factors such as the country of medical school training, fluency in English, age of graduate, and performance on qualifying examinations as predictors of residency success. However, these predictors in themselves may introduce a new set of biases or are explicitly discouraged by human rights regulations (e.g., discrimination based on age or gender). Requiring selection committee members to complete training in unconscious bias is promoted in medical school admissions as way to reduce the negative impact of human factors.²⁶ More research is needed to assess the impact of these types of interventions on the selection of IMG residency applicants.

Limitations

Although participants represented all regions in Canada, just over half of eligible administrators agreed to an interview. The selection of IMG in residency programs is a sensitive topic and individuals may have been hesitant to participate. Similarly, participants may have been influenced by social desirability bias, that is, physicians may have felt obligated to give responses that are expected of them or portrayed their program positively. One of the interviews was done in-person, which may have introduced

bias (e.g., non-verbal cues) that was not present in the other interviews conducted by telephone. With potentially sensitive topics such as ours, telephone interviews may elicit more open responses than in-person interviews.²⁷ We triangulated between interviews to ensure that the interview mode had limited impact on the themes raised in the in-person interview.¹⁷ Recruitment was limited by the finite number of potential applicants. Nonetheless, we are confident that we reached saturation on the themes identified in the manuscript because they were consistently raised by multiple participants and later interviews did not present new or conflicting ideas.

Conclusions

Through interviews with senior administrators of post-graduate medical education programs and IMG clinical assessment and training programs, we identified five key factors that may advantage CSA over immigrant-IMG in the selection process: the reputation of the IMG's medical school, recency of graduation from medical school, ability to complete clinical placement prior to admission to a residency program, familiarity with Canadian culture, and performance in interviews. These factors arise as downstream effects of other institutional policies designed to promote efficiencies or mitigate medico-legal risks. Describing these potential sources of bias is the first step in developing strategies to mitigate the unintended consequences of institutional policies. The findings also provide examples of how unconscious bias may influence the selection process and identify specific targets with which to evaluate interventions designed to promote equity, diversity, and inclusion in the selection and acceptance of post-graduate medical education trainees.

Conflicts of Interest: None to declare.

Funding: This study was funded by CIHR (MOP 137069).

References

1. Banner S, McKiver A, Rattanasithy S, Cassie J, Woodward C, Ford R. *Canadian students studying medicine abroad*. Ottawa: Canadian Residency Matching Service; 2010 [Available from: https://www.carms.ca/pdfs/2010_CSA_Report/CaRMS_2010_CSA_Report.pdf] [Accessed on Aug 18, 2021].
2. Thomson G, Cohn K. *IMG selection: independent review of access to postgraduate programs by international medical graduates in Ontario. Volume 2: analysis and background*. Toronto: Ontario Ministry of Health and Long-Term Care and the Council of Ontario Universities; 2011. Available from: <http://www.health.gov.on.ca/en/common/ministry/publicatio>

- [ns/reports/thomson/v2_thomson.pdf](#). [Accessed on Aug 18, 2021].
3. Thomson G, Cohn K. *IMG selection: independent review of access to postgraduate programs by international medical graduates in Ontario. Volume 1: findings and recommendations* [Internet]. Toronto: Ontario Ministry of Health and Long-Term Care and the Council of Ontario Universities; 2011. Available from: http://www.health.gov.on.ca/en/common/ministry/publications/reports/thomson/v1_thomson.pdf. [Accessed on Aug 18, 2021].
 4. Mathews M, Kandar R, Slade S, Yi Y, Beardall S, Bourgeault I. Realization of entry-to-practice milestones of Canadians who studied medicine abroad and other international medical graduates: a retrospective cohort study. *CMAJ Open*. 2017;5(2):E476-82. <https://doi.org/10.9778/cmajo.20160144>
 5. Medical Council of Canada. *Phasing out the MCCEE*. MCC:2022. Available from: <https://mcc.ca/news/phasing-out-of-the-mccee/> [Accessed on May 20, 2022].
 6. Medical Council of Canada. *Application and eligibility*. [Internet]. MCC:2022. Available from: <https://mcc.ca/examinations/mccqe-part-i/application-information/> [Accessed on May 20, 2022].
 7. Canadian Residency Matching Service. *Eligibility criteria*. CaRMs: 2021 [cited 2021 Aug 05]. Available from: <https://www.carms.ca/match/r-1-main-residency-match/eligibility-criteria/> [Accessed on Aug 05, 2021].
 8. Andrew RF. How do IMGs compare with Canadian medical school graduates in a family practice residency program? *Can Fam Physician*. 2010;56:E318-22.
 9. Bates J, Andrew R. Untangling the roots of some IMGs poor academic performance. *Acad Med*. 2001;76(1):43-6.
 10. Szafran O, Crutcher RA, Banner SR, Watanabe M. Canadian and immigrant international medical graduates. *Can Fam Physician*. 2005;51:1242-3.
 11. Giacomini M. *The SAGE handbook of qualitative methods in health research*. Bourgeault I, Dingwall R, De Vries R, editors. London: SAGE Publications Ltd.; 2010.
 12. Berg BL. *Qualitative research methods for the social sciences*. 2nd ed. Boston: Allyn and Bacon; 1995.
 13. Guest G, MacQueen KM, Namey EE. *Applied thematic analysis*. Los Angeles: SAGE Publications Ltd.; 2012.
 14. Campbell JL, Quincy C, Osseman J, Pedersen OK. Coding in-depth semistructured interviews: problems of unitization and intercoder reliability and agreement. *Sociol Methods Res*. 2013;42(3):294-320.
 15. Creswell JW. *Research design - qualitative, quantitative and mixed methods approaches*. 4th ed. Los Angeles: SAGE Publications Ltd.; 2014.
 16. Rowan M, Huston P. Qualitative research articles: information for authors and peer reviewers. *CMAJ*. 1997;157:1442-6.
 17. Saarjärvi M, Bratt E-L. When face-to-face interviews are not possible: tips and tricks for video, telephone, online chat, and email interviews in qualitative research. *Eur J Cardiovasc Nurs*. 2021;20:392-396.
 18. The Association of Faculties of Medicine. *DataPoint! International medical graduates and Canadians studying abroad*. Ottawa. 2012 Available from: https://www.afmc.ca/web/sites/default/files/pdf/2012-DATAPOINT_EN.pdf [Accessed on Aug 18, 2021].
 19. Bandiera G, Abrahams C, Ruetalo M, Hanson MD, Nickell L, Spadafora S. Identifying and promoting best practices in residency application and selection on a complex academic health network. *Acad Med*. 2015;90(12):1594-601. <https://doi.org/10.1097/acm.0000000000000954>
 20. The Association of Faculties of Medicine. *AFMC student portal* 2021. Available from: <https://www.afmcstudentportal.ca/> [Accessed on Aug 18, 2021].
 21. Bandiera G, Regehr G. Evaluation of a structured application assessment instrument for assessing applications to Canadian postgraduate training programs in emergency medicine. *Acad Emerg Med*. 2003;10:594-8. <https://doi.org/10.1111/j.1553-2712.2003.tb00041.x>
 22. Bandiera G, Regehr G. Reliability of a structured interview scoring instrument for a Canadian postgraduate emergency medicine training program. *Acad Emerg Med*. 2004;11(1):27-32. <https://doi.org/10.1197/j.aem.2003.06.011>
 23. Grierson LEM, Mercuri M, Brailovsky C, et al. Admission factors associated with international medical graduate certification success: a collaborative retrospective review of post-graduate medical education programs in Ontario. *CMAJ Open*. 2017;5(4):E785-90. <https://doi.org/10.9778/cmajo.20170073>
 24. Schabert I, Mercuri M, Grierson LEM. Predicting international medical graduate success on college certification examinations: responding to the Thomson and Cohl judicial report on IMG selection. *Can Fam Phys*. 2014;60:E478-84.
 25. Mathews M, Kandar R, Slade S, Yi Y, Beardall S, Bourgeault I. Examination outcomes and work locations of international medical graduate family medicine residents in Canada. *Can Fam Phys*. 2017;63:776-83.
 26. Robinett K, Kareen R, Reavis K, Quezada S. A multi-pronged antiracist approach to optimize equity in medical school admissions [online ahead of print 2021 Jun 26]. *Med Educ*. <https://doi-org.qe2a-proxy.mun.ca/10.1111/medu.14589>
 27. Novick G. Is there a bias against telephone interviews in qualitative research? *Res Nurs Health*. 2008;31(4):391-198.