RESEARCH

Challenges of medical residency
Are they perceived and addressed differently by international medical graduates, Canadian medical graduates, and preceptors?

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Abstract

Background: Residency is an important part of medical education, and international medical graduates represent a significant proportion of residents in the U.S., Canada, and most European countries. All residents face challenges during their residencies. Some of these challenges are common to all residents and some others are specific to a particular group of either Canadian or international medical graduates (IMGs). A number of studies have addressed the challenges of residency for all residents or just for IMGs from different perspectives. To our knowledge, the experience of challenges from the perspective of IMGs, residents who graduate from Canadian medical schools (CMGs), and their preceptors has not been studied in a single residency cohort. This study represents a valuable step in addressing the differential needs of international and Canadian medical graduates and in identifying the way different groups of residents can support each other in the interest of improved function during residency.

Methods: We surveyed groups of IMGs (divided into Canadian IMGs [CIMGs] and foreign IMGs [FIMGs]), CMGs, and preceptors to determine what they perceive to be the greatest challenges for IMGs and CMGs during residency. The survey was sent to the program coordinators of all English language psychiatry residency programs in Canada to be distributed to all residents and preceptors. To increase the response rate, three reminders were sent, and a prize draw was offered to participants. Mean scale scores were calculated. One-way analyses of variance (ANOVAs) were calculated to compare resident self-ratings between groups, preceptors’ ratings of each resident group’s challenges, and all four groups’ perceptions of the challenges experienced by FIMGs, CIMGs, and CMGs. Because the investigators were interested in the particular types of challenges that residents experience, multivariate analyses of variance (MANOVAs) were also used for item-level comparisons.

Results: 177 residents and 82 preceptors completed the survey. We found no significant differences in the mean scale scores for how FIMGs, CIMGs and CMGs rated their own challenges though there were differences in which types of challenges different groups perceived as most challenging (Canadian Language and slang for FIMGs, isolation from family for CIMGs and balance of personal and professional life for CMGs). Furthermore, our results suggest preceptors viewed FIMGs as experiencing the greatest challenges (M = 3.27, SD = 0.066, 95% CI [3.11, 3.41]) and CMGs, the least (M = 2.02, SD = 0.59, 95% CI [1.89, 2.16]; F (2, 227) = 88.030, p < 0.001).

Conclusion: Although the degree of challenge perceived by all groups of residents was relatively similar in general, different groups of residents identified different areas of challenges from their own perspective, and these areas differed from those identified by their resident colleagues and preceptors as being challenging for each group. This study highlights the necessity for reviewing the needs, strengths, and challenges of each group of residents and the importance of better communication between preceptors and residents regarding the different areas of challenges.

Keywords: Residency; Challenges; Psychiatry residency; International medical graduate; Canadian medical graduate
Background

Residency is that part of medical education which transitions residents from theoretical knowledge to clinical practice in their chosen field of medicine. International medical graduates (IMGs) represent a significant proportion of residents in the U.S., Canada, and most European countries, and they also play an important role in the preparation of health system professionals [1, 2]. The number of IMGs completing residency has increased steadily and comprises 17–24% of health care providers in the U.S. and Canada [3, 4, 5, 6]. Based on the report of the Canadian Post-MD Education Registry (CAPER), about 21% of exiting post-MD trainees since 2015-16 in Canada were IMGs [7].

IMG applicants are a heterogeneous group with different training backgrounds, some demographic differences between Canadian and immigrant IMGs [8], and an age range that generally falls between 23 and 42 years [1]. IMGs in Canada can be divided into two main groups: 1) IMGs who were born in Canada and completed medical school in a country other than Canada or the U.S. (Canadian IMGs: CIMGs); and 2) IMGs who were born in and completed their medical education in countries other than Canada or the U.S. [9] and then relocated to Canada (foreign IMGs: FIMGs).

In general, residency is challenging for all residents. However, some of the residency challenges are greater specifically for IMGs [2]. Some of these challenges are due to being trained in medicine in different health and educational systems. A different educational system; different clinical experiences with different populations and epidemiology; different types of training, evaluation, and expectations; and different research requirements for IMGs create different training environments than those experienced by Canadian medical graduates (CMGs) [10, 11]. Other challenges stem from cultural and language differences as well as the financial, acculturation, and social isolation struggles that often accompany the immigration process and are specifically more prominent for FIMGs [9, 10, 11, 12]. Considering the collaborative style of health care in Canada and the U.S., language and communication skills play an important role for residents in terms of overall performance and team cohesion [9]. As trainees or practitioners, IMGs traditionally serve a higher percentage of undeserved and vulnerable groups, such as immigrants, rural populations, and the elderly [12, 13, 14, 15].

Some studies have shown differential strengths among IMGs when compared to medical graduates trained in the U.S. [2, 3]. Such strengths included having more experience in medical practice before residency, lower scores on measures of fatigue, and higher scores on self-esteem and perceptions of personal growth. All reflect positively on levels of dedication, motivation, and ability as this group prepares to enter the medical health system as physicians [5, 16]. That these individuals have been ambitious enough to overcome the challenges of immigration (in the case of FIMGs) or studying in another country away from family and other sources of support (in the case of CIMGs) to obtain a residency position should not be underestimated [2, 3].

Although some recent qualitative studies have assessed the strengths and challenges of IMGs [16], we were unable to find a similar study that addressed the strengths and resiliency of IMGs compared with CMGs in Canada. Most related
studies to date have focused primarily on topics such as levels of knowledge, skills, and competence as the main challenges for IMGs during residency [5, 10, 17, 18, 19]. By comparison, variables such as coping skills, stress management, development of self-esteem, and other challenges have received less attention [2, 9]. With respect to these latter variables, adjustment and integration into the Canadian health system is trying for many IMGs. In a qualitative study, Wong et al. [2] defined three phases in the process that preceded full integration to the Canadian health system for IMGs: loss, disorientation, and finally adaptation.

A number of studies in different countries have addressed the challenges of residency for IMGs from different perspectives [11, 17, 18]. Some have evaluated and explored the challenges by surveying or interviewing program directors and preceptors [17, 20], while other studies have explored these challenges from the perspective of the IMGs themselves [21, 22, 23]. These two perspectives share some differences and some similarities. From the program directors’ perspective, communication is the main area of perceived IMG challenge [20], while the main challenges from the perspective of IMGs themselves are areas such as knowledge of the medical health care system, health organizational differences, systemic processes such as pharmaceutical and hospital formulary information, ethical challenges, and cultural differences [2, 16]. Consistent with this final challenge, qualitative studies have shown that some IMGs feel discriminated, intimidated, harassed, and socially isolated during residency [1, 12]. Knowing and addressing these challenges in appropriate and realistic ways will be a key factor in supporting and training IMGs during residency. Some have recommended that starting this approach before residency is crucial to support and provide structure for future physicians [9, 10, 12].

Despite these recommendations, and although the number of IMG residents in countries hosting such programs is constantly growing, challenges such as communication roles and style, ethics, and organizational differences have not been fully recognized or addressed to date [2]. Few studies, for instance, have recommended that an orientation program at the start of residency [20, 24] or an observership before residency [17] would familiarize IMGs with the new culture and healthcare system in which they will work. Such preparation has the potential to improve capacity in the areas of patient care, medical knowledge, practice-based learning, evidence-based medicine, formulation, and interpersonal and communication skills such as documentation, professionalism, and system-based practice [17]. Studies showed that the orientation process for all residents including IMGs must be based on their needs, and be relevant, comprehensive, multifaceted, and efficiently delivered within a short period of time [24, 25, 26].

Identification of priority areas and topics and the ability to administer education in a meaningful and timely way are the most important factors to be considered prior to each orientation so that the best results can be delivered [5]. To provide the most appropriate orientation and training for each different group of residents, it is important to understand their needs and challenges during residency training in a comprehensive multi-perspective way and also address their strengths to achieve a better educational outcome for all residents. Our main research questions included:

**Do IMGs face different challenges compared to CMGs? Are the challenges of residency greater for IMGs compared to other residents? Do**
IMGs have different perceptions and understanding of their challenges than their colleagues (CMGs) and preceptors? Are the challenges of residency perceived differently among different groups of IMGs (FIMGs and CIMGs)? Do preceptors perceive FIMGs, CIMGs, and CMGs as facing different challenges throughout their residencies? To answer these questions, we designed a research study to compare the challenges of medical residency from the perspectives of IMGs, CMGs, and the preceptors working with them.

Methods
This research was approved by the Research Ethics Boards of the University of Saskatchewan and Regina Qu’Appelle Health Region (RQHR). The study aimed to recruit psychiatry residents, preceptors, and program directors in English language psychiatry residency programs throughout Canada. After reviewing approximately 50 articles in the related area of residency challenges, three questionnaires were prepared based on a questionnaire which was used in a study by Sockalingam et al. [9]. This study had a similar goal of determining the needs of IMGs in a different population of fellowship trainees. The questionnaire was used after contacting the authors and obtaining permission to use a similar version of the questionnaire in our study. Eleven potential stressors or challenges facing residents were assessed, addressing professional (e.g., knowledge areas, competencies) and interpersonal (e.g., communication, feelings of isolation) domains (See Table 1).

Contact information for the program coordinators of the 14 English language psychiatry residency programs in Canada was provided by the Coordinators of Psychiatric Education (COPE) committee. Program coordinators were asked to forward the survey invitation to residents and preceptors within their respective programs. The participants completed the questionnaire three times, one for each of the three different respondent groups of interest (IMGs, CMGs, and preceptors/program directors) through an online survey platform (fluidsurveys.com). Responses were collected anonymously. Three reminders were sent to program coordinators with the request that these reminders be forwarded to residents and preceptors. As an incentive, a draw for 30 bookstore gift cards (20 for residents and 10 for preceptors), valued at $50 each. To maintain confidentiality, email addresses of respondents who participated in the draw were entered into a separate form. The draw was performed by one of the co-investigators (MM) using a random number generator. After the surveys were closed, all results were backed up and transferred from the survey site to a secure database managed by the RQHR.

The questionnaires for each resident included three parts:

1 demographic information consisting of age, gender, year of residency, program of residency (optional), first language (English, French, other), and country of birth (Canada, U.S., other);

2 an 11-item questionnaire in a Likert-type scale format (ranging from 1 = not at all challenging to 5 = very challenging) to rate their own challenges in residency; and

3 the same questionnaire in Likert-type scale format to rate the challenges of the other 2 groups of residents (other than that to which the respondent belonged).
Thus, CMGs in this part rated the challenges of FIMGs and CIMGs, FIMGs rated the challenges of CMGs and CIMGS, and CIMGs were asked to rate the challenges for CMGs and FIMGs.

Preceptors’ questionnaires were similar, containing two parts:
1 demographic information consisting of age, gender, country of training for medical school and residency (inside or outside Canada), years working in an academic (teaching) position, total number of residents with whom they work/teach during a year and number of both FIMG and CIMG residents with whom they work/teach during a year; and
2 three different sets of the questionnaire in a Likert-type scale format, with the same questions that residents received, to rate the challenges of CMGs, FIMGs, and CIMGs.

Analyses were conducted using IBM SPSS Statistics version 22.0. Descriptive statistics were computed for demographic variables. Scale means were calculated for every set of questionnaires completed by each participant. Separate one-way analyses of variance (ANOVA) were conducted for self-ratings of challenges (FIMGs vs. CIMGs vs. CMGs) and for preceptors’ ratings of the challenges of FIMGs vs. CIMGs vs. CMGs. Three separate univariate ANOVAs were also conducted to determine the four respondent groups’ (FIMGs, CIMGs, CMGs, and preceptors) perceptions of the challenges experienced by FIMGs, CIMGs, and CMGs. Separate item-level one-way multivariate analyses of variance (MANOVA) were computed to compare the perceptions of each responder group (FIMGs, CIMGs, CMGs, and preceptors) regarding the challenges experienced by each of the three resident types. Post-hoc Bonferroni tests were used for multiple comparisons; for items on which equality of variances was violated, the Games-Howell statistic was used.

Results
According to CAPER [7], 676 psychiatry residents were enrolled in 14 English language programs in Canada at the time of survey distribution. Responses were received from 11 FIMGs, 35 CIMGs, and 131 CMGs, for a total of 177 responses and for an overall response rate of 26%. Of these, three FIMGs and 19 CMGs did not complete all three Likert-type scales in their entirety. More than 65% of resident respondents were female (n = 120), with a mean age of 30.6 years (SD = 4.1). Of the 997 faculty member preceptors supporting post-MD training in psychiatry during this time period, 82 responded, for a response rate of 8.2%. However, the total figure represents both English and French language programs and this survey was only distributed to English language programs; thus the respondents rate is a slight underestimate. Of the 82 preceptor respondents, six were missing data from some or all of the Likert-type questionnaires. More than half of the preceptor respondents were female (n = 48; 58.5%) with a mean age of 47.9 years (SD = 11.2).

Scale Ratings
Differences in residents’ perceptions of their own challenges were non-significant, F(2, 169) = 2.010, p = 0.137, partial $\eta^2 = 0.023$; however, the observed power was low (0.411). Mean scale scores were 2.55 (SD = 0.63, 95% CI [2.12, 2.97]) for FIMGs, 2.18 (SD = 0.63, 95% CI [2.19, 2.36]) for CIMGs and 2.28 (SD = 0.48, 95% CI [2.19, 2.36]) for CMGs.
CI [2.19, 2.35]) for CMGs. In contrast, preceptors’ perceptions of the challenges experienced by residents differed significantly across groups, $F(2, 227) = 88.030, p < 0.001$, partial $\eta^2 = 0.437$, observed power = 1.000. Preceptors identified FIMGs as experiencing the greatest challenges, with a scale mean of 3.27 (SD = 0.66, 95% CI [3.11, 3.41]), followed by CIMGs (M = 2.27, SD = 0.58, 95% CI [2.14, 2.40]). Preceptors perceived CMGs as having the fewest challenges (M = 2.02, SD = 0.59, 95% CI [1.89, 2.16]). Mean scale scores are reported in Table 2. We found a significant difference between groups in the ratings of FIMGs’ perceived challenges, $F(3, 235) = 3.904, p = 0.01$, partial $\eta^2 = 0.047$, observed power = 0.823. Post-hoc analyses revealed that preceptors perceived FIMGs as having more challenges than FIMGs perceived themselves as having (MDiff = 0.72, SE = 0.24, 95% CI [0.09, 1.35], p = 0.017). The groups also significantly differed in their ratings of CMGs’ challenges, $F(3, 241) = 7.813, p < 0.001$, partial $\eta^2 = 0.089$, observed power = 0.989. Post-hoc analyses demonstrated that CMGs reported experiencing more challenges than CIMGs (MDiff = 0.40, SE = 0.10, 95% CI [0.14, 0.67], p < 0.001) or preceptors (MDiff = 0.26, SE = 0.08, 95% CI [0.05, 0.46], p = 0.005) perceived them to experience. No significant between-group differences were found for CIMGs, $F(3, 228) = 0.584, p = 0.626$, partial $\eta^2 = 0.008$; however, observed power was low (0.170).

## 1 Item-Level Results

The item-level perceptions about FIMGs, CIMGs and CMGs from each group of residents and preceptors are presented in tables 3, 4 and 5. A comparison of item-by-item self-ratings of challenges experienced by FIMGs, CIMGs, and CMGs demonstrated a statistically significant MANOVA effect, Wilks’ $\lambda = 0.407, F(22, 318) = 8.201, p < 0.001$, partial $\eta^2 = 0.362$, observed power = 1.000. Levene’s test of equality of variances was violated for items 6 and 10; the Games-Howell statistic was used for those between-groups comparisons. Univariate tests revealed significant differences for items 1, 3, 5, 6, 8, 10, and 11 at $p < 0.05$. Statistically significant comparisons on self-rated challenges, using Bonferroni comparisons, are presented in Table 6. Post-hoc analyses on item 10 subsequently revealed no significant differences. A significant MANOVA effect was also found for perceptions of the challenges experienced by FIMGs, Wilks’ $\lambda = 0.721, F(33, 660.649) = 2.346, p < 0.001$, partial $\eta^2 = 0.103$, observed power = 1.000. Univariate analyses found significant differences on items 4, 6, 7, 8, 9, and 11 at $p < 0.05$; the Bonferroni statistic was used for between-groups comparisons. Post-hoc analyses demonstrated no significant differences between groups on item 8. Significant comparisons between groups for perceptions of FIMG challenges are shown in Table 7.

Box’s M-test was violated for the MANOVA of perceptions of CIMG experiences, indicating unequal covariances, $F(132, 34502.676) = 195.670, p = 0.005$. Thus, Pillai’s Trace was used instead. A significant MANOVA effect was found for perceptions of the challenges experienced by CIMGs, Pillai’s Trace = 0.374, $F(33, 660) = 2.847, p < 0.001$, partial $\eta^2 = 0.125$, observed power = 1.000. Univariate tests revealed significant differences on items 1, 3, 5, 6, 7, and 11 at $p < 0.05$; however, between-groups comparisons yielded no significant differences on item 11. Statistically significant group comparisons for perceptions of CIMG challenges are shown in
Table 8. As with perceptions of CIMG challenges, Box’s M-test was violated for the MANOVA of perceptions about CMGs, F(132, 33720.818) = 305.288, p < 0.001. A significant MANOVA effect was found for perceptions of the challenges experienced by CMGs, Pillai’s Trace = 0.604, F(33, 699) = 5.341, p < 0.001, partial $\eta^2 = 0.201$, observed power = 1.000. Levene’s test of equality of variances was violated for items 2, 3, 5, 7, 8, and 10. Univariate analyses revealed significant differences on all but item 5 at p < 0.05. Group comparisons that were significant are shown in Table 9.

**Discussion**

The range of mean scale scores among all three groups of residents (FIMG, CIMG, or CMG) showed that residency is perceived as being challenging to approximately the same degree by members of all three groups (Table 2 and Figure 1). However, the area of perceived challenges differed among groups. Moreover, the preceptors’ responses indicated a significant difference between the challenges that they perceived IMGs to encounter compared to those that they perceived CMGs to face (Table 2 and Figure 1).

The level of challenges that FIMGs perceived for themselves was significantly lower than what other residents and preceptors perceived for them (Table 2 and Figure 1). Interestingly, the challenges facing CMGs were perceived to be less by the other two groups of residents and preceptors compared to what CMGs perceived their own challenges to be (Table 2 and Figure 1). The mean level of challenges for CIMGs was not significantly different among the other two groups of residents or preceptors’ compared to what CIMGs perceived for themselves (Table 2 and Figure 1).

Overall, the most challenging self-perceived areas for each group of residents from their own perspective were different. For FIMGs, the most challenging areas were medical documentation, Canadian language and slang, and knowledge of the hospital system and structure (Table 3). For CIMGs, the primary challenges were balancing of professional and personal life, isolation from family, and medical documentation (Table 4). CMGs were most challenged by balancing personal and professional life, specialty-specific clinical skills, and knowledge of evidence-based medicine (Table 5).

From the preceptors’ perspective, the most challenging areas were isolation from family for FIMGs, and balancing one’s personal and professional life for both CIMGs and CMGs (Tables 3, 4, 5).

Item by item comparison of the self-rating data from each group of residents showed that for FIMGs, knowledge of the hospital system and structure was a significantly greater challenge than for the other two residency groups. Also not surprisingly, Canadian language and slang posed a significantly greater challenge for FIMGs than for CIMGs (Table 6). Isolation from family was identified as the most significant challenge for CIMGs compared to CMGs, whereas communication with patients was viewed as a significantly lesser challenge by this group compared to both FIMGs and CMGs (Table 6). CMGs were significantly more challenged in balancing their personal and professional life compared to FIMGs and were also more challenged in their knowledge of evidence-based medicine compared to the other two groups (Table 6).
Other items such as medical documentation, specialty-specific clinical skills, knowledge of the Canadian health care system, communication within interdisciplinary teams, and social adjustment to living in a new city/province or country were considered equally challenging among all three groups of residents.

Item by item comparison of FIMG challenges from different perspectives showed that preceptors found specialty-specific clinical skills, communication with patients, knowledge of the Canadian health care system, and communication within interdisciplinary teams significantly more challenging for IMGs compared to what FIMGs perceived about themselves (Table 7). The preceptors considered communication with patients and knowledge of the Canadian health care system to be significantly more challenging for CIMGs compared to what this group perceived for itself (Table 8).

CMGs had higher self-rating scores in the areas of balancing their personal and professional life, isolation from family, knowledge of the Canadian health care system, knowledge of the hospital system and structure, and knowledge of evidence-based medicine compared to their preceptors; however, preceptors found that communication with patients was significantly more challenging for CMGs than what CMGs perceived for themselves (Table 9).

Comparing the data from all three groups of residents and preceptors also showed that communication with patients was consistently perceived as a more challenging area for all residents from the preceptors’ perspective than for each group as a self-rating challenge (Tables 7, 8 and 9). The summary of the most challenging area for each group of residents as well as the areas of challenge which are rated significantly different between each group of residents and preceptors are given in tables 10 and 11 consecutively.

This study had some limitations, including uncertainty whether the questionnaires were successfully distributed to all available residency programs. In addition to sending the introductory email, we followed up with each program administrative assistant or main contact to confirm that they had received our email. However, some of the programs did not respond even to subsequent telephone calls, which left some uncertainty as to whether they had received or distributed the survey among the residents and preceptors of their assigned residency program. Another limitation of this study is that we included only psychiatry program residents and preceptors, who may not be representative of all other residency programs. It is possible that the areas of challenge would be relatively different for other residency programs which would affect the results.

We also did not separate the results by different residency years, as the data from all years of residency in each group were analyzed together due to the small number of participants. Different years of residency can have a significant effect on the different areas of challenges perceived during the residency and similarly, separating the data by gender or age group would probably also show some differences which needs to be considered in further studies.

**Conclusion**

In conclusion, although residency was perceived as a challenging time for all groups of residents to approximately the same degree overall, different groups of residents
had different areas of challenge which were also different from what other groups of residents and preceptors’ perceived for each group.

Unlike the two other residency groups, the mean score of self-perceived residency challenges for CIMGs was not significantly different from what other groups perceived for CIMGs. This similarity in the mean scores for CIMGs could be related to greater familiarity with the Canadian academic system compared to FIMGs, as well as better communication with preceptors and other resident groups concerning their needs and challenges.

Each group of residents differed in the areas that they found the most and the least challenging, which was also different from what other residents and preceptors perceived as challenging for them. This difference between preceptors’ and residents’ perceptions could be related to the different expectations and definitions of academic and clinical work or to miscommunication between preceptors and residents. The significant differences between resident perceptions of their own challenges compared to the preceptors’ perception show the importance of communication between these two groups to discuss the expectations and understanding of the challenges for residents.

The differences in the areas of challenges and strengths for each group could provide an interesting opportunity for residents to share experiences and provide peer support for each other in the area(s) in which each group is stronger for the group(s) with more challenges. The differences in challenges faced by each group from different perspectives brings up the necessity for improved communication between residents and their preceptors and for better definitions of expectations for each group.

This pilot study could be used as a starting point for further investigations on different groups of residents in other specialties as well as in different years of residency to compare the challenges, strengths, and needs of each group in more detail.

Having a better and more accurate understanding of residents’ needs and challenges in each group from the beginning of the residency will reduce stress during the term of residency, improve the quality of education, and facilitate better connection between residents as well as between residents and preceptors.

List of abbreviations

IMG: International medical graduate
FIMG: Foreign international medical graduate
CIMG: Canadian international medical graduate
CMG: Canadian medical graduate
REB: Research Ethics Board
CAPER: Canadian Post-MD Education Registry
COPE: Coordinators of Psychiatric Education

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**Ethics approval and consent to participate**

Research Ethics Board (REB) approval was obtained from the Regina Qu’Appelle Health Region and the University of Saskatchewan. Permission to ask the Coordinators of Psychiatry Education (COPE) group to distribute the survey to program coordinators of all psychiatry residency programs was obtained and approved by the REB and COPE. The consent form was approved by the REB and was sent along with the survey to participants for their approval prior to completing the survey. The results of the survey were only submitted after a respondent agreed to participate in the study by submitting the consent form.

**Consent for publication**

Not applicable

**Availability of data and material**

All data from the study were backed up and transferred to secure database storage at the University of Saskatchewan by the research coordinator of the study. All demographic information remained anonymous and was only available to the research team. All data analyzed during this study are reported in this published article, and the datasets used and analyzed during the current study are available from the corresponding author upon request. Please note that any requests for access to study data are subject to approval from the research Ethics Boards of the former Regina Qu’Appelle Health Region and University of Saskatchewan.

**Competing interests**

The authors declare that they have no competing interests.

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Author’s contributions
NA designed and prepared the draft of the proposal and disseminated the survey to participants, MM provided ethical documentations as well as analyses of the data, FS validated the data analysis and prepared the draft of the paper in LaTeX format and AP supervised the design of the study as well as preparation of the survey and proposal. All authors actively contributed to the study design, data collection and analyses, and manuscript preparation. All authors read and approved the final manuscript.

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References
1. Crutcher, R., Banner, S., Szafran, O., Watanabe, M.: Characteristics of international medical graduates who applied to the carms 2002 match. CMAJ 168(9), 1119–23 (2003)  
2. Wong, A., Lohfeld, L.: Re-certifying as a doctor in Canada: international medical graduates and the journey from entry to adaptation. Med Educ. 42(1), 53–60 (2008)  
3. Gozu, A., Kern, D., Wright, S.: Similarities and differences between international medical graduates and U.S. medical graduates at six Maryland community-based internal medicine residency training programs. Acad Med. 84(3), 385–90 (2009)  
4. Kramer, M.: The educational needs of international medical graduates in psychiatric residencies. Acad Psychiatry 29(3), 322–4 (2005)  
5. Nasmith, L.: Programs for international medical graduates. Can Fam Physician 39, 2549–53 (1993)  
6. Ahmed, A., Hwang, W., Thomas, C.J., Deville, C.J.: International medical graduates in the U.S. Physician Workforce and Graduate Medical Education: Current and Historical Trends. J Grad Med Educ. 10(2), 214–218 (2018)  
7. Canadian Post-MD Education Registry, Annual census of post-M.D. trainees, 2015-2016. https://www.caper.ca  
8. Szafran, O., Crutcher, R., Banner, S., Watanabe, M.: Canadian and immigrant international medical graduates. Can Fam Physician 51, 1242–3 (2005)  
9. Sockalingam, S., Hava, R., Al-Battran, M., Abbey, S., Zaretsky, A.: Preparing international medical graduates for psychiatry residency: a multi-site needs assessment. Acad Psychiatry 36(4), 277–81 (2012)  
10. Dorgan, K., Lang, F., Floyd, M., Kemp, E.: International medical graduate-patient communication: a qualitative analysis of perceived barriers. Acad Med 84(11), 1567–75 (2009)  
11. Jain, P., Krieger, J.: Moving beyond the language barrier: the communication strategies used by international medical graduates in intercultural medical encounters. Patient Educ Couns 84(1), 98–104 (2011)  
12. Chen, P., Curry, L., Bernheim, S., Berg, D., Gozu, A., Nunez-Smith, M.: Professional challenges of non-U.S.-born international medical graduates and recommendations for support during residency training. Acad Med 86(11), 1383–8 (2011)  
13. Allan, G., Manca, D., Szafran, O., Korowynk, C.: EBM a challenge for international medical graduates. Fam Med 39(3), 160 (2007)  
14. Heal, C., Jacobs, H.: A peer support program for international medical graduates. Aust Fam Physician 34(4), 277–8 (2005)  
15. Mcmahon, G.: Coming to America-international medical graduates in the United States. N Engl J Med. 350(24), 2435–7 (2004)  
16. Triscott, J., Szafran, O., Waugh, E., Torti, J., Barton, M.: Cultural transition of international medical graduate residents into family practice in Canada. Int J Med Educ. 7, 132–41 (2016 May 4)  
17. Hamoda, H., Sacks, D., Sciolla, A., Dewan, M., Fernandez, A., Gogineni, R., Goldberg, J., Kramer, M., Saunders, R., Spyer, J., Rao, N.: A roadmap for observership programs in psychiatry for international medical graduates. Acad Psychiatry 36(4), 300–6 (2012)  
18. Dickson, G., Chesser, A., Keene Woods, N., Krug, N., Kellerman, R.: Self-reported ability to perform procedures: a comparison of allopathic and international medical school graduates. J Am Board Fam Med 26(1), 28–34 (2013)  
19. Boulet, J., Cassimatis, E., Opalek, A.: The role of international medical graduate psychiatrists in the United States healthcare system. Acad Psychiatry. 36(4), 293–9 (2012)  
20. Zula, R., Baerlocher, M., Verma, S.: International medical graduates (IMGs) needs assessment study: comparison between current IMG trainees and program directors. BMC Med Educ. 42, 42 (2008)
21. Atri, A., Matorin, A., Ruiz, P.: Integration of international medical graduates in U.S. psychiatry: the role of acculturation and social support. Acad Psychiatry 35(1), 21–6 (2011)

22. Rao, N., Kodali, R., Mian, A., Ramtekkar, U., Kamarajan, C., Jibson, M.: Psychiatric residents’ attitudes toward and experiences with the clinical-skills verification process: a pilot study on U.S. and international medical graduates. Acad Psychiatry 6(4), 316–22 (2012)

23. Chen, P., Nunez-Smith, M., Bernheim, S., Berg, D., Gozu, A., Curry, L.: Professional experiences of international medical graduates practicing primary care in the United States. J Gen Intern Med. 25(9), 947–53 (2010)

24. Curran, V., Hollett, A., Hann, S., Bradbury, C.: A qualitative study of the international medical graduate and the orientation process. Can J Rural Med. 13(4), 163–9 (2008)

25. Tan, A., Hawa, R., Sockalingam, S., Abbey, S.: (Dis)orientation of international medical graduates: an approach to foster teaching, learning, and collaboration (TLC). Acad Psychiatry 37(2), 104–7 (2013)

26. Berkenbosch, L., Schoenmaker, S., Ahern, S., Sejnaas, C., Snell, L., Scherpier, A., Busari, J.: Medical residents’ perceptions of their competencies and training needs in health care management: an international comparison. BMC Med Educ. 13, 25 (2013)
Table 1 Sample of the Questionnaire

|                          | Very Challenging | Somewhat Challenging | Neutral | Easy | Very Easy |
|--------------------------|------------------|----------------------|---------|------|-----------|
| 1. Balancing one's personal and professional life |                  |                      |         |      |           |
| 2. Medical Documentation |                  |                      |         |      |           |
| 3. Isolation from family |                  |                      |         |      |           |
| 4. Specialty specific clinical skills          |                  |                      |         |      |           |
| 5. Canadian language and slang                  |                  |                      |         |      |           |
| 6. Communication with patients                  |                  |                      |         |      |           |
| 7. Knowledge of the Canadian health care system |                  |                      |         |      |           |
| 8. Knowledge of the hospital system and structure |            |                      |         |      |           |
| 9. Communication within interdisciplinary teams |                  |                      |         |      |           |
| 10. Social adjustment to living in new city/province/country |                  |                      |         |      |           |
| 11. Knowledge of evidence based medicine         |                  |                      |         |      |           |

Table 2 Perceptions of Challenges Experienced by FIMG, CIMG, and CMG Psychiatry Residents

|                         | FIMGs n=11 | CIMGs n=35 | CMGs n=115 | Preceptors n=78 |
|-------------------------|------------|------------|------------|-----------------|
| FIMG Challenges         | 2.55 0.63  | 2.94 0.89  | 3.10 0.74  | 3.27 0.66 0.01  |
| CIMG Challenges         | 2.27 0.62  | 2.18 0.63  | 2.34 0.63  | 2.27 0.58 0.626 |
| CMG Challenges          | 1.90 0.47  | 1.88 0.5   | 2.28 0.48  | 2.02 0.59 <0.001 |

Figures

Figure 1 Perceptions of Challenges Experienced by FIMGs, CIMGs, and CMGs

Table 3 Preceptors about FIMGs

|                | FIMGs Self n=11 | CIMGs n=35 | CMGs n=115 | Preceptors n=78 |
|----------------|-----------------|------------|------------|-----------------|
| Q1             | 2.55 0.93       | 3.23 1.03  | 3.01 0.94  | 3.00 0.93       |
| Q2             | 3.00 0.89       | 2.94 1.14  | 3.10 0.95  | 3.23 1.03       |
| Q3             | 2.73 1.35       | 3.54 1.15  | 3.50 1.07  | 3.55 0.89       |
| Q4             | 2.09 0.94       | 2.57 0.92  | 2.95 0.92  | 3.23 1.04       |
| Q5             | 3.09 0.94       | 3.06 1.28  | 3.31 1.08  | 3.51 1.08       |
| Q6             | 2.09 0.83       | 2.83 1.18  | 3.17 1.00  | 3.42 1.05       |
| Q7             | 2.55 1.21       | 2.97 1.18  | 3.11 1.06  | 3.45 0.92       |
| Q8             | 3.18 1.08       | 2.89 1.08  | 3.07 1.00  | 3.42 0.88       |
| Q9             | 2.36 0.81       | 2.83 1.12  | 2.95 1.00  | 3.27 1.05       |
| Q10            | 2.55 1.44       | 3.11 1.16  | 3.25 1.00  | 3.30 0.97       |
| Q11            | 1.82 0.75       | 2.34 0.87  | 2.67 0.97  | 2.51 0.96       |
Table 4 Preceptors about CIMGs

| CIMGs | FIMGs n=9 | CMGs n=112 | Preceptors n=76 |
|-------|-----------|------------|-----------------|
| Mean  | SD        | Mean       | SD              |
| Q1    | 2.36      | 1.04       | 2.79            | 0.89            |
| Q2    | 2.51      | 1.15       | 2.58            | 0.92            |
| Q3    | 3.09      | 1.29       | 2.46            | 0.94            |
| Q4    | 2.37      | 0.97       | 2.58            | 0.86            |
| Q5    | 1.20      | 0.53       | 1.51            | 0.75            |
| Q6    | 1.26      | 0.51       | 1.97            | 0.86            |
| Q7    | 1.91      | 0.89       | 2.39            | 0.93            |
| Q8    | 2.29      | 1.10       | 2.62            | 0.96            |
| Q9    | 1.83      | 0.92       | 2.19            | 0.89            |
| Q10   | 2.20      | 1.21       | 2.14            | 0.95            |
| Q11   | 2.11      | 0.96       | 2.47            | 0.90            |

Table 5 Preceptors about CMGs

| CMGs | FIMGs n=8 | CIMGs n=35 | Preceptors n=76 |
|------|-----------|------------|-----------------|
| Mean  | SD        | Mean       | SD              |
| Q1    | 3.39      | 0.96       | 2.50            | 1.31            |
| Q2    | 2.63      | 0.96       | 1.50            | 0.54            |
| Q3    | 2.42      | 1.11       | 1.75            | 0.89            |
| Q4    | 2.65      | 0.90       | 3.00            | 1.20            |
| Q5    | 1.20      | 0.55       | 1.13            | 0.35            |
| Q6    | 1.70      | 0.70       | 1.50            | 0.76            |
| Q7    | 2.11      | 0.86       | 1.13            | 0.35            |
| Q8    | 2.34      | 0.98       | 1.75            | 0.71            |
| Q9    | 2.10      | 0.92       | 1.75            | 0.46            |
| Q10   | 1.69      | 0.98       | 2.13            | 0.84            |
| Q11   | 2.82      | 0.88       | 2.75            | 0.89            |

Table 6 Bonferroni Comparisons for Self-Perceptions of Residency Challenges

| Item | Group Comparison | Difference (Scale Mean) | Std Error | Lower Bound | Upper Bound | p   |
|------|------------------|-------------------------|-----------|-------------|-------------|-----|
| Q1   | CIMG vs. FIMG    | 0.84                    | 0.30      | 0.12        | 1.56        | 0.015 |
| Q3   | CIMG vs. CMG     | 0.67                    | 0.22      | 0.13        | 1.20        | 0.009 |
| Q5   | FIMG vs. CIMG    | 1.89                    | 0.20      | 1.41        | 2.37        | <0.001 |
| Q6*  | FIMG vs. CIMG    | 0.83                    | 0.27      | 0.13        | 1.54        | 0.021 |
| Q8   | FIMG vs. CMG     | 0.90                    | 0.35      | 0.05        | 1.89        | 0.034 |
| Q11  | CIMG vs. CMG     | 0.70                    | 0.17      | 0.29        | 1.11        | <0.001 |
|      | CIMG vs. FIMG    | 1.00                    | 0.28      | 0.32        | 1.68        | 0.001 |

* Games-Howell statistic used

Table 7 Bonferroni Comparisons for Perceptions of Challenges Experienced by FIMGs

| Item  | Group Comparison | Difference (Scale Mean) | Std Error | Lower Bound | Upper Bound | p   |
|-------|------------------|-------------------------|-----------|-------------|-------------|-----|
| Q4    | CIMG vs. FIMG    | 0.86                    | 0.30      | 0.05        | 1.66        | 0.030 |
| Preceptor vs. CIMG | 0.66 | 0.20 | 0.14 | 1.18 | 0.005 |
| Preceptor vs. FIMG  | 1.14 | 0.31 | 0.00 | 0.32 | 1.96 |
| Q6    | CIMG vs. FIMG    | 1.08                    | 0.33      | 0.21        | 1.96        | 0.007 |
| Preceptor vs. CIMG  | 0.59 | 0.21 | 0.02 | 1.15 | 0.036 |
| Preceptor vs. FIMG  | 1.32 | 0.34 | 0.43 | 2.22 | 0.001 |
| Q7    | Preceptor vs. FIMG | 0.91 | 0.34 | 0.01 | 1.80 | 0.044 |
| Q9    | Preceptor vs. FIMG | 0.91 | 0.33 | 0.03 | 1.79 | 0.039 |
| Q11   | CIMG vs. FIMG    | 0.85                    | 0.30      | 0.06        | 1.65        | 0.029 |

* Games-Howell statistic used
### Table 8 Bonferroni Comparisons for Perceptions of Challenges Experienced by CIMGs

| Item | Group Comparison | Difference (Scale Mean) | Std Error | 95% CI | p   |
|------|------------------|-------------------------|-----------|-------|-----|
| Q1   | CIMG vs. FIMG    | 92.00                   | 0.34      | 0.02  | 1.83 | 0.043 |
|      | CIMG vs. CMG     | 0.47                    | 0.18      | 0.00  | 0.94 | 0.048 |
|      | CIMG vs. Preceptor | 0.55                 | 0.19      | 0.05  | 1.04 | 0.022 |
|      | CIMG vs. Preceptor | 0.63                 | 0.24      | 0.00  | 1.26 | 0.049 |
| Q3*  | CMG vs. CIMG     | 0.31                    | 0.11      | 0.01  | 0.61 | 0.041 |
|      | CMG vs. CIMG     | 0.72                    | 0.15      | 0.31  | 1.13 | < 0.001 |
|      | Preceptor vs. CIMG | 0.65                 | 0.16      | 0.22  | 1.08 | < 0.001 |
|      | CMG vs. CIMG     | 0.48                    | 0.18      | 0.00  | 0.95 | 0.048 |
|      | Preceptor vs. CIMG | 0.64                 | 0.19      | 0.14  | 1.14 | 0.005 |

* Games-Howell statistic used

### Table 9 Bonferroni Comparisons for Perceptions of Challenges Experienced by CMGs

| Item | Group Comparison | Difference (Scale Mean) | Std Error | 95% CI | p   |
|------|------------------|-------------------------|-----------|-------|-----|
| Q1   | CMG vs. CIMG     | 0.62                    | 0.19      | 0.13  | 1.11 | 0.006 |
|      | CMG vs. Preceptor | 0.57                 | 0.14      | 0.20  | 0.95 | < 0.001 |
|      | CMG vs. Preceptor | 0.52                 | 0.16      | 0.10  | 0.94 | 0.009 |
|      | CMG vs. FIMG     | 1.13                    | 0.21      | 0.50  | 1.77 | 0.001 |
|      | CMG vs. Preceptor | 0.48                 | 0.13      | 0.15  | 0.81 | 0.001 |
| Q4   | CMG vs. Preceptor | 0.38                 | 0.13      | 0.03  | 0.73 | 0.025 |
|      | FIMG vs. CIMG    | 0.94                    | 0.34      | 0.03  | 1.86 | 0.039 |
|      | CMG vs. CIMG     | 0.59                    | 0.17      | 0.15  | 1.04 | 0.003 |
|      | Preceptor vs. CIMG | 0.47                 | 0.15      | 0.08  | 0.87 | 0.009 |
|      | Preceptor vs. CMG | 0.29                 | 0.11      | 0.01  | 0.57 | 0.039 |
| Q7*  | CMG vs. CIMG     | 0.71                    | 0.13      | 0.38  | 1.05 | < 0.001 |
|      | CMG vs. FIMG     | 0.99                    | 0.15      | 0.56  | 1.42 | < 0.001 |
|      | CMG vs. Preceptor | 0.33                 | 0.12      | 0.01  | 0.65 | 0.037 |
|      | Preceptor vs. CIMG | 0.38                 | 0.14      | 0.01  | 0.74 | 0.043 |
|      | Preceptor vs. FIMG | 0.65                 | 0.16      | 0.20  | 1.10 | 0.003 |
| Q8*  | CMG vs. CIMG     | 86.00                   | 0.13      | 0.52  | 1.19 | < 0.001 |
|      | CMG vs. Preceptor | 0.49                 | 0.12      | 0.17  | 0.81 | 0.001 |
|      | Preceptor vs. CIMG | 0.37                 | 0.13      | 0.03  | 0.71 | 0.026 |
| Q9   | CMG vs. CIMG     | 0.50                    | 0.16      | 0.08  | 0.93 | 0.011 |
| Q10* | CIMG vs. CMG     | 57.00                   | 0.20      | 0.03  | 1.10 | 0.033 |
|      | CMG vs. CIMG     | 0.87                    | 0.17      | 0.43  | 1.32 | < 0.001 |
|      | Preceptor vs. CMG | 0.71                 | 0.13      | 0.38  | 1.05 | < 0.001 |

* Games-Howell statistic used

### Table 10 Most challenging areas for each group of residents:

| Resident group | Self-Rated | Preceptor Rated |
|----------------|------------|-----------------|
| FIMGs          | • Knowledge of the hospital system and structure (Mean=3.18, SD=1.08) | • Isolation from family (Mean=3.55, SD=0.89) |
|                | • Canadian language and slang (Mean=3.09, SD=0.94) | |
|                | • Medical documentation (Mean=3.00, SD=0.89) | |
| CIMGs          | • Balancing of professional and personal life (Mean=3.26, SD=1.04) | • Balancing one’s personal and professional life (Mean=2.71, SD=0.88) |
|                | • Isolation from family (Mean=3.09, SD=1.29) | |
|                | • Medical documentation (Mean=2.51, SD=1.15) | |
| CMGs           | • Balancing personal and professional life (Mean=3.39, SD=0.92) | • Balancing one’s personal and professional life (Mean=2.82, SD=0.98) |
|                | • Knowledge of evidence-based medicine (Mean=2.82, SD=0.88) | |
|                | • Specialty-specific clinical skills (Mean=2.65, SD=0.90) | |
Table 11: Significantly higher areas of challenges for each group of residents comparing other groups:

| Resident group | Items rated significantly higher on Self Rated scale comparing other groups | Items rated significantly higher by Preceptors |
|----------------|--------------------------------------------------------------------------------|------------------------------------------------|
| FIMGs          | • Canadian language and slang ($P < 0.001$)                                    | • Specialty specific clinical skills ($P = 1.96$) |
|                | • Communication with patients ($P \leq 0.021$)                                | • Communication with patients ($P = 0.001$)      |
|                | • Knowledge of the hospital system and structure ($P \leq 0.03$)               | • Knowledge of the Canadian health care system ($P = 0.044$) |
|                |                                                                              | • Communication within interdisciplinary teams ($P = 0.039$) |
| CIMGs          | • Isolation from family ($P = 0.009$)                                         | • Communication with patients ($P < 0.001$)      |
|                |                                                                              | • Knowledge of the Canadian health care system ($P = 0.005$) |
| CMGs           | • Balancing one’s personal and professional life ($P = 0.015$)                | • Communication with patients ($P = 0.039$)      |
|                | • Communication with patients ($P < 0.001$)                                   |                                                |
|                | • Knowledge of evidence based medicine ($P = 0.001$)                          |                                                |
Perceptions of Challenges Experienced by FIMGs, CIMGs, and CMGs

| Scale Mean Score | Perceptions of FIMG Challenges | Perceptions of CIMG Challenges | Perceptions of CMG Challenges |
|------------------|--------------------------------|--------------------------------|------------------------------|
|                  | FIMGs  2.55                     | CIMGs  2.27                     | CMGs  1.9                     |
|                  | CIMGs  2.94                     | CIMGs  2.18                     | CMGs  1.88                    |
|                  | CMGs   3.10                      | CMGs   2.34                     | CMGs  2.28                    |
|                  | Preceptors  3.27                | Preceptors  2.27               | Preceptors  2.02              |