

Web exclusive

Residents as teachers

Survey of Canadian family medicine residents

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Abstract

Objective To examine Canadian family medicine residents' perspectives surrounding teaching opportunities and mentorship in teaching.

Design A 16-question online survey.

Setting Canadian family medicine residency programs.

Participants Between May and June 2011, all first- and second-year family medicine residents registered in 1 of the 17 Canadian residency programs as of September 2010 were invited to participate. A total of 568 of 2266 residents responded.

Main outcome measures Demographic characteristics, teaching opportunities during residency, and resident perceptions about teaching.

Results A total of 77.7% of family medicine residents indicated that they were either interested or highly interested in teaching as part of their future careers, and 78.9% of family medicine residents had had opportunities to teach in various settings. However, only 60.1% of respondents were aware of programs within residency intended to support residents as teachers, and 33.0% of residents had been observed during teaching encounters.

Conclusion It appears that most Canadian family medicine residents have the opportunity to teach during their residency training. Many are interested in integrating teaching as part of their future career goals. Family medicine residencies should strongly consider programs to support and further develop resident teaching skills.

EDITOR'S KEY POINTS

- This study aims to identify teaching opportunities that currently exist for Canadian family medicine residents and the availability of resources to support resident teaching activities.
- Overall, it appears that 78.9% of family medicine residents have opportunities for teaching their peers or junior trainees; however, only one-third of residents perceive that they have ever been directly observed and given feedback on their teaching skills.
- Despite the high number of resident teachers, the availability of training programs to support resident teaching is likely not sufficient.

This article has been peer reviewed.
Can Fam Physician 2013;59:e421-7

Les résidents comme enseignants

Enquête auprès de résidents canadiens en médecine familiale

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Résumé

Objectif Vérifier ce que les résidents pensent des occasions qu'ils ont d'enseigner et de leur formation comme enseignants.

Type d'étude Enquête en ligne comportant 16 questions.

Contexte Les programmes canadiens de résidence en médecine familiale du Canada.

Participants Entre mai et juin 2011, tous les résidents de première et de deuxième année inscrits au 10 septembre 2010 dans un des 17 programmes canadiens de résidence en médecine familiale ont été invités à participer. Au total, 568 résidents sur 2266 ont répondu.

Principaux paramètres à l'étude Les caractéristiques démographiques des résidents, les occasions qu'ils ont eu d'enseigner et ce qu'ils pensent de l'enseignement.

POINTS DE REPÈRE DU RÉDACTEUR

- Cette étude vise à vérifier si les résidents canadiens en médecine familiale ont actuellement l'occasion de faire de l'enseignement et s'il existe des ressources pour les aider dans cette activité.
- Dans l'ensemble, il apparaît que 78,9% des résidents en médecine familiale ont des occasions d'enseigner, soit à leurs pairs ou à des étudiants moins avancés; toutefois, seulement le tiers d'entre eux sont d'avis qu'ils n'ont jamais été surveillés directement et qu'ils n'ont pas reçu de commentaires sur leur performance comme enseignants.
- Même si beaucoup de résidents enseignent, il semble qu'il n'existe pas suffisamment de programmes de formation pour les aider dans cette activité.

Résultats Un total de 77,7% des résidents en médecine familiale ont indiqué qu'ils étaient intéressés ou très intéressés par l'enseignement comme élément de leur future carrière, et 78,9% d'entre eux avaient eu l'occasion d'enseigner dans différents contextes. Toutefois, seulement 60,1% des répondants avaient entendu parler des programmes destinés à les appuyer comme enseignants, tandis que 33,0% avaient été observés durant des rencontres d'enseignement.

Conclusion Il semble que la plupart des résidents canadiens en médecine familiale ont l'occasion d'enseigner durant la résidence. Plusieurs sont intéressés à enseigner dans le cadre de leur future carrière. Les programmes de résidence en médecine familiale devraient envisager sérieusement la création de programmes pour appuyer et développer davantage la capacité d'enseigner chez les résidents.

Cet article a fait l'objet d'une révision par des pairs.
Can Fam Physician 2013;59:e421-7

Traditionally, medical education in North America has been facilitated by a system of mentorship wherein senior clinicians pass on knowledge to their juniors. Interestingly, residents provide much of this preceptorship: up to 25% of their clinical time is spent teaching junior house staff and medical students.^{1,2} In a study of radiology residents, 92% had been involved with teaching medical students.³ In a study of internal medicine house staff, 63% of junior residents were taught how to put in central venous catheters by their senior residents.⁴ From a medical student perspective, approximately two-thirds thought that residents played an important role in their clinical education, and studies have shown that approximately one-third of their clinical knowledge can be attributed to resident teaching.⁵

In general, residents appear to enjoy teaching and mentoring their juniors. In a study by Backes et al, residents subjectively believed their own clinical knowledge improved by teaching, likely as a by-product of having to review the material in detail before teaching.⁶ Despite the prevalence of residents as medical teachers and their interest in teaching, there appears to be a lack of support and training available for residents. In the United States, Donovan found that only 20% of residency programs provided teaching-skills training for residents.³ In those academic centres where teaching sessions are offered to residents, outcome assessments have shown that residents' teaching skills improve substantially.^{4,7-10} Furthermore, studies of medical students showed that students taught by residents with stronger teaching abilities had an overall better clerkship experience, and these studies further suggested that medical students gained an added positive view of the specialty.¹¹⁻¹⁴ As role models, residents can potentially have a strong effect on medical students and their future career choices.

CanMEDS-Family Medicine (CanMEDS-FM) is the adapted version of the CanMEDS 2005 competency framework for medical education developed by the Royal College of Physicians and Surgeons of Canada. Of the 7 CanMEDS-FM roles, the role of scholar clearly identifies that family physicians "facilitate the education of their students, patients, colleagues, and others."¹⁵ Furthermore, the College of Family Physicians of Canada's accreditation guidelines for residency programs also identify that residents should have the opportunity to teach and become role models to junior residents and medical students.¹⁶ Similarly, in the United States, program accreditation bodies such as the Accreditation Council of Graduate Medical Education view the role of resident teachers as crucial.¹⁷ As such, it is a stated core competency that residents be able to play a strong role in facilitating the learning of medical trainees and other health care professionals.^{16,17}

The role of resident teachers is well supported by accreditation bodies, and residents have long been a clinical resource to junior house staff and medical

students. This study aims to identify the opportunities for teaching that exist currently for Canadian family medicine residents and the availability of resources to support resident teaching activities.

METHODS

Participants

Every family medicine resident registered at 1 of the 17 Canadian medical schools as of September 2010 was eligible to complete the questionnaire.

Ethics

Ethics approval for the study was given by the Western University Research Ethics Board.

Survey tool

There is currently no validated tool for assessing the experience of family medicine residents as teachers. Based on a literature review and expert opinion, we developed a 16-question survey to assess the opportunities and resources family medicine residents have for teaching medical trainees. The questionnaire was initially developed in English, and a translated French version was distributed to the primarily Francophone medical schools. Family medicine residents were asked to provide basic demographic information such as age, sex, and site of training. Beyond basic demographic characteristics, survey questions were developed based on bipolar scaling methods. Questions such as whether residents have had opportunities to teach were given answer options of yes or no. Regarding questions where resident interest or perceptions were measured, a 4-point Likert scale, forced-choice method was used for question development. The surveys were identified by medical school and year of postgraduate training, and the actual names of respondents were not collected, assuring anonymity.

Survey distribution

All of the survey questions were entered into SurveyMonkey (www.SurveyMonkey.com) and electronically mailed to the 17 Canadian family medicine programs. Residency program participation was encouraged by offering training programs the summary of school-specific data upon completion of the study. Program administrators and administrative residents were asked to distribute the surveys to first- and second-year family medicine residents. Subsequent reminder messages to complete the survey were sent to the residents via the program administrators and administrative residents.

Statistical analysis

Cross-tabulations with independent covariates were generated. All analyses were performed using SPSS for

Windows, version 17.0.3. Z tests for proportions were used with a significance level of $P < .05$. Owing to the number of significance tests performed, a Bonferroni correction for multiple comparisons was also employed.

RESULTS

Of the 17 Canadian family medicine training programs, 16 participated in the survey, representing a 94.1% program participation rate. As of September of 2010, 2266 first- and second-year residents were registered in those Canadian family medicine residency training programs. A total of 568 residents responded to the survey, yielding a 25.1% response rate. **Table 1** outlines the demographic information of the survey respondents.

The opportunities for teaching medical trainees are detailed in **Table 2**. Of note, second-year residents had significantly more opportunities to review patient encounters with trainees than first-year residents did ($P < .05$). In the other areas of teaching opportunity (ie, discussion of clinical cases, presentations on academic days, journal club, and bedside teaching), there were

no statistically significant differences between first- and second-year residents.

Tables 3 and **4** describe the accessibility of resources that local training programs provide to foster teaching skills in their residents. Statistically significant differences were noted in the amount of feedback residents received between those in horizontal or integrated programs versus the traditional block or rotation programs. Those training in the former appear to receive more feedback on their teaching skills ($P < .05$).

Table 5 highlights the interest residents have in teaching as part of their future careers. Overall, 77.7% of all residents who completed the survey indicated that they were highly interested or interested in teaching as a part of their future careers.

DISCUSSION

This is the first study that has looked at the availability of teaching opportunities for family medicine residents in Canada. Overall, it appears that 78.9% of family medicine residents have the opportunity to teach their peers or junior trainees.

Despite the high number of resident teachers, the availability of training programs to support resident teaching is likely not sufficient. Only 60.1% of residents were aware of workshops or programs to support their teaching activities. The figure of 60.1% might also be a slight overestimation, as those who are more interested in teaching and aware of teaching opportunities might be more likely to respond to the survey. However, we did not survey the family medicine residency programs to find out whether they offered programs teaching residents these skills. Perhaps residents are not aware that such programs exist or are not able to attend. Based on a comprehensive 2009 review by Lacasse and Ratnapalan, the availability of teaching-skills programs in Canadian family medicine residencies appears to be minimal.¹⁸ Similarly, in a 2001 survey of residency programs across the United States, Morrison et al found that only 52% of family medicine training programs offered formal instruction in teaching skills.¹⁹

In addition, only one-third of residents perceived that they had ever been directly observed and given feedback on their teaching skills. That same opinion was identified in a study of surgical residents conducted at the University of Toronto in Ontario by Rotenberg et al.²⁰ The surveyed residents indicated that they believed staff surgeon role modeling and feedback were important, but also identified that they did not receive regular feedback regarding their own teaching.²⁰ In academic clinical settings, time is often stretched between patient and learner needs. However, there is evidence from our resident respondents that not enough time is dedicated to

Table 1. Demographic characteristics of Canadian family medicine residents respondents: N = 568; not all respondents answered all questions.

CHARACTERISTIC	N
Year of training	
• First	293
• Second	275
Sex	
• Male	170
• Female	397
Training program description	
• Traditional blocks or rotations	387
• Horizontal or integrated program	118
Age, y	
• 21-25	57
• 26-30	324
• 31-35	108
• 36-40	39
• 41-45	25
• > 45	10
Location of intended practice*	
• Academic practice	119
• Urban community practice	324
• Rural community practice	249
• Northern or remote practice	69

*Respondents could indicate more than 1 future practice location.

Table 2. Opportunities for teaching medical students or junior residents in the family medicine learning environment: A) By year of residency; B) By type of program.

A)			
VARIABLE	FIRST-YEAR RESIDENTS	SECOND-YEAR RESIDENTS	ALL RESIDENTS
Availability of teaching opportunities			
• Yes, %	78.2	79.9	78.9
• No, %	21.8	20.3	21.1
• Total, n	252.0	251.0	503.0
Type of teaching opportunities available			
• Discussion of clinical cases, %	73.2	76.8	75.0
• Review of patient encounters, %	72.2	80.8*	76.5
• Presentation at academic day, %	55.6	57.1	56.3
• Leading journal club, %	44.4	42.9	43.7
• Bedside teaching, %	57.6	56.1	56.8
• Total, n	198.0	198.0	396.0
B)			
VARIABLE	BLOCK- OR ROTATION-BASED PROGRAM	HORIZONTAL OR INTEGRATED PROGRAM	ALL RESIDENTS
Teaching opportunities available			
• Yes, %	77.8	82.2	78.8
• No, %	22.2	17.8	21.2
• Total, n	387.0	118.0	505.0
Type of teaching opportunities available			
• Discussion of clinical cases, %	74.8	75.3	74.9
• Review of patient encounters, %	77.4	73.2	76.4
• Presentation at academic day, %	53.2	66.0*	56.3
• Leading journal club, %	40.9	53.6*	44.0
• Bedside teaching, %	58.1	53.6	57.0
• Total, n	301.0	97.0	398.0

*Indicates a statistically significant difference ($P < .05$) between the first- and second-year residents or residents in block and horizontal programs.

Table 3. Awareness of teaching-skills programs available in residency among first- and second-year family medicine residents

VARIABLE	FIRST-YEAR RESIDENTS	SECOND-YEAR RESIDENTS	ALL RESIDENTS
Awareness of programs to facilitate teaching			
• Yes, %	57.1	62.3	59.7
• No, %	42.9	37.7	40.3
• Total, n	252.0	247.0	499.0
If yes, format of formal training in place			
• Didactic sessions on teaching skills, %	59.6	57.8	58.7
• Organized interactive seminars or workshops geared toward teaching skills, %	65.2	70.1	67.7
• Mentorship program between faculty and residents, %	11.3	12.9	12.2
• Assigned reading on improving teaching skills, %	7.1	3.4	5.2
• Total, n	141.0	147.0	288.0
Received direct observation in the role of teacher			
• Yes, %	27.8	37.3*	32.5
• No, %	72.2	62.7*	67.5
• Total, n	252.0	249.0	501.0
Received formal or informal feedback on teaching skills			
• Yes, %	28.7	39.1*	33.9
• No, %	71.3	60.9*	66.1
• Total, n	251.0	248.0	499.0

*Indicates a statistically significant difference ($P < .05$) between the first- and second-year residents.

Table 4. Awareness of teaching–skills programs available in residency among family medicine residents in block or rotation and horizontal or integrated training programs

VARIABLE	BLOCK- OR ROTATION-BASED PROGRAM	HORIZONTAL OR INTEGRATED PROGRAM	ALL RESIDENTS
Awareness of programs to facilitate teaching			
• Yes, %	57.8	67.5	60.1
• No, %	42.2	32.5	39.9
• Total, n	384.0	117.0	501.0
If yes, format of formal training in place			
• Didactic sessions on teaching skills, %	59.7	63.2	58.4
• Organized interactive seminars or workshops geared toward teaching skills, %	70.7*	57.9	67.4
• Mentorship program between faculty and residents, %	13.0	10.5	12.4
• Assigned reading on improving teaching skills, %	4.7	6.6	5.2
• Total, n	215.0	76.0	291.0
Received direct observation in the role of teacher			
• Yes, %	30.9	39.8	33.0
• No, %	69.1	60.2	67.0
• Total, n	385.0	118.0	503.0
Received formal or informal feedback on teaching skills			
• Yes, %	32.0	41.9*	34.3
• No, %	68.0	58.1*	65.7
• Total, n	384.0	117.0	501.0

*Indicates a statistically significant difference ($P < .05$) between residents in block and horizontal programs.

Table 5. Interest in teaching among family medicine residents as part of future practice

VARIABLE	HIGHLY INTERESTED, %	INTERESTED, %	SOMEWHAT INTERESTED, %	NOT INTERESTED, %	TOTAL, N
Intended future practice location					
• Academic	60.6*	34.9	3.7	0.9	109
• Urban community	33.5	43.4	19.6	3.6	281
• Rural community	34.7	43.1	19.6	2.7	225
• Northern or remote	36.7	48.0	13.3	1.7	60
• Other	35.9	41.7	19.4	3.0	504
Residency program structure					
• Block- or rotation-based program	33.7	43.8	19.7	2.8	386
• Horizontal or integrated program	42.4	35.6	18.6	3.4	118
• All residents	35.7	41.9	19.4	3.0	504
Year of residency					
• First	35.7	44.0	17.5	2.8	252
• Second	36.0	39.6	21.6	2.8	250
• All residents	35.9	41.8	19.5	2.8	502

*Indicates a statistically significant difference ($P < .05$).

nurturing their teaching skills. As clearly identified in the definition of the scholar role of CanMEDS-FM,¹⁵ teaching is a key competency. Mentorship from experienced family medicine teachers is essential for residents to improve their own teaching skills and abilities.

In Canada, family medicine training exists in 2 basic structures: block- or rotation-based programs and horizontal or integrated programs. The block system is the classic internship model in which specialty rotations are broken down into months or “blocks” and residents rotate through them. While there are certainly variations,

the horizontal or integrated system can be simplistically described as residents learning in a primarily family medicine-based environment with subspecialty experience intertwined. As expected, the teaching opportunities appear to be equal for residents who train in either type of program. Interestingly, while the number of residents who claim to have been observed in the role of a teacher is the same, the number who have received feedback regarding their teaching abilities appears to be greater for those in the horizontal or integrated training programs. One possible explanation might be that

residents who are in the horizontal or integrated programs have greater continuity with their family medicine preceptors and thus have more opportunities for feedback.

Arguably the most interesting finding of the study is the sheer number of residents who are interested in teaching as part of their future careers. Nearly 80% of family medicine residents who completed the survey indicated that they were either highly interested or interested in teaching in the future. While this number might be an overestimation, as those residents who are more interested in teaching might be more likely to respond to the survey, this is nonetheless an impressive number. As residency programs continue to grow in number of both residents and distributed sites, there will undoubtedly be an increased dependence on community-based family medicine teachers. Many of those teachers are today's family medicine residents. Developing a core group of family physicians with strong teaching skills starting at the residency level will likely improve distributed teaching and learning for future medical students and residents.

Limitations

One limitation of this study is the number of respondents. While we were able to engage 16 of 17 Canadian family medicine training programs, with representation from all regions and both English and French medical schools, the response rate was 25.1%. Female respondents outnumbered male respondents at a ratio of approximately 2:1, which might be a source of potential bias. Those who responded to the survey might also have been more likely to respond if they had a particular interest in academic medicine and teaching, potentially leading to another source of bias. Future research could examine the ideal types of teaching-skills programs that exist or need to be developed to facilitate residents as teachers. In addition, further studies could look at the need to support family medicine faculty in teaching residents how to teach and how to best offer professional development in this area.

Conclusion

It appears that residents by and large enjoy teaching and offer a great deal of mentorship to their juniors during residency. As reinforced by accreditation bodies,^{16,17} family medicine training programs should endeavour to foster a strong teaching-skills program serving to promote excellence in teaching. Given the high proportion of residents who would be interested in teaching as a part of their future careers, medical educators should take advantage of this unique opportunity to develop programs and modules to not only further resident

teaching abilities, but to further encourage and support teaching roles upon completion of residency. 

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Contributors

All authors contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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