

# Family medicine residents' barriers to conducting scholarly work

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## Abstract

**Objective** To identify family medicine residents' barriers to conducting high-quality research for the mandatory family medicine resident scholarly project, as well as to determine possible strategies to encourage research activity among family medicine residents.

**Design** Descriptive study using an online survey.

**Setting** Department of Family Medicine at the University of Ottawa in Ontario.

**Participants** A total of 54 first- and second-year residents.

**Main outcome measures** Family medicine residents' involvement in research activities, perceived quality of their mandatory scholarly project, intentions for publication and presentation, and attitudes toward potential barriers to and facilitators of conducting high-quality research.

**Results** Of the 54 residents, 20 (37%) reported that their project was of high quality, 6 (11%) intended to publish their findings, and 2 (4%) intended to present their findings. Respondents indicated that the main barriers to conducting high-quality research were lack of time, interest, and scholarly skills. The proposed solutions to increase participation in scholarly work were to allow full research days to be used in half-day increments and to offer a journal club where residents could learn scholarly activities.

**Conclusion** Family medicine residents found several factors to be considerable barriers to completing the required family medicine resident scholarly project. This indicates that there is a need to change the current approach to developing scholarly skills in family medicine. Greater allotment of and flexibility in protected research time and more sessions focused on developing scholarly skills might facilitate scholarly activity among family medicine residents.

## EDITOR'S KEY POINTS

- It is important to expose family medicine residents to scholarly work, as it might increase their interest in research activity in the future. The Department of Family Medicine at the University of Ottawa in Ontario introduced a mandatory family medicine resident scholarly project to help residents develop skills in scholarly work. Unfortunately, residents face several barriers to conducting the research required for this part of the curriculum.
- The family medicine residents in this study indicated that the leading barriers to conducting high-quality research were lack of time, interest, and skills in data analysis, research design, and literature searching. Some residents reported that they would be more likely to conduct high-quality research for the project if they could use full research days in half-day increments, as well as if they could participate in journal clubs where they could learn about scholarly activities (eg, medical writing).
- While some of the identified barriers can be addressed relatively easily (eg, lack of time and research skills), others require more long-term attention (eg, lack of interest, inadequate mentorship).

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# Les obstacles que rencontrent les résidents en médecine familiale lorsqu'ils effectuent des travaux d'érudition

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## Résumé

**Objectif** Identifier les obstacles que rencontrent les résidents en médecine familiale lorsqu'ils veulent faire de la recherche de qualité en réponse à l'obligation de participer à des travaux d'érudition; aussi, développer des stratégies pour encourager les résidents à faire de la recherche.

### POINTS DE REPÈRE DU RÉDACTEUR

- Il est important que les résidents en médecine familiale aient l'occasion de participer à des activités savantes car cela pourrait les inciter à faire de la recherche plus tard. Le département de médecine familiale de l'Université d'Ottawa a créé un projet obligeant ses résidents à effectuer des activités savantes de façon à leur permettre de développer des compétences dans ce domaine. Malheureusement, les résidents rencontrent plusieurs obstacles lorsqu'ils veulent effectuer la recherche exigée par ce projet.

- Les résidents en médecine familiale ayant participé à cette étude ont indiqué que les principaux obstacles les empêchant d'effectuer de la recherche de qualité étaient le manque de temps et d'intérêt, le peu d'habileté dans l'analyse des données et dans la façon de concevoir la recherche, et la consultation de la littérature. Certains des participants ont mentionné qu'ils seraient plus susceptibles d'effectuer de la recherche de qualité dans le cadre de ce projet s'ils pouvaient disposer de jours complets, utilisés par tranches de demi-journées, mais aussi s'ils pouvaient participer à des clubs de lecture qui les familiariseraient avec les activités savantes (p. ex. sur la rédaction d'un article médical).

- Alors qu'on peut assez facilement supprimer certains des obstacles mentionnés plus haut (p. ex. les contraintes de temps et le peu de compétences en recherche), d'autres, comme le manque d'intérêt ou de mentorat adéquat, exigent une attention à long terme.

Cet article a fait l'objet d'une révision par des pairs.  
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**Type d'étude** Étude descriptive à l'aide d'une enquête sur le Web.

**Contexte** Le département de médecine familiale de l'Université d'Ottawa, en Ontario.

**Participants** Un total de 54 résidents de première et de deuxième année.

**Principaux paramètres à l'étude** La participation des résidents en médecine familiale aux activités de recherche, ce qu'ils pensent de la qualité de leur projet de recherche obligatoire, leur intention de le publier et de le présenter, et leur opinion concernant les facteurs éventuels qui les aident à faire de la recherche de grande qualité ou qui leur nuisent.

**Résultats** Sur les 54 résidents, 20 (37%) ont déclaré qu'ils avaient un projet de grande qualité, 6 (11%) qu'ils avaient l'intention d'en publier les observations et 2 (4%) qu'ils projetaient de le présenter. Les participants ont indiqué que les principaux facteurs les empêchant d'effectuer de la recherche de qualité étaient leur manque d'intérêt et d'habileté dans ce domaine. Comme façons d'augmenter leur participation aux activités savantes, ils proposaient qu'on leur offre des journées de recherche complètes, à utiliser par tranches d'une demi-journée, et d'offrir aux résidents un club de lecture pour les familiariser avec les travaux d'érudition.

**Conclusion** Les résidents en médecine familiale ont identifié plusieurs facteurs qui les empêchent de répondre au projet les obligeant à participer à des travaux d'érudition. Ils soulignent qu'il faudrait utiliser une approche différente pour développer ce type de compétences en médecine familiale. Allouer plus de temps et de flexibilité aux périodes consacrées à la recherche, et offrir des séances visant à développer des compétences en recherche; ce sont là des solutions qui permettraient de faciliter la participation des résidents aux travaux d'érudition.

The need for scholarly work in family medicine is well documented.<sup>1-4</sup> The CanMEDS–Family Medicine (CanMEDS-FM) competency framework, which was adapted from the original CanMEDS framework<sup>5</sup> to guide the curriculum, design, and accreditation of residency programs, lists *scholar*—defined as family physicians who “demonstrate a lifelong commitment to reflective learning, as well as to the creation, dissemination, application and translation of knowledge”<sup>3</sup>—as 1 of 7 roles that family physicians should adopt. The College of Family Physicians of Canada states that in order for family physicians to exercise the scholar role, they must be competent at the following:

- critically evaluating medical information from academic sources and ascertaining its relevance and applicability to clinical practice,
- fostering professional development through self-directed learning and reflective practice,
- facilitating the education of the health care community and the public, and
- contributing “to the creation, dissemination, application, and translation of new knowledge and practices.”<sup>3</sup>

Despite the importance of family medicine research to family practice, family physicians conduct relatively little research.<sup>6,7</sup> A recent study examining PubMed citations between 1960 and 2003 found that the topics of cardiology and public health had 20 and 40 times more articles, respectively, than the topic of family medicine did,<sup>6</sup> while another study found that family medicine residents identified scholar as the least important of all the CanMEDS-FM roles.<sup>8</sup> Furthermore, a survey of clinical research papers published in family medicine journals found that family medicine researchers favour less-rigorous study designs and often fail to meet established criteria for validity and relevance.<sup>9</sup> To help address this problem, the College of Family Physicians of Canada now emphasizes scholarly activity as a core educational competency, and many family medicine curricula at Canadian universities, including at the University of Ottawa in Ontario, mandate a resident scholarly project.<sup>10-12</sup>

Exposing family medicine residents to scholarly work has the potential to increase participation in postgraduate research, as has been the case in other specialties.<sup>13,14</sup> However, simply having a research curriculum does not necessarily increase postgraduate research activity,<sup>15</sup> and support for research in family medicine curricula is not overwhelming. In a study examining survey results from 247 practising family physicians, Leahy et al found that fewer than half of responding physicians believed that developing an interest in research should be a core goal of family medicine residency training, and only 1 in 5 reported that completing a research project had been a highly influential learning experience.<sup>13</sup>

Family medicine departments might potentially increase contributions to primary care research, as

well as interest in career research activity, by making high-quality resident research a core curriculum objective. Rivera et al found that 56% of internal medicine residents who presented original research abstracts at a national conference believed that the experience had encouraged them to pursue a research career, compared with only 33% of residents who presented clinical vignettes.<sup>16</sup> Unfortunately, residents appear to face a number of barriers to conducting high-quality research, including a lack of time, research skills, research curriculum, technical support, funding, personal interest, faculty interest, and personal recognition.<sup>13,14,16-21</sup>

Few studies have examined the perspectives of family medicine residents on research activity; however, the existing literature suggests that family medicine residents face barriers to conducting research similar to those faced by other medical residents.<sup>13,17,20,22,23</sup> Koo et al conducted a qualitative study of family medicine residents and recent graduates. Participants emphasized the importance of effectively integrating research knowledge into their training.<sup>22</sup> Previous studies of academic projects in family medicine support these findings.<sup>20,23</sup> Further exploration of how research activity is integrated into family medicine residencies is therefore warranted.

The purpose of this study was to identify residents' barriers to conducting high-quality research for the mandatory family medicine resident scholarly project (FMRSP) in the University of Ottawa's Department of Family Medicine (DFM), as well as to determine possible strategies to encourage research activity among family medicine residents.

## METHODS

### Participants and setting

The study population consisted of 135 first- and second-year family medicine residents in the DFM at the University of Ottawa. The DFM introduced a mandatory scholarly project in 2006 to help residents enhance their scholarly abilities, develop skills in critical appraisal and dissemination, and gain an awareness of ethical issues. Potential projects include development and evaluation of educational tools, clinical tools, and programs; original qualitative research; comprehensive literature review; original retrospective research; chart audit; continuous quality improvement; and original quantitative research.

### Survey development

The survey consisted of 27 questions, most of which were closed ended and sought nominal or ordinal data. A 5-point Likert scale was used for questions requiring a range of responses. Open-ended responses were

permitted for certain questions to allow respondents to expand on closed-ended responses. The questions were designed to garner information on each resident's FMRSF, research history before entering residency, opinions about the quality of the current research project and research environment, future goals relating to the current research project, and future goals beyond residency training.

The survey was validated through iterative consultation with educational and survey experts at the C.T. Lamont Primary Care Research Centre, the research arm of the DFM, in Ottawa. Four first-year residents from the Department of Internal Medicine at Queen's University in Kingston, Ont, and the Department of Family Medicine at the University of Toronto in Ontario pilot-tested the questions for clarity. We compiled the questions into an online survey (hosted by SurveyMonkey), which was pilot-tested by 4 family medicine residents from the University of Ottawa to verify ease of completion. These individuals were not included in the final sample. The survey was approved by the Ottawa Hospital Research Ethics Board.

An invitation to complete the survey was distributed by e-mail in June 2012 to all family medicine residents at the University of Ottawa, using the postgraduate e-mail list. E-mail reminders were sent to all residents 6 and 12 days following initial contact.

### Data collection and analysis

The survey data were de-identified and extracted into a statistical analysis program (SPSS, version 12.0) for analysis. A response to each question was required in order for the survey to be submitted, and therefore no data were missing.

Univariate descriptive analyses were conducted for all variables using SPSS. Responses to the 5-point Likert scale questions were reclassified as binary data, with the 2 data end points on the scale (eg, important and very important) grouped as 1 and the other 3 points grouped as 0. A scarcity of open-ended responses prohibited us from conducting text analysis, and therefore open-ended responses were considered based simply on completeness.

## RESULTS

Of 135 invitations sent, 54 online surveys were completed. Of the respondents, 54% were first-year residents and 46% were second-year residents. Eighty-one percent of respondents were women (Table 1).

For the types of projects residents chose to complete, 31% of respondents developed or evaluated an education tool, clinical tool, or program; and 19% conducted original qualitative research (Table 2). Of the respondents,

**Table 1. Demographic characteristics of survey respondents: N = 54.**

CHARACTERISTICS	N (%)
Year of residency	
• First	29 (54)
• Second	25 (46)
Sex	
• Male	10 (19)
• Female	44 (81)
Primary family medicine site*	
• Academic health science centre	36 (67)
• Community teaching program	14 (26)
• Francophone teaching unit	13 (24)
• Rural teaching unit	7 (13)

\*Survey respondents practised at more than 1 family medicine site.

**Table 2. Types of projects completed by residents: N = 54.**

TYPE OF PROJECT	N (%)*
Development and evaluation of educational tools, clinical tools, or programs	17 (31)
Original qualitative research	10 (19)
Comprehensive literature review	9 (17)
Original retrospective research	9 (17)
Chart audit	5 (9)
Continuous quality improvement	3 (6)
Original quantitative research	1 (2)

\*Values do not add to 100% owing to rounding.

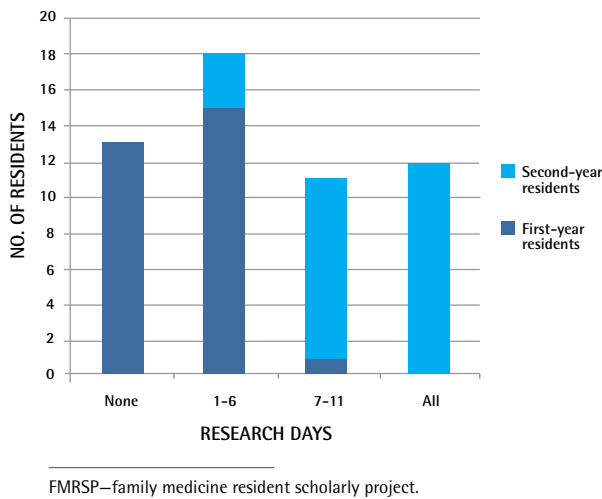
37% self-reported that their research was of high quality (defined as potentially publishable in a peer-reviewed journal or presentable at a national or international conference). Twenty-six percent of the projects required ethics review.

Respondents spent an average of 54.7 hours (95% CI 39.1 to 70.3; range 4 to 300) and used an average of 5.6 (95% CI 4.3 to 6.9) of their 12 allotted research days working toward the completion of their FMRSF projects. Thirteen respondents did not use any research days (Figure 1).

Most respondents had no intention of publishing their findings (n=31), presenting their findings at a conference (n=40), or incorporating research into their career (n=28). Only 6 respondents had intentions of publishing their FMRSF findings (17 were not sure), and only 3 intended to present their findings at a national or international conference (10 were not sure, and 1 had already done so).

Respondents identified a number of immediate barriers to conducting high-quality research in the FMRSF program (Figure 2). The barriers with the highest

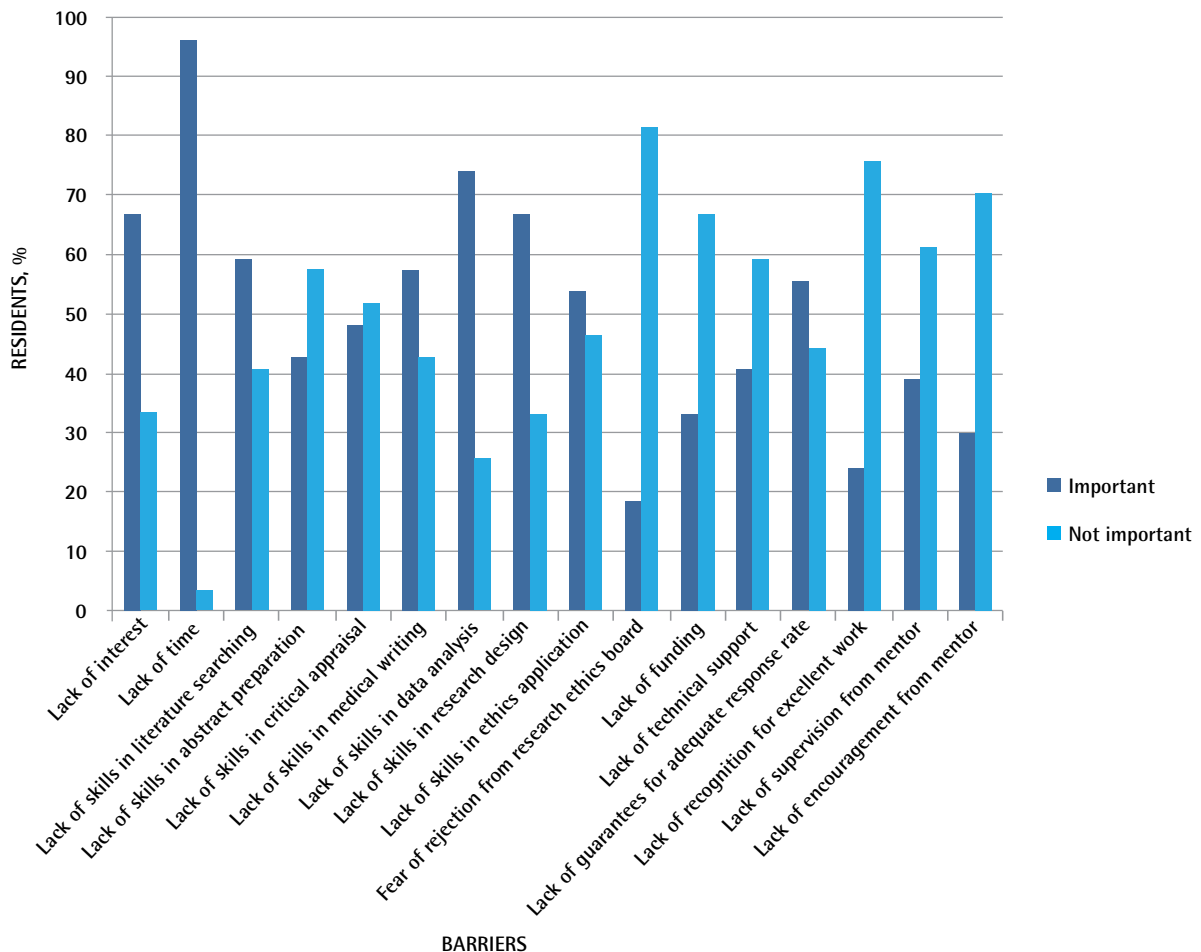
**Figure 1.** Research days used by family medicine residents to work on their FMRSPs: Residents are allotted a total of 12 days to work on this project.

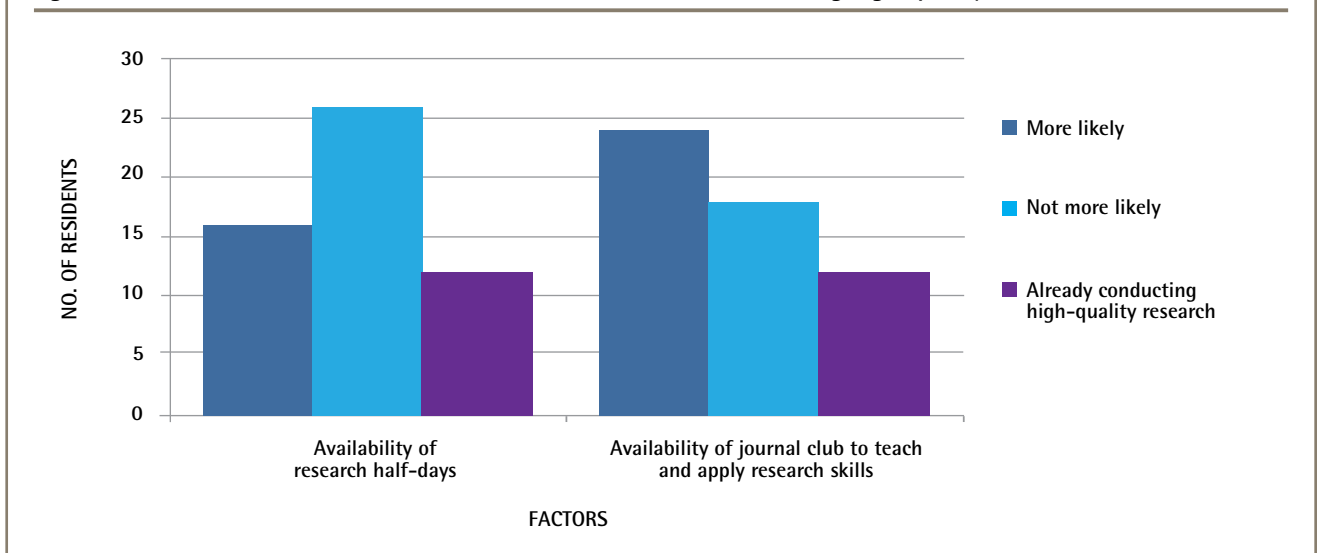


percentage of responses included lack of time (96%), lack of interest (67%), and lack of skills in data analysis (74%), research design (67%), and literature searching (59%).

Of the 42 respondents not already conducting high-quality research, 16 (38%) of them reported that they would be more likely to do so if they could use research half-days in addition to full days, and 24 (57%) of them would be more likely to conduct high-quality research if they could participate in a journal club that taught research skills (Figure 3). Interestingly, fewer residents reported conducting higher-quality research when discussing facilitators (n=12) than when asked directly about research quality (n=20), suggesting a lack of consistent understanding regarding what constitutes high-quality research. Other facilitators that respondents identified in the open-ended response option included assistance with formulating creative research questions, assistance with project design, mentorship by research-trained physicians, mentor encouragement, research topics applicable to clinically focused

**Figure 2.** Important barriers to conducting high-quality research identified by residents



**Figure 3. Factors that could influence the likelihood of residents conducting high-quality research**

residents, research topics of personal interest, and the ability to join ongoing projects.

## DISCUSSION

Family medicine residents found several factors to be considerable barriers to completing scholarly work, including a lack of scholarly skills, time, and interest, all factors previously identified as barriers by earlier studies.<sup>16,18,20</sup> This indicates that there is a need to change the current approach to developing scholarly skills in family medicine. Greater allotment of and flexibility in protected research time and more sessions focused on developing research skills were identified as factors that could facilitate scholarly work.

### Lack of research skills

In our study, residents believed that a lack of any of the 7 research skills (ie, literature searching, abstract preparation, critical appraisal, medical writing, data analysis, research design, and ethics applications) constituted a barrier to conducting high-quality research. The literature indicates that scholarly skills are poorly taught in residency programs,<sup>13,24</sup> a fact that is often seen as an important barrier to scholarly work.<sup>16</sup> Leahy et al found that while 90% of family medicine residents at the University of Toronto considered critical appraisal skills important in practice (compared with 48% in our study), only 39% said that their education in this skill was adequate.<sup>13</sup> Several studies cited the presence of a strong research curriculum as a key factor in determining the success of scholarly projects completed during family medicine residencies.<sup>20</sup> Early identification of the resident's existing scholarly skills would enable

individualized learning, and simple self-assessment tools might be helpful.<sup>25</sup> Journal clubs have been recommended as a teaching tool to help develop scholarly skills.<sup>20</sup> In addition, many resources exist within faculties of medicine to support scholarly work (eg, medical librarians, research experts). Short reminders of available resources during academic days might help. Furthermore, in order to support research activities, many faculties have online research resources available to faculty members and residents on their websites. The development of a one-stop repository with links to these resources would make them more accessible and could lead to their more widespread use among residents.

### Lack of time

Lack of time was the leading barrier to conducting high-quality research identified by respondents. This corresponds to the findings of other studies of medical resident scholarly projects, which have cited lack of time for and interest in research as commonly reported barriers among residents.<sup>16,18</sup> Notably, Rivera et al found that 79% of residents reported lack of time as a barrier to research, nearly double the frequency of inadequate research skills (45%) and lack of a research curriculum (44%).<sup>16</sup> Dedicated research time has been associated with better participation in research projects among family medicine residents<sup>19</sup>; DeHaven et al identified sufficient time for research as one of the "virtually unanimous characteristics" of successful research programs in family medicine residencies.<sup>20</sup> However, despite the availability of protected research time in our program, a substantial proportion of residents did not access it. Allowing residents to split full research days into half-days might increase the likelihood that they will be approved for time off, especially during their off-service rotations.

## Lack of interest

Residents were more interested in publishing papers than presenting at conferences. This interest in being published has been reported in other studies; for example, Rivera et al found that two-thirds of residents who completed scholarly work intended to develop a manuscript for publication.<sup>16</sup> However, a review of the family practice resident research projects completed at the University of British Columbia in Vancouver found that while 55% of former residents expressed interest in seeing their projects published, only 7% of projects successfully achieved publication.<sup>17</sup> This discrepancy might arise in part owing to the increased demands involved in publishing a manuscript, which can be difficult to fit within the time frame of a family medicine residency. A study of family medicine residency research noted that a common mistake among family medicine residents was attempting a project that was too large to effectively manage.<sup>26</sup> While both publishing and presenting one's findings are excellent scholarly and research outcomes, presenting at a conference might be a more realistic goal. Most programs, including ours at the University of Ottawa, have an annual research day where residents can present their work to their peers. Other studies have found an association between established research days and greater resident participation in research projects.<sup>19</sup> Increased faculty involvement in and support for research activities is also seen as an important factor in promoting research among family medicine residents.<sup>20,21</sup> This suggests that exposing family medicine residents to researchers working at their institution might encourage more of them to engage in high-quality research.

## Limitations


Our study had a response rate of only 40%, which reduced its statistical power. One explanation for this low participation might be that the survey was distributed in June, when first-year residents were transitioning into their second year of residency and second-year residents were transitioning into practice. Future research should potentially be conducted in less stressful periods. There also appears to be an overrepresentation of female residents. Finally, residents more heavily critical of a mandatory research program or more positively inclined toward research might have been more likely to complete the survey.

While our study took place at 1 site, the results are consistent with past literature and are likely relevant in other family medicine programs, especially with the implementation of competency-based education and promotion of the CanMEDS-FM scholar role. Future research could focus on testing the effects of improving research skills, particularly scientific writing. In addition, the association between protected time and scholarly

work could be examined. It would also be interesting to explore how often research studies and even programs of research develop from quality improvement initiatives started in residency.

## Conclusion

Our findings suggest that some barriers to conducting high-quality research during residency—lack of time and skills in scholarly activity—in the DFM at the University of Ottawa could begin to be addressed fairly quickly through the implementation of flexible research half-days and journal clubs. Other barriers need more long-term attention: lack of interest on the part of residents, insufficient funding to support more complicated projects, and inadequate mentorship. However, more in-depth research is needed to deal with each issue fully.

It is also important to determine why almost 75% of respondents showed no desire to conduct future research and what could be done to improve interest in research among family medicine residents. 

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### Contributors

**Dr Bammeke** conceived of and designed the study, executed data gathering, contributed to data analysis, and helped develop the final research paper as his family medicine resident scholarly project. **Dr Liddy** conceived of and designed the study, contributed to the data analysis, and helped write the manuscript. **Drs Hogel, Archibald, and Chaar** contributed to the study design, data collection, and data analysis, and assisted in manuscript preparation. **Dr MacLaren** facilitated the research done by **Dr Bammeke** and contributed to the data interpretation and writing process. All authors read and approved the finished manuscript.

### Competing interests

None declared

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