



Editor's key points

- ▶ The study sought to identify specific factors related to family medicine rotations that are susceptible to influencing medical students' interest in choosing this specialty as their profession.
- ▶ Factors considered in the study included exposure to different areas of practice, the site's overall atmosphere, the presence of a role model, and the desire to return to the site to practise. These elements appeared to have the greatest positive influence on medical students' interest in pursuing family medicine.
- ▶ Overall, the family medicine rotation was highly appreciated and improved medical students' perception of the specialty. The study's conclusions could be used to develop assessment tools and to improve the quality of family medicine rotations, and consequently, further promote the specialty at this stage of students' medical education.

Family medicine rotations and medical students' intention to pursue family medicine

Descriptive study

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Abstract

Objective To identify specific factors occurring during family medicine (FM) rotations that were associated with a change in intention to pursue FM.

Design Transversal descriptive study. A self-administered questionnaire was distributed on SurveyMonkey between September 2015 and April 2016.

Setting Family medicine rotation sites affiliated with the University of Montreal in Quebec.

Participants Medical students who were conducting their rotations at participating sites and who had not yet chosen their residency specialty.

Main outcome measures Specific factors occurring during a rotation that influenced medical students' intention to pursue FM in residency.

Results In the sample population, it was found that the FM rotation was generally highly appreciated by study participants, and that it improved the FM specialty's image while positively influencing the participants' intention to pursue FM. The degree of exposure to different areas of practice, overall atmosphere, the presence of role models, and the desire to return to the rotation site to practise were all moderately associated with a positive change in intention to pursue FM. There was a weak association between pursuing FM and participants' perception of physicians' interest in their work, rural rotation sites, positive interactions with physicians, perceptions of the rotation's level of difficulty, and degree of satisfaction with the final assessment. The results for other factors were not statistically significant. Concerning a negative change in the intention to pursue FM in residency, 2 factors were identified: the absence of a role model and lack of interest in returning to the rotation site. New positive factors were identified: overall atmosphere and the desire to return to the rotation site to practise.

Conclusion Several factors related to the FM rotations appeared to act as prime motivators for change toward pursuing FM. This could support the development of an assessment tool and the improvement of FM rotations.

— Methods —

Despite efforts made in recent years, recruitment to family medicine (FM) remains a challenge in Canada and elsewhere around the world.^{1,2} In Canada, there are usually around 40 unfilled FM residency spots annually, most of them in Quebec. During the past 5 years, the number of students opting to pursue FM as their first choice has remained suboptimal at 36.5% in Canada overall and 34.8% in Quebec.³ In Quebec, the rate required to meet population needs is 50%.⁴

Deciding on something as important as a career path involves a complex process influenced by several factors grouped into 2 categories⁵⁻⁷: those intrinsic to medical students (sex, age, values, level of debt, etc) and those specific to a medical program.^{7,8} Regarding the latter, we already know that an FM rotation can positively influence the level of student interest in FM.^{5,6,8-23} In 2015, a first systematic review on the effect of FM rotations concluded that the quality of studies conducted to date was limited and that their results were difficult to interpret within a Canadian context (eg, rotation conditions such as duration and the level of student integration into a care team differed among countries).⁹

Studies have shown that the presence of role models^{22,24,25} and varied clinical exposure during rotations positively influence students toward choosing FM.^{5,22,26,27} Other factors, such as completing a rotation in a rural setting,^{5,28,29} exposure to continuity of care,^{22,27,30} and the opportunity to practise medical procedures^{5,30} can positively influence students' intention to pursue FM. To our knowledge, no existing studies have confirmed an association between the above factors and the intention to pursue FM.

In 2001, an initial study suggested that the educational quality of an FM rotation was an important indicator of whether students would apply to an FM program.⁸ However, the concept of educational quality was not defined. In 2017, a German retrospective study²⁶ sought to identify specific factors present during a rotation that could influence student interest in FM. The level of educational challenge provided by a rotation had a positive effect on the selection of an FM program, and the authors concluded that it was necessary to identify contributing barriers and facilitators. That said, the measuring instrument used for this study, initially developed for rotation assessment, only considered a limited number of related factors.

Current knowledge on which elements of a rotation positively influence students' decisions to pursue FM is still very limited. Other factors, such as perceived level of difficulty, degree of satisfaction with the final assessment, contact with residents, overall atmosphere, and orientation at the beginning of the rotation, could also influence students' decisions. These factors are important to consider, as faculties of medicine could actively improve upon them. The goal of this study was to identify specific factors occurring during FM rotations that could be associated with a change in intention to pursue FM.

This study is a transversal descriptive study. The directors of the 25 FM sites affiliated with the University of Montreal across Quebec were invited to participate twice over e-mail. Students from participating sites who had not yet chosen their residency specialty were included in the study. They consisted of 2 distinct cohorts (third- and fourth-year medical students).

Measuring instrument

To our knowledge, there are no valid, existing questionnaires that meet our objectives. A self-administered questionnaire composed of 30 closed-ended questions in 5 sections was developed. The sections were as follows:

- student characteristics (11 questions),
- intention to apply to FM before and after the rotation (2 questions; **Box 1**),
- perception of the profession before and after the rotation (1 question),
- specific factors related to the rotation (14 questions, most requiring a response using a 5-point rating scale), and
- overall rotation assessment (2 questions).

Box 1. Response options to questions assessing family medicine ranking before and after rotation

Select the statement that best describes your position before your rotation:

- I intended to rank family medicine as my first choice on CaRMS
- I was undecided on how to rank family medicine on CaRMS. I considered family medicine to be a potential first choice
- Regardless of the sequence of my rank order list on CaRMS, I intended to rank family medicine as my last choice (emergency backup plan)
- I did not know whether I would apply to family medicine through CaRMS
- I was not planning to apply to family medicine through CaRMS

Select the statement that best describes your position after your rotation:

- I intend to rank family medicine as my first choice on CaRMS
- I am undecided on how to rank family medicine on CaRMS. I consider family medicine to be a potential first choice
- Regardless of the sequence of my rank order list on CaRMS, I intend to rank family medicine as my last choice (emergency backup plan)
- I do not know whether I will apply to family medicine through CaRMS
- I am not planning to apply to family medicine through CaRMS

CaRMS—Canadian Resident Matching Service.

The questionnaire included all intrinsic factors related to the rotation found in the literature. Factors related to assessing the quality of the rotation were also added. All factors that could not be directly affected by the rotation itself (eg, student debt, student values, political context) were excluded.

Questions measuring change in intention to pursue FM were based on decisional models found in the literature.^{5,30} The questionnaire was subject to a content assessment by the FM program director at the University of Montreal. A preliminary test was conducted by 9 residents (8 in FM and 1 in internal medicine). Minor modifications were made as a result. The questionnaire's estimated response time was approximately 10 minutes.

Data collection

Because students conduct their FM rotations at different times and locations, data collection was conducted through the sites to maximize the number of respondents. At the end of the rotation, and after submitting final assessments to the students, the sites were instructed to allow students time to anonymously complete the questionnaire on SurveyMonkey. Data were collected between September 2015 and April 2016.

Statistical analysis

Descriptive, univariate, and bivariate analyses were conducted using SPSS software. Each factor was tested using the Pearson χ^2 test to calculate *P* values, and the Cramer *V* test was used to calculate strength of association.

The project was approved by the University of Montreal Comité d'éthique de la recherche en santé.

— Results —

In total, 19 of the 25 sites agreed to participate in the study (183 of 213 students). The student participation rate was 66% (121 of 183). Participant characteristics are presented in **Table 1**.

The proportions of participants indicating a change in intention to apply to FM following their rotation are presented in **Figure 1**. Of the 51 participants who changed their FM ranking, 75% (38 of 51) indicated a positive change, with 42% (16 of 38) responding that FM was now their first choice. In the end, 32 of 121 (26%) rated FM as their first choice for their residency, compared with 18 of 121 (15%) before the rotation. The perception of FM similarly improved following the rotation, with 53% (64 of 121) indicating a positive change and 7% a negative change.

Regarding rotation characteristics, 72% (86 of 120) of students rated their rotation orientation as very good, and 94% (114 of 121) rated the atmosphere as good or very good. Eighty-five percent (100 of 118) indicated that they had encountered a preceptor who inspired them during their rotation, and 99% (117 of 118) noted that most of their preceptors seemed inspired by or

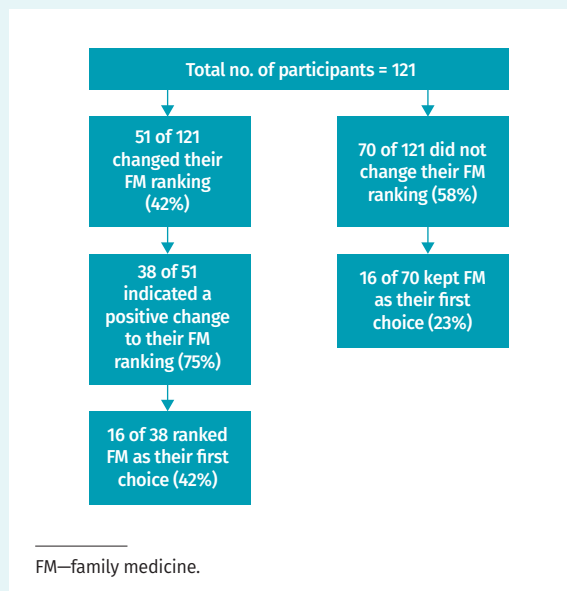
Table 1. Participant characteristics: N = 121.

CHARACTERISTIC	N (%)
Sex	
• Male	36 (30)
• Female	85 (70)
Age, y	
• 19-24	77 (64)
• 25-27	24 (20)
• ≥28	19 (16)
• Prefer not to disclose	1 (<1)
Children	
• Yes	8 (7)
• No	113 (93)
Year of study	
• Third	90 (74)
• Fourth	31 (26)
Preliminary training	
• Yes	56 (46)
• No	65 (54)
Affiliated university	
• University of Montreal	118 (98)
• Other	3 (2)
Preferred career path at preclinical stage	
• Undecided	32 (26)
• Family medicine	32 (26)
• Internal medicine	28 (23)
• Surgical specialty	9 (7)
• Other	20 (17)
Originally from rotation site region	
• Yes	51 (42)
• No	70 (58)

interested in their work. Finally, 58% (69 of 118) would consider returning to their rotation site to practise.

Most students (96% or 113 of 118) rated their clinical exposure as varied or very varied. However, 86% (102 of 118) responded that they received little to no exposure to continuity of care (meaning they did not have the opportunity to see the same patient more than once). Furthermore, 90% (109 of 121) of students would have liked to have received greater exposure to medical procedures. In addition, 63% (76 of 121) of students indicated that they found the level of difficulty of the FM rotation to be the same as other rotations while 29% found it easier. Seventy-six percent (90 of 118) were satisfied with their final assessments compared with 15% who responded that they were disappointed.

Figure 1. Participants who indicated a change in intent to apply to FM residency after their rotation versus participants who did not indicate a change



Finally, 31% (38 of 121) completed their rotation at a rural site, and 85% (102 of 120) of students had regular contact with FM residents.

Factors that were associated with a positive change in students' intention to apply to FM are presented in **Table 2**.

— Discussion —

The results of this study support the existing literature: FM rotations are generally highly appreciated by students, improve the perception of the specialty, and can influence the intention to apply to an FM program.⁹

Several factors specific to rotations were associated with a positive change in students' intention to apply to FM. The degree of exposure to different areas of practice, the overall atmosphere, the presence of role models, and interest in returning to a rotation site to practise were all moderately associated with a change in intention to pursue FM. A weak association was observed in relation to physicians' interest in their work, rural rotations, positive interactions with physicians, perception of the rotation's level of difficulty, and degree of satisfaction with the final assessment. Results for other factors were not statistically significant. There were 2 factors associated with a negative change in intention to pursue FM: the absence of a role model and lack of interest in returning to the site to practise.

These results correspond with what was previously reported in the literature,^{5,6,9-22} but provide new clarity and greater specificity within a Canadian context concerning the relationship between each factor and a

Table 2. Strength of association and P value for each analyzed factor

FACTOR	SA*	P VALUE
Degree of exposure to different areas of practice	0.330	.002
Perception of overall atmosphere	0.336	<.001
Presence of a role model	0.390	<.001
Interest in returning to rotation site to practise	0.390	<.001
Perception of physician interest in their work	0.230	.014
Rural rotation	0.227	.044
Positive interactions with physicians	0.209	.035
Perception of rotation's level of difficulty	0.231	.025
Level of satisfaction with final assessment	0.253	.008
Degree of contact with residents	0.161	.197
Degree of exposure to continuity of care [†]	0.138	.341
Perception of initial rotation orientation	0.115	.532
Participation in informal activities with the medical team (eg, social or volunteer activities)	0.103	.534

SA—strength of association.

*SA was measured using the Cramer V test: weak (0-0.25), moderate (>0.25-0.5), or strong (>0.5-1).

[†]Whether a student saw a patient more than once during his or her rotation.

student's change in intention to pursue FM. Moreover, new factors with a positive influence were also identified, namely the site's overall atmosphere and the desire to return to a rotation site to practise. Other factors that were only mildly associated with a change in intention to pursue FM should be the subject of future studies to understand their actual role in the decision-making process (the data were not discriminating enough to draw a conclusion on their actual association).

Strengths and limitations


This study provides a new perspective compared with other recent research because its previously tested measuring instrument was specifically developed to assess the influence of multiple factors related to FM rotations on students' intention to apply to an FM program. The 66% participation rate is also one of the study's strengths.

Although the study included only 1 university, the number and diversity of rotation sites produced results that we believe to be generally applicable across Canadian faculties.³¹ Our sample of participants was also representative of cohorts across Quebec.³¹ While, to our knowledge, no other study has previously measured this many factors, it is possible that there were still uncontrolled factors intrinsic to FM rotations that could have influenced participant responses. Furthermore, as the questionnaire was only distributed once (after the rotation),

there could have been a recall bias regarding participants' perceptions before beginning their rotations. However, our sample's responses before the rotation (15% were interested in pursuing FM) corresponded with the existing literature.²⁸ As our study was only interested in intent rather than the actual decision, we could suppose that a rotation's influence is reduced over time, as suggested by the existing literature.^{9,20} However, comparing the percentage of students indicating FM as their first choice (26%) against the annual Canadian average (36.5%), it is possible that the influence was somewhat underestimated within our sample.³ Finally, there is also a potential bias related to the fact that questionnaire respondents were from sites that had previously agreed to participate.

Conclusion

Several factors related to FM rotations appear to act as movers for change in favour of FM. The factors identified could be used to develop an assessment tool and to improve FM rotations.

A question remains regarding the role of FM rotations. A rotation that is intended as a promotion and recruitment tool should encourage exposure to a variety of experiences. However, the reality is that FM in Quebec is becoming increasingly centred on managing patients and continuity of care, with limited time spent in institutions. Should FM rotations represent this new reality on the ground? 

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Acknowledgment

This project received financial support from the Primary Healthcare Research Network at the University of Montreal in Quebec. The authors thank **Philippe Karazivan, Nicolas Fernandez, and Janusz Kaczorowski** for their invaluable support.

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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This article has been peer reviewed. *Can Fam Physician* 2019;65:e316-20

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