A Mixed Studies Literature Review of Family Physicians' Participation in Research

Deniz Sahin, MD, MSc; Mark J. Yaffe, MDCM, MCISc, Tamara Sussman, PhD; Jane McCusker, MD, DrPH

BACKGROUND AND OBJECTIVES: Family physicians' recruitment and adherence in research are challenging. This mixed studies literature review sought to identify the extent of family physicians' participation in primary health care research, as well as facilitators and inhibitors of their recruitment and subsequent protocol adherence in research projects.

METHODS: We searched Medline, Embase, PsycINFO, SCOPUS, Google Scholar, and BioMed Central Medical Research Methodology by using an explicit strategy. Sixty-two articles met predetermined selection criteria. Using a mixed method approach, we performed a content analysis of the results published in these articles to synthesize factors affecting family physicians' participation in research.

RESULTS: Recruitment rates varied between 2% and 81%. The most frequent types of participation requested were completion of questionnaires (48%) and recruitment of patients (37%). We found that family physicians' personal/professional factors mainly affected recruitment, practice/patient-related issues mainly affected adherence, and study protocol characteristics facilitated both recruitment and adherence of family physicians in research.

CONCLUSIONS: This review provides a synthesis of knowledge about factors mediating family physicians' roles in research. Our findings offer material for researchers to create checklists to help create and operationalize protocols that respect local clinical and research realities.

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Findings derived from research are fundamental to improve health care.[1] Since the latter occurs mostly in the community settings, family physicians' participation in research can play a key role in providing new information and in translating it to practice.[2] While family physicians who participate in research appear to be more satisfied with their jobs,[3] the ability to recruit and retain family physicians in research is challenging.[4] To date there is no comprehensive and methodologically sound review of factors that facilitate or inhibit family physician recruitment into research protocols, and once recruited, their adherence to the protocol requirements. Information on these factors may identify methods used to improve family physician participation in research and attainment of study objectives.[2]

In this paper, we report on the outcome of a mixed studies review (MSR)[5] of the English-language literature on the role of family physicians in primary health care research and factors facilitating or inhibiting such activity. Our specific objectives were to: (1) identify published primary care studies (qualitative, quantitative and mixed) that reported on barriers and facilitators of: (a) family physician recruitment and/or (b) family physician adherence to the research protocol, for example, by recruiting of patients into studies, implementing study interventions, or completing questionnaires, (2) categorize published studies by research methods used, country where research was carried out, and type of study, (3) describe family physician recruitment rates, (4) enumerate the different types of family physician participation in research, and (5) categorize and compare factors

From the Department of Family Medicine and St. Mary's Research Centre (Drs Sahin and Yaffe), School of Social Work (Dr Sussman), and Department of Epidemiology, Biostatistics and Occupational Health and St. Mary's Research Centre (Dr McCusker), McGill University, Montreal, Quebec.

reported to facilitate or inhibit such participation.

Methods

MSRs are a relatively new form of literature review that help to manage heterogeneity among studies and to identify gaps in the literature.[5] They provide a way to synthesize empirical research that comprises both qualitative and quantitative studies and/or mixed methods studies and can be performed as systematic, reproducible, or convenience literature reviews.[6] Our approach, as described below, was to use an explicit search and selection strategy consistent with reproducible reviews.

Search Sources

Our search was conducted for English-language articles published in the following electronic databases: Medline, Embase (from 1996 to June 2013), PsycINFO (from 1987 to June 2013), SCOPUS citation database (without time limitation). A less specific additional search was done in Google Scholar and BioMed Central (BMC) Medical Research Methodology (without time limitation) to capture other relevant articles that may not have appeared in databases searched.

Identification of Relevant Articles

We used two relevant articles[7,8] possessing useful terminologies and methodologies to develop the search strategy that was guided by a reference librarian. Specific key words, subject headings, or phrases were used (see Appendix 1 at https://www.stfm.org/Portals/49/Documents/FMAppendix/Appendix1Sahin.pdf.)

Selection of Eligible Studies

The first author (DS) initially screened the titles and abstracts for potential eligibility. Eligible studies were those that were original quantitative, qualitative, or mixed research; were conducted in primary health care; described family physicians' participation (recruitment and/or protocol adherence); and were written in English. The full-text articles for potentially eligible studies were then reviewed using the criteria including those cited above for titles and abstracts, plus studies that took place in family practice office settings, specifically described community-based research, and described the barriers and facilitators of family physician recruitment and/or protocol adherence.

Data Extraction From Retained Studies

We extracted the following three types of data from each individual article included in our data set: (1) Study characteristics, including author(s), year, country, methods (quantitative, qualitative, or mixed-methods), and research questions/objectives, (2) Family physician recruitment rates, (3) Tasks requested of the family physicians once recruited (eg, patient screening, questionnaire completion), and (4) Factors affecting family physician recruitment in or adherence to the studies (eg, financial recognition, patient refusal to participate, practice workload). Data appearing in quantitative studies were in the form of descriptive and bivariate analyses, while those found in qualitative studies were reported following thematic analysis of family physicians' self-reported experiences of study participation.

Synthesis of Factors Affecting Family Physicians' Participation in Research

Our specific goal was to obtain a cross-sectional description of the factors existing in the literature. We adapted a sequential exploratory mixed methods design[9] (qualitative phase followed by quantitative phase) and performed content analysis of results published in the articles. This analysis permits quantification of content with regard to pre-set categories in a systematic and replicable manner.[10]

In the qualitative phase, we specifically analyzed published articles by allocating their content to any of four predetermined categories, as follows: factors facilitating or inhibiting family physicians' recruitment in research and factors facilitating or inhibiting family physicians' adherence with protocols. For each of these four categories, factors suggested in the articles to impact on facilitation or inhibition were categorized by us, as applicable, under the groupings of family physicians' personal factors, professional factors, practice issues, patient issues, and study protocol characteristics. Three people participated in a consensus process. After DS extracted and analysed the factors, two other authors (MY and TS) reviewed the groupings independently and provided opinions. Where discordance was present, discussions were held to reach consensus.

The categorizations obtained by qualitative analysis permitted quantitative comparison of the frequency that each grouping was attributed in the literature to impact on each category.

Results

Article Selection

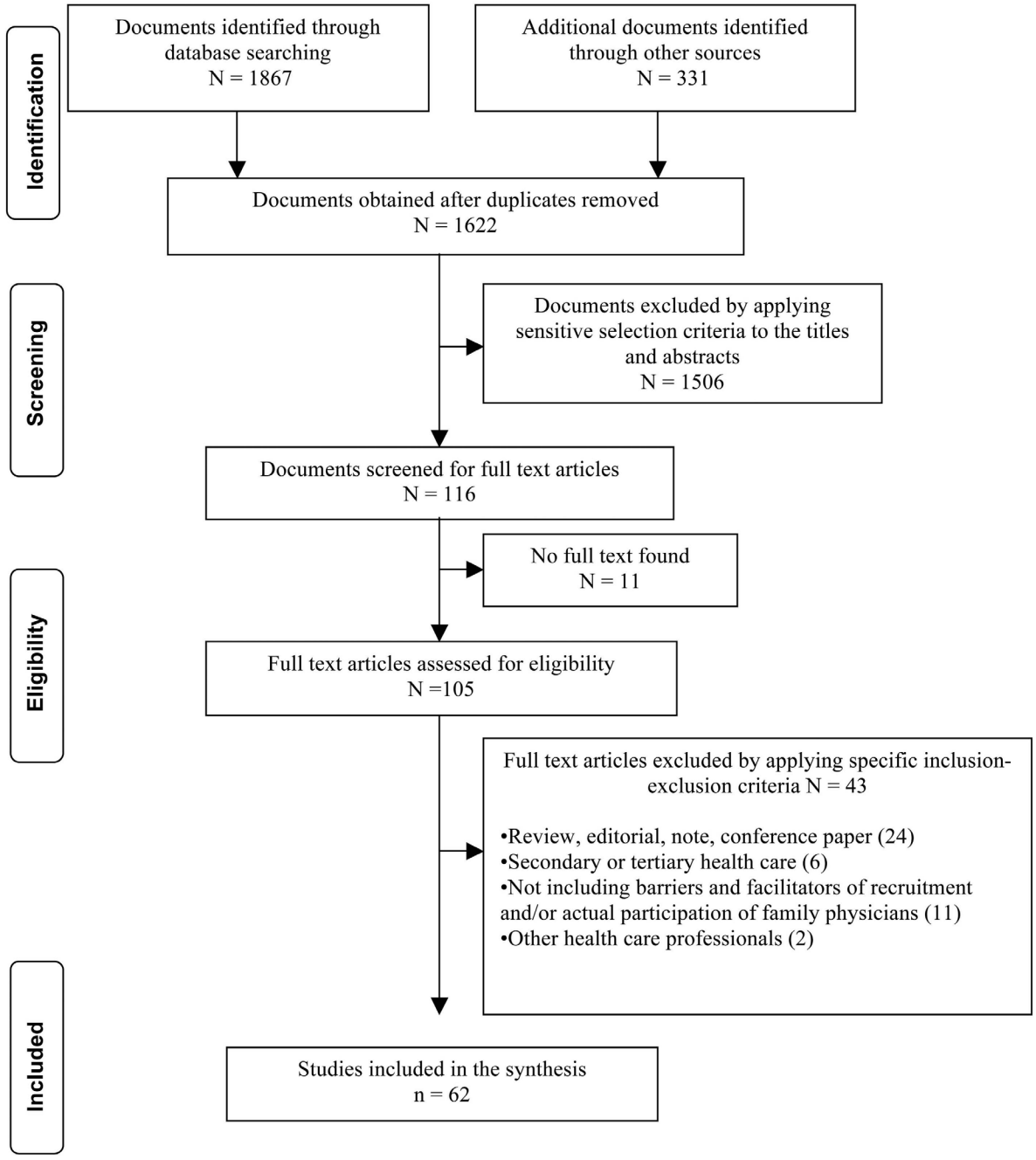
Figure 1, adapted from the PRISMA Statement,[11] summarizes the outcome of our article search and selection process. We initially identified 1,867 from the four main databases and 331 from the other aforementioned sources. Of the total, 62 were eligible according to inclusion-exclusion criteria and underwent detailed review.

Study Characteristics

The articles described family physician participation either as a primary or a secondary research question. Primary research questions tended to focus on family physicians' attitudes toward research.[12] Those that were secondary more frequently investigated factors affecting family physician recruitment into studies and extent of their adherence with protocols, eg, recruiting patients into studies[13] or applying specific approaches to patient care.[14]

Common rubrics describing information found across retained studies are tabulated in Appendix 2 (see

Figure 1: Flow Diagram Showing Identification and Selection Process



Appendix 2 at https://www.stfm.org/Portals/49/Documents/FMAppendix/Appendix2Sahin.pdf). Of the 62 articles that met inclusion criteria, 43 used quantitative methods, 10 qualitative, and nine both quantitative and qualitative. The countries from which these 62 papers originated were United States (n=16), Australia (n=12), United Kingdom (n=11), Canada (n=5), Germany (n=5), and others (n=13).

Recruitment Rates and Protocol Adherence

Data that estimate family physician recruitment in studies are inconsistent because varying denominators have been used in the calculations. For example, rates of recruitment

(consent to participate) based on all physicians targeted at study onset for potential participation has been described as ranging from 2% to 81%. On the other hand, if one considers recruitment rates based on those who are actually contacted and deemed to be eligible to participate, rates vary from 19% to 63%.

Our review revealed diverse ways in which family physicians were asked to participate in research. The most frequent types of participation requested were questionnaire completion (48%) and patient recruitment (37%) (Table 1). Details of this literature analysis are found in Appendix 2 (see Appendix 2 at https://www.stfm.org/Portals/49/Documents/FMAppendix/Appendix2Sahin.pdf).

Factors Affecting Family Physicians' Participation in Research

All 62 studies were included in the synthesis. Findings are summarized in Tables 2–5 in descending order, from most to least prevalent for a given grouping. In these tables, the number of references given for each factor reflects their frequency. Table 6 sums up these frequencies for each grouping.

Discussion

This mixed studies review sought to identify and describe the rates and nature of family physicians' participation in primary health care research and factors that either affect their recruitment in research and/or that influence their adherence to the research protocol once they have been recruited. We found that research activities conducted by different teams, in different settings, with different participants and varying protocols resulted in different degrees of family physician participation. Our findings though do give a list of variables that might be used in a checklist to help researchers improve family physician participation at various stages of a research project.

Characteristics of Studies on Family Physicians' Participation in Research

The studies that met our inclusion criteria were performed in 12 countries, the majority of which have well-developed colleges, academies, or associations of family/general practice, and the latter usually take active roles in the promotion of primary care research. However, international and regional differences do exist in practice and research conditions, and researchers consulting on how to get optimum physician participation should ensure that the findings are generalizable to their own communities. Our research found that the vast majority of studies that met our inclusion criteria used only quantitative methods.

Rates and Nature of Family Physicians' Recruitment in Research

The differences found in calculating and reporting participation rates show the complexity of trying

Table 1: Family Physician Activities in Research: Total n=62 Articles*

Activity	# of Articles Citing the Activity, (%)
Questionnaire completion	30 (48%)
Patient recruitment	23 (37%)
Obtaining verbal or written consent	5 (8%)
Referring eligible patient to the research center	4 (6%)
Recruiting patients from clinical practice	4 (6%)
Sending an introductory letter to patient	4 (6%)
Screening	2 (3%)
Undertaking database searches for eligibility or data export	3 (5%)
Using a tool to find potentially eligible patients	1 (2%)
Interviews	16 (26%)
Participating in informational meeting or training	8 (13%)
Supervising and performing interventions for patients	6 (10%)
Receiving educational intervention	6 (10%)
Cooperating with data collection	3 (5%)
Audiotaping office visits with patients	1 (2%)
Being study investigator	1 (2%)
Participating in focus groups	1 (2%)

* More than one activity could be cited per article.

Table 2: Factors Facilitating Family Physicians' Recruitment in Research

Factor	Articles Citing the Factor
Family physician personal factors	
Desire for financial compensation	12,14,15,20,25,26,28,29
Gender (male physicians)	30-33
Previous research experience	25,34,58
Interest and motivation in research	19,34,36
Acquaintance with research team members	34
Younger age	25,33
Preference for research valuing patient-physician relationship	22
Having flexible working hours	34
Interest in research that is not on complementary or alternative medicine	35
Willingness for a change in pace	12
Interest in determining research questions or publishing articles	12
Interest in research likely to inform positive policy change	36
Family physician professional factors	
Perceived relevance of the research topic	15,19,20,22,25,26,32,37-39
Willingness to undergo training and perform interventions for research	12,25,28,37,40,41
Membership in a research network	23,25,33,36,38,42
Desire for recognition for research participation with educational credits	12,14,24-26
Affiliation with a university and/or teaching practice	23,25,30,36,43
Potential benefits to practice and patients	7,22,28,36,39
Desire for research that has minimal impact on practice workload	8,20-22
Willingness to contribute to improving primary care	12,28,34
Desire for feedback on results from research team	25,37,38
Desire to improve professional reputation	14,17,44
Desire for protected time for research	23
Training in research methodologies	36
Practice-related factors	
Working in a larger practice (two to nine physicians)	23
Study protocol characteristics	
Simplicity and flexibility of study procedures	7,20,36,39,44,45
Informational or training meetings at the practice site	14,21,39,45,46
Working with physician recruiters	24,36,38,45,47
Acceptable invitation method (database, letter, phone, personal)	8,21,39,48
Research team establishing relationships with practice staff	21,46
Payments offered by researchers to offset practice costs of research	20,21
Offering a chart audit	24,44
Appointing a project coordinator in practice	21,46
Pre-screening practice databases for identifiable eligibility criteria	15,45
Computer/Internet assistance to practice	25,36
Close collaboration with family physicians and consideration of their needs	7

Table 3: Factors Inhibiting Family Physicians' Recruitment in Research

Factor	Articles Citing the Factor
Family physician personal factors	
Perceived lack of time	4,23,25,36-38,41,49-51,52
No interest in specific research topic	15,19,20,22,25,26,32,38,39
No interest in research in general	4,22,23,41,50,52
Feeling of being monitored	38,53,54
Not thinking research as part of career	31,39,53
Low income/job insecurity in research	23,34
Being unable to complete the training required for the study	49,54
No communication or professional association with researchers	49,54
Ambivalent feelings toward research	29,75
Satisfaction with current treatment options	4,54
Trust issues	47,53
Not seeing benefit out of research	54
Feeling isolated during research	34
Familial reasons	31
Previous negative research experience	47
Feminization of workforce	36
Family physician professional factors	
Concern for disruption of clinical care	4,22,25,31,34,38,54,55
Perceived lack of skill or confidence in using research outcomes in practice	25,55,57,58
Involvement in other research projects	4,22,54
Patient confidentiality issues when using electronic patient records	49,53,56
Preference for clinical experience over research evidence	20,57
Research topics on sensitive conditions	36,49
Practice-related factors	
Unavailable management options to conduct the research in practice	4,23,36,39,49
Inadequate patient population required for the study	4,36,37,49
Having no access to information databases and the internet	20
Remunerating physicians with fee-for-service	7
Not being an office-based type	4
Ending its existence before the study ends	4
Establishing barricades for research teams contacting physicians	46
Study protocol characteristics	
Large time or work commitment required for a project	25,36,37,39,49,54,58,59
Letter of agreement at onset	24
Geographical barriers	59
Costs for patients (eg, travel)	49
Unclear incentives	47
Family physicians and staff not well-informed about the protocol	39
Requirement for presenting results to peers	36

Table 4: Factors Facilitating Family Physicians' Adherence With Study Protocols

Factor	Articles Citing the Factor
Patient recruitment into studies	
Family physician personal factors	
Older family physicians	60
Younger family physicians	43
Family physician professional factors	
Enthusiasm about the program/intervention	61
Communication with the program/intervention provider	61
Training in motivational skills	61
Practice-related factors	
Computerized patient registries	13,62-64
Involvement of the practice nurse in the study	65
Smaller practice size (one or two physicians)	60
Larger practices	62
Suitable practice population for the topic being studied	32
Rural practice location	32
Patient-related factors	
Patients' understanding of randomization	60
Patients who are already on the intervention being studied	60
Patients' personal physicians are study investigators	67
Patients having a family member/friend working in health care	67
Patient trust in the institution	56
Study protocol characteristics	
Not interfering with practice capacity	8,19,21,62
Communicating clearly with physicians	8,15,19
Simple study procedures	8,46,60
Provision of written information for patients to initiate for enrolment	21,50
Reminder calls to assess practice needs and to provide support	8,21
Payments upon meeting pre-agreed targets	19
Keeping exclusion criteria to a minimum	62
Employing research nurses to facilitate research in practice	21
Setting deadlines for physicians to complete study-related materials	46
Conducting seminars with potential patient-participants	68
Patients recruited by third party	36
Partnership between specialists, research staff, and family physicians	56
Opt-out option	56
Questionnaire completion	
Study protocol characteristics	
Financial or non-financial inducements	66
Surveys sent by registered mail	48
Other activities	
No reported factor facilitating any other family physician activities in research	

Table 5: Factors Inhibiting Family Physicians' Adherence With Study Protocols

Factor	Articles Citing the Factor
Patient recruitment into studies	
Family physician professional factors	
Forgetfulness	69,70
Time constraints	8,69
Perceived impact of the study on patients	8
Sense of lack of recognition for their contributions	52
Limited readiness for innovation	61
Fear of fragmentation of care	61
Uncertainty about their role in care for specific conditions	61
Practice-related factors	
Targeted patients not being found in the practice	15,41,70
Staff turnover/renovations in practice	4,21,49
Remuneration with fee-for-service	49,52
Seasonal increase in workloads	21
Practice too small	36
Patient-related factors	
Refusing to participate	8,37,41,49,69,71
Perceptions of their illness severity	21,29,60
Expectation for compensation	69,71
Reluctance to receive intervention	37,71
Time commitment problems	71
Fear of side effects	71
Personal issues	71
Other health problems	71
Lost contact information	71
Living outside courier boundary	71
Improved health status	71
Not feeling being in need for help	71
Failure on a prior study intervention	71
Incomplete understanding of electronic patient records for research	72
Study protocol characteristics	
Strict eligibility criteria	8,29,41,69
Studies on minors	49,36
Usual care or no treatment for the control group	41
Privacy legislation	73
Informed consent process needed to be done by FPs	36
Research requiring patient recall	36
Questionnaire completion	
Study protocol characteristics	
Postal problems in returning completed questionnaires	21,74
Family physician finds it too onerous or heavy in paperwork	74
Other activities	
No reported factor inhibiting any other family physician activities in research	

Table 6: Frequencies of Reported Factors Affecting Family Physician Recruitment or Adherence to Research Activities

Groupings	Recruitment		Adherence*			
			Facilitator		Inhibitor	
	Facilitator	Inhibitor	Patient Recruitment	Questionnaire Completion	Patient Recruitment	Questionnaire Completion
Family physician personal factors	27	49	2	0	0	0
Family physician professional factors	52	22	3	0	9	0
Practice-related factors	1	14	9	0	10	0
Patient-related factors	0	0	5	0	23	0
Protocol-related factors	33	14	22	2	10	3

* No reported factors affecting family physicians' activities other than patient recruitment and questionnaire completion

to understand the participation of family physicians in research. At the same time, the broad ranges of participation rates support the known heterogeneity of family practice research. When doctors are recruited for research participation it is with the hope that such participation will be comprehensive and for the duration of the project. Although the actual nature and degree of family physician participation can be quite variable, this participation mostly occurs by completing questionnaire and helping with patient recruitment (Tables 4 and 5).

Barriers to and Facilitators of Family Physicians' Participation in Research

In reporting on barriers and facilitators, our goal was to provide an overview to mediating factors on physicians' participation in research. However, because of the large variability in research methodologies and subject matter found in the literature it was not our intent to explore any unique factor in any detail. Hence we limited our analysis to the reporting of frequencies with which they appeared in the literature (Tables 2-5).

There were occasionally seemingly contradictory findings seen for a particular variable. For example, both older and younger family physician age were found to be associated with higher patient recruitment into studies. This may be less a contradiction and more a real world reality of both younger and older age being associated with being less busy while building or winding down a practice. Similarly, both smaller and larger practices were reported to be facilitating patient recruitment in studies, possibly idiosyncratic to the nature and location of the research being conducted.

There were also some factors that could have been categorized under different groupings. For example, family physician forgetfulness is conceivably a function of stressors that may be of a personal or professional nature or both. In our analysis, we actually assigned forgetfulness to be a professional factor since it commonly is associated with the time constraints of practice.

Overall, family physician recruitment in studies appeared predominantly dependent on the personal and professional factors. In terms of family physicians' adherence with study protocols, only factors related to "patient recruitment" and "questionnaire completion" were reported in the literature. There were no reported adherence issues related to other family physician activities. This should be addressed in future research. Factors found within study protocols were generally found to act as facilitators in both family physicians' recruitment and adherence in studies whereas patient/practice issues seem to work to the contrary. The complexity of these relationships suggests that projects may be improved if there is initial family physician input into the study design, protocol operationalization, questionnaire content, and study sustainability within practices.

Although financial compensation seemed in this review to be the most frequently cited facilitator for physicians' decision to join in research, this approach is controversial because of the need to ensure that the interests of the patient take precedence over physicians' self-interests.[15,16] Some suggest that paying clinicians improves recruitment, but it may reduce quality of participation through negative impact on the doctor-patient relationship.[17,18] Others postulate that payment upon meeting pre-agreed targets is a better way to ensure appropriate patient recruitment.[19] These contradictions suggest that well-controlled studies are needed to specifically examine the pros and cons of financial remuneration.

The specific relevance that a research question has to clinicians and/or their practices appeared as another frequently cited explanation for what attracts family physicians to participate in research. It would be logical for family physicians to be interested in studies that reflect the characteristics and the needs of their patients, that generate personal or

professional curiosity, or that provide potential to improve care. Qualitative studies exploring dimensions of what is relevant for family physicians might add to an understanding of how to recruit them to research.

The most cited reasons for family physicians' non-participation were their perceived lack of time and a preference for clinical care over research. Research teams therefore need to find innovative means to support clinical practices while encouraging research. Specifically, research protocols should aim to minimize impact on practice function.[8,20-22] This may require an *a priori* exploration of practice logistics and the tailoring of the study protocol to specific needs of all practice staff. This might involve funding protected time for family physicians who are interested in engaging in research projects[23] or perhaps the addition of physician assistants or nurse practitioners to complement physician clinical activities during the duration of the study. Moreover, the activity of research participation may need to receive greater recognition in the form of continuing education credits.[12,14,24-26]

Limitations

Since our review was done in the context of a master's thesis, there were no other reviewers of the literature. As well, the quality of each study was not assessed by a formal tool since the focus of our work was on content analysis. Therefore the review lacked two of the criteria necessary for it to be considered systematic.[27] However, we had an explicit and reproducible selection strategy, and once data extractions were done, other team members were involved in synthesis and interpretation stages. The allocation of various variables within assigned groupings was based on team consensus when a variable could have appeared under more than one factor.

It is possible that some studies incorporating family physicians did not appear in the search results because of restrictions within the search strategy. As well, we might have missed some publications by limiting the search to English. However, since six out of the 12 countries from which eligible papers were derived were non-English speaking countries whose authors opted to publish in English, this concern would seem less cogent.

Conclusions

This paper has identified barriers and facilitators to family physician recruitment in research studies and to protocol adherence by using mixed methods. To our knowledge, a similar approach has not been used previously. Given the broad range of communities in which studies may be done and the wide variability and uniqueness to study protocols, we have not generated solutions to the barriers identified. We believe that this is best addressed through collaborative discussion by stakeholders of any particular project based on particular needs and characteristics of such participants. Our findings may guide researchers by providing the basis for a list of issues that could be included in such discussions. This may be enhanced by considering *a priori* community-based participatory research approach in which discussions are held as to what participation is possible and viable.

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CORRESPONDING AUTHOR: Address correspondence to Dr Yaffe, St. Mary's Hospital Center, Family Medicine Centre, 3830 Lacombe Avenue, Montreal, Quebec, Canada, H3T 1M5 514-734-2677. Fax: 514-734-2602. mark.yaffe@mcgill.ca.

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