PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Understanding and addressing changing administrative workload in primary care in Canada: Protocol for a mixed method study
AUTHORS	Lavergne, M.; Moravac, Catherine; Bergin, Fiona; Buote, Richard; Easley, Julie; Grudniewicz, Agnes; Hedden, Lindsay; Leslie, Myles; McKay, Madeleine; Marshall, Emily; Martin-Misener, Ruth; Mooney, Melanie; Palmer, Erin; Tracey, Joshua

VERSION 1 – REVIEW

REVIEWER	Kawade, Anand King Edward Memorial Hospital, Vadu Rural Heath Progrm
REVIEW RETURNED	04-Aug-2023

GENERAL COMMENTS	I would like to congratulate the authors for bringing this important issue in healthcare delivery. Overburdened primary health care workers is a global phenomenon and administrative workload is one of the important causes of it. There is an unmet need to understand and address these issues to achieve sustainable health care. This is a very well written protocol. The objectives and methods are clearly described. I have few suggestions: 1.Suggest making a conceptual framework for better understanding. 2. For the qualitative study, please check whether this number is sufficient for data saturation during IDI, considering the various groups of participants like physician & nurses, male & female, Scotia & Brunswick provinces, more experienced provider & less experienced, urban & rural you would like to interview. 3.What strategies would be adapted to capture any sensitive information during Informed consent? 4.For data analysis are you proposing any data triangulation of quantitative and qualitative data? If so, then please add. 5. For dialogue sessions it would be very useful if you can develop a matrix of various strategies based on high /low priority and high/low vulnerability (affected by other factors like budget) 6. Paragraph on “Impact on equity in recruitment and retention of healthcare professionals” on page 11 seems to be misplaced. Suggest to move appropriately. 7. Are you planning for any stakeholder engagement? If so then How you are planning to involve various stakeholder? What is role of FP/NP in developing the qualitative tools? How these tools would be piloted? 8. A Time motion study in a subset of participants would be real value addition to this study which will help you to inform more accurately on time spent on care coordination or other administrative work.

REVIEWER	Schrimpf, Anne Universität Leipzig Medizinische Fakultät, Selbstständige Abteilung für Allgemeinmedizin
REVIEW RETURNED	07-Aug-2023

GENERAL COMMENTS	General comment The manuscript presents a mixed-methods study protocol to address the research objectives related to administrative workload and healthcare service utilization in primary care settings in Nova Scotia and New Brunswick. The planned studies are highly relevant and the methods described complement and build on each other well. The methods section generally provides a clear outline of the study protocol, but there are some areas that need revision or clarification to align with best practices and scientific guidelines. Introduction It would be interesting to see Canadian data on the increase in part-time work among health care workers, which might also be a factor in the gap between the number of health care providers (who may be more likely to work part-time) and the workload. With this in mind, I wonder if the number of primary care providers per person mentioned on page 5, line 21 is a full-time equivalent per-capita? Methods General comment It would be very helpful to provide the readers with a figure, flowchart, or overview of the planned studies. Page 8, line 6: Please specify here the type of mixed-method designs you will use. There are several methods papers about different types of mixed-method designs (e.g., https://www.sagepub.com/sites/default/files/upm-binaries/10982_Chapter_4.pdf). Based on the information provided in the manuscript, in my view the study probably uses a sequential explanatory mixed-methods design. Objective 1 - Quantitative administrative data Please provide information on the expected quantity of the data, if possible (e.g., how many cases you expect for each data source). For people not living in Canada, it would be helpful to provide more information on the sources you want to us. Where do these databases get their data from? The authors report that the statistical analysis will be descriptive only. I think it would be a great addition to the analyses if statistically significant differences over time (e.g., with repeated measures) could be explored. The authors should specify why they decided against statistical models. Objective 2 - In-depth video interviews Please provide (e.g., in a figure) more details on the (preliminary) interview guideline, including the specific questions that will be asked to address research questions 2a, 2b, and 2c. Please also provide the screening survey in the appendix. Please indicate the inclusion criteria after the potential participants have completed the screening survey. How do you select them (apart from gender)? Informed consent: The consent process should be more explicit and ensure that participants are fully aware of their rights and the purpose of the study before providing consent. Implying consent by

	completing the questionnaire does not seem to be a legitimate procedure. Data Management: The plan to securely store quantitative and qualitative data on password-protected computers is acceptable, but also mention backup and data retention policies. Please address how data anonymity will be maintained throughout the analysis process, especially when quoting participants in the final report. Qualitative Analysis: More details about the steps involved in the thematic analysis process should be included, and it would be beneficial to provide some examples of how themes will be identified and developed. Please also mention the strategies to ensure rigor and trustworthiness of the qualitative analysis, such as member checking or peer debriefing. Objective 3 - Integration of findings and knowledge exchange Please explain the triangulation process of the data assessed in phase one and two in more detail. In line, please clarify the process of how the qualitative and quantitative findings will be used to inform the dialogue process. How many individuals do you plan to involve in the two stages?

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

1.Suggest making a conceptual framework for better understanding.

Thank you for this suggestion. We agree with the value of a conceptual framework. However, given there has been very little research in this area, we anticipate that this will be a research product informed by this study. We do not feel there is sufficient information on which to base a conceptual framework as part of this protocol.
2. For the qualitative study, please check whether this number is sufficient for data saturation during IDI, considering the various groups of participants like physician & nurses, male & female, Scotia & Brunswick provinces, more experienced provider & less experienced, urban & rural you would like to interview.
We plan a sample size of 40 participants as follows:
5 family physicians practising in Nova Scotia
5 family physicians practising in New Brunswick
5 nurse practitioners practising in Nova Scotia
5 nurse practitioners practising in New Brunswick
10 administrative staff/managers working in Nova Scotia
10 administrative staff/managers working in New Brunswick
Given that the majority of nurse practitioners and administrative staff are women, we anticipate approximately 75% of the sample to be women, and approximately 25% of the sample to be men. We will aim for an even distribution of urban versus rural settings, and an even distribution of years in practice from the following choices: less than 2 years, between 2-5 years, 6-10 years or more than 10 years (approximately half or less from the first 2 categories and half or more from the last 2 categories). We also anticipate that the majority of nurse practitioners will be on salary, while roughly half of family physician participants will be remunerated by the fee for service model with the other half on blended payment models or alternative funding plans. As this is a pilot study that will inform a forthcoming larger scale project, we believe our sample size is appropriate. Another practical consideration for the sample size was the funding allocated to this investigation.

3. What strategies would be adapted to capture any sensitive information during Informed consent?
If during the consent process or during the interview process any sensitive information is offered by a participant, depending on the nature of the information shared, the qualitative interviewer will ensure

that the participant has support and resources available to them, and will assure the participant that the information will remain confidential and will not be shared with members of the research team, nor included in any study results in any form.

4. For data analysis are you proposing any data triangulation of quantitative and qualitative data? If so, then please add.

Thank you for your question. Our approach most closely resembles a mixed methods multi-level plan in which quantitative and qualitative data will be concurrently collected and analyzed, each with equal weight. The research questions we are attempting to answer through the use and analysis of quantitative data while complementary, are distinct from the research questions we are exploring though qualitative interviews and analysis. Findings from both methods will contribute to knowledge generation and may enhance each other, however it is impossible to know in advance of data collection and analysis precisely how this will evolve. We anticipate that findings from quantitative data on changes in service volume requiring primary care coordination will be better understood when complemented by narratives from the interviews that add important contextual information.

5. For dialogue sessions it would be very useful if you can develop a matrix of various strategies based on high /low priority and high/low vulnerability (affected by other factors like budget)
Thank you for this comment. We do plan to utilize the quantitative and qualitative outcomes to prepare information for participants of the deliberative dialogue events. That information will include strategies participants will help to prioritize and stratify based on level of importance and/or urgency, degree of feasibility, potential impact on decreasing administrative burden, and potential impact on quality of care. During the second deliberative dialogue event, these will be further grouped into short, intermediate and long- term categories.

6. Paragraph on “Impact on equity in recruitment and retention of healthcare professionals” on page 11 seems to be misplaced. Suggest to move appropriately.
Thank you for this comment. We have moved that paragraph to page 9 where it flows better with the surrounding text.

7. Are you planning for any stakeholder engagement? If so, then How you are planning to involve various stakeholder? What is role of FP/NP in developing the qualitative tools? How these tools would be piloted?

The first level of engagement with stakeholders is the inclusion of several individuals on our research team with representation from family medicine, nursing, and health policy whose skills complement members with expertise in quantitative and qualitative research, ethnography and medical anthropology. Family physicians, a nurse, and nurse practitioners reviewed the study proposal and interview guides and offered suggestions for improvements. Stakeholders will also be involved in the deliberative dialogue events in the third phase of the project. Participants in the deliberative dialogue events will include policy advisors and policymakers, qualitative interview participants, ministry staff from both provinces and other stakeholders identified by members of the research team and their colleagues. These points are clarified within the flow diagram on page 8, and within methods for Objectives 2 and 3.

8. A Time motion study in a subset of participants would be real value addition to this study which will help you to inform more accurately on time spent on care coordination or other administrative work.
Thank you for this suggestion. We agree it would add value to do that, however, it is not possible for us to conduct a time motion study on a subset of participants with the budget we have for this pilot study.

Reviewer: 2

Introduction
It would be interesting to see Canadian data on the increase in part-time work among health care workers, which might also be a factor in the gap between the number of health care providers (who may be more likely to work part-time) and the workload. With this in mind, I wonder if the number of primary care providers per person mentioned on page 5, line 21 is a full-time equivalent per-capita?
Thank you for this comment and very helpful suggestion. Your question is answered to some extent in the following article:
https://www.cmaj.ca/content/195/9/E335. The authors note "Although Canada's absolute physician-to-population ratio has increased and is at an historic high, reports of physician shortages and inadequate patient access to physicians abound. To reconcile these observations, we analyzed workforce data for physicians from 1987 to 2020 and adjusted the population size to address population aging and the number of physicians **to account for changing hours of work**. Although the unadjusted physician-to-population ratio in 2019 was 35% higher than it was in 1987, we found that full adjustment showed the ratio to be about 4% lower."

To respond to your question, this is per-capita but not FTE adjusted. In order to more clearly frame the potential impact of part-time work we have edited this text as follows, including more current citations about changing workload:

"There is an urgent need to understand factors contributing to the gap between a growing number of primary care providers per person and declines in the availability of primary care services.[7] *To some extent this gap may reflect declining hours worked or service volume per physician, but evidence also points to broader health system changes that may impact workload in primary care over and above visit volume."*

Methods
General comment
It would be very helpful to provide the readers with a figure, flowchart, or overview of the planned studies.
Thank you for this suggestion. A flowchart has been added to the protocol on page 8.

Page 8, line 6: Please specify here the type of mixed-method designs you will use. There are several methods papers about different types of mixed-method designs (e.g., https://www.sagepub.com/sites/default/files/upm-binaries/10982_Chapter_4.pdf). Based on the information provided in the manuscript, in my view the study probably uses a sequential explanatory mixed-methods design.

Thank you for your question. Our approach most closely resembles a mixed methods multi-level plan in which quantitative and qualitative data will be concurrently collected and analyzed, each with equal weight. The research questions we are attempting to answer through the use and analysis of quantitative data while complementary, are distinct from the research questions we are exploring though qualitative interviews and analysis. Findings from both methods will contribute to knowledge generation and may enhance each other, however it is impossible to know in advance of data collection and analysis precisely how this will evolve. We anticipate that findings from quantitative data on changes in service volume requiring primary care coordination will be better understood when complemented by narratives from the interviews that add important contextual information.

Objective 1 - Quantitative administrative data
Please provide information on the expected quantity of the data, if possible (e.g., how many cases you expect for each data source).
For people not living in Canada, it would be helpful to provide more information on the sources you want to use. Where do these databases get their data from?
The authors report that the statistical analysis will be descriptive only. I think it would be a great addition to the analyses if statistically significant differences over time (e.g., with repeated measures) could be explored. The authors should specify why they decided against statistical models.

Thank you for this comment. We have edited this section of the Methods to expand discussion of data sources, clarifying that we will access population-based data reflecting the entire provincial populations and including references with extensive documentation of each data source.

The data contain service use across the entire population and not a sample, and so differences over time reflect true differences and not sampled estimates. That said, we agree with the reviewer that models may be helpful to quantify changes, particularly surrounding the COVID-19 pandemic, and we have suggested segmented regression may be useful in quantifying changes in the levels and trends of service use outcomes over time.

Objective 2 - In-depth video interviews
Please provide (e.g., in a figure) more details on the (preliminary) interview guideline, including the specific questions that will be asked to address research questions 2a, 2b, and 2c.
Full versions of both interview guides have been included as a supplementary file.

Please also provide the screening survey in the appendix.
This has been done and is noted on page 9.

Please indicate the inclusion criteria after the potential participants have completed the screening survey. How do you select them (apart from gender)?

As noted above and briefly clarified under “Recruitment”, given that the majority of nurse practitioners and administrative staff are women, we anticipate selecting approximately 75% of the sample as women, and approximately 25% of the sample to be men. We will aim for an even distribution of urban versus rural settings in both provinces respectively, and an even distribution of years in practice from the following choices: less than 2 years, between 2-5 years, 6-10 years or more than 10 years (approximately half or less from the first 2 categories and half or more from the last 2 categories). We also anticipate that the majority of nurse practitioners selected for interviews will be on salary, while roughly half of family physician interview participants will be remunerated by the fee for service model with the other half on blended payment models or alternative funding plans.

Informed consent: The consent process should be more explicit and ensure that participants are fully aware of their rights and the purpose of the study before providing consent. Implying consent by completing the questionnaire does not seem to be a legitimate procedure.

Individuals completing screening questionnaires receive the following information:

“STUDY TITLE:	**A Thousand papercuts: Understanding and addressing changing administrative workload in primary care**
PRINCIPAL INVESTIGATOR:	M. Ruth Lavergne, Faculty Researcher Dalhousie University, ruth.lavergne@Dal.ca

Thank you for your interest in participating in an interview for our research study called “A Thousand papercuts: Understanding and addressing changing administrative workload in primary care.” In this study we would like to better understand the breadth and distribution of administrative workload in primary care. We would like to learn more about the administrative tasks that family physicians, nurse practitioners, office managers, and office staff perform and how this work has changed over time. We hope that this study will help others to become more aware of the important work that you do and how valuable it is.

To be considered for an interview, please complete this survey and provide us with your contact information and profession. The survey has a short series of optional questions for you to answer. Please answer as many questions as you like. You are not obligated to answer any, although your answers will help us to select participants representing a diversity of practices and locations.

Your completion of the survey implies that you have consented to participate in this research. The information you provide in the survey will be kept confidential. You may exit the survey at any time and your information will not be saved. The survey is administered by Opinio, a tool hosted and supported by Dalhousie University. The survey data from Opinio is stored on Dalhousie University servers in Halifax, Nova Scotia, Canada and is endorsed for use by the Dalhousie Research Ethics Board. The information you give during the survey will be destroyed after the recruitment process has been completed.

If you are invited to participate in an interview, you will be provided with an information sheet about the study and the interview."

This approach to consent has been approved by the local research ethics board. Individuals invited to participate in qualitative interviews receive a 5-page information sheet which contains all the typical information provided in research participant information and consent forms. There is ample opportunity for potential participants to ask questions prior to the interview taking place. Verbal consent is documented in the audio file of the interview before the interview commences.

Data Management: The plan to securely store quantitative and qualitative data on password-protected computers is acceptable, but also mention backup and data retention policies.

Thank you for the feedback. This point has been addressed on page 10 with the addition of the following: Files are backed up monthly on an external drive. Both quantitative and qualitative data will be stored for a period of seven years after which it will be permanently destroyed in accordance with the policies of Dalhousie University.

Please address how data anonymity will be maintained throughout the analysis process, especially when quoting participants in the final report.
This question has been addressed on page 10 as follows:
Each participant will be assigned an identification number in place of their name. All interview transcripts will bear the identification number. Only the qualitative interviewer on the research team will have knowledge of participants' names and personal identifiers. Participant quotes will be included in presentations and publications emanating from this study, however there will not be any personal identifiers associated with the quotes. Quotes will be attributed to the type of professional, gender and province in which the person is practicing.

Qualitative Analysis: More details about the steps involved in the thematic analysis process should be included, and it would be beneficial to provide some examples of how themes will be identified and developed. Please also mention the strategies to ensure rigor and trustworthiness of the qualitative analysis, such as member checking or peer debriefing.

Thank you for this feedback. We have added the following text within the Qualitative Analysis section:
"There are six fluid phases involved when conducting reflexive thematic analysis. The first phase is becoming familiar with the interview data by reading through transcripts on several occasions. The next phase involves initial coding of data related to the research questions. We plan to employ an inductive approach to analysis at that stage. This will be followed by the generation of preliminary themes. We will then return to the data, further develop and revise themes. Depending on the analysis in progress, we may continue with the inductive analysis, or we may decide to conduct a deductive analysis based on a concept or framework that we determine at that point may provide greater depth to the findings. In the latter case, we will return to the data and commence a new phase of coding deductively. This is what is meant by the fluidity of analytic phases. Once that phase has been completed, we will further refine and name themes and develop definitions for the themes. The final stage involves written preparation of the results including a discussion of their relevance to the existing literature.

Initially each member of the qualitative working group will review 2-3 transcripts each. Working group members will meet weekly to discuss the transcripts and potential codes. The research associate will use NVivo software to begin the inductive coding process based on those discussions. The qualitative working group will continue to meet bi-weekly or as needed throughout the analytic process. The diverse perspectives and expertise of group members will ensure a robust and meticulous analysis of qualitative data. We will have representation from family medicine, nursing, health administration and health policy, as well as expertise in qualitative research methods, ethnography and medical anthropology. Each interviewer will prepare field notes shortly after interviews take place. This may result in modifications to the interview guides. Field notes will be reviewed prior to and during analysis. The research associate will document all analytic decisions as part of the audit trail."

Objective 3 - Integration of findings and knowledge exchange
Please explain the triangulation process of the data assessed in phase one and two in more detail. In line, please clarify the process of how the qualitative and quantitative findings will be used to inform the dialogue process.

Thank you for the comment. As noted above, our approach most closely resembles a mixed methods multi-level triangulation plan in which quantitative and qualitative data will be concurrently collected and analyzed, each with equal weight. The research questions we are attempting to answer through the use and analysis of quantitative data while complementary, are distinct from the research questions we are exploring though qualitative interviews and analysis. Findings from both methods will contribute to knowledge generation and may enhance each other, however it is impossible to know in advance of data collection and analysis precisely how this will evolve. We anticipate that findings from quantitative data on changes in service volume requiring primary care coordination will be better understood when complemented by narratives from the interviews that add important contextual information. After analysis of quantitative and qualitative data has been completed, a document will be prepared for distribution prior to the first deliberative dialogue event. This will include a summary of quantitative findings and an initial list of areas of concerns identified through the qualitative interviews. Focused discussions and a priority ranking exercise will be conducted during the first event. The second deliberative dialogue event will focus on feasibility and actions needed to address high-priority areas of concern identified in the first event.

How many individuals do you plan to involve in the two stages?
We expect to involve 12-15 individuals in each of the two stages of deliberative dialogues.

The total word count is now 4,388 due to the additions required to address questions and issues raised in the review.

Thank you for this opportunity to expand upon and clarify aspects of our study protocol. We hope that we have adequately answered your questions, and that your helpful comments are reflected in the revised version of the manuscript we are enclosing today.