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Title: Characteristics and practice patterns of family physicians who provide home visits in Ontario, Canada: a cross-sectional study
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Reviewer 1: Jeffrey Poss
Institution: School of Public Health and Health Systems, University of Waterloo
General comments (author response in bold)

R1.1. …in Table 2, the comparison is between a very small subset of low-volume home-visit physician patients (only those with a home visit) and all patients of those physicians who provided no home visits to any patient, and it is unsurprising that patient characteristics, aggregated at the physician level, are so different. I would advise that the lower portion of Table 2, with the physician-level patient characteristics, be omitted. An alternate view would be to compare all patients receiving a home or office visit for the low-volume physicians in Table 2, so as to characterize the physician practice overall; however, that is a question that the authors may or may not wish to address in this paper.
This is a very good point, and we agree that the low patient numbers for the low-volume physicians will skew the comparison with the no home visit physicians. As suggested, we have removed the patient characteristics of Table 2, as well as any mention of these findings in the Results and Interpretation sections. (Table 2; Results, p.13-14)

R1.2. It is challenging for the reader to keep straight that the distributions of patient characteristics are aggregated at the physician level, and some reminders of this for the casual reader so that they do not mis-read this as characteristics of the collection of all patients, would be helpful.
We agree with the reviewer that the physician-level patients characteristics can be confusing, so we have modified wording throughout the results and interpretation to clarify these variables. (Methods and Interpretation, throughout)

R1.3. If you do keep all of Table 2, note that the suppressed counts in Table 1 for median patient age groups can be calculated from the values in Table 2.
We thank the reviewer for catching this and have removed the lower portion of Table 2 so this is no longer a concern. (Table 2)

R1.4. A central idea that I see as important, which has no profile in either the introduction or discussion, is how home visits come about. Are there accepted practices among physicians as to what is an appropriate scenario for a home visit, or whether referrals from one GP to another who may specialize in home visits occurs?
The paper uses language like “option” (page 12, line 18), “patients who determine where and when they will be delivered care” (line 25), “use home visits as an alternative” (line 51), “sought a home visit” (page 13, row 52) that suggests patient requests/preference could be driving a home visit event. This would be more compelling if there was evidence within these data, or published elsewhere, that shed light on mechanisms of home visits.

Do physicians make specific judgements as to whether a home visit is the only possible way to see the patient, or whether it is in the patient's best interests, or whether it is what the patient is asking for (or perhaps has received previously, so expects it).
Thank you for these thought-provoking questions. There are programs in Ontario put together by family health teams or community support services agencies to provide home visits to enrolled patients. There are also physicians who regularly visit group or retirement homes. Anecdotally, many of our family health team physician colleagues choose which of their enrolled patients to provide home visits to, often based on whether the patient is homebound or cannot easily make it to their office.6 We have added this point to the Methods (Setting) section. We are aware of only one group of entirely home-visiting (i.e. no office visits) full-service family physicians: Housecalls in Toronto (https://www.seniorshousecalls.ca/) will take over the primary care of referred patients (with formal enrolment). Most physicians who participate in this group are salaried, and so their billings would not be captured in the OHIP billing data used for this study.
For patients who are not formally enrolled to their home visiting physician, such as seen in the high-volume group, these visits may have been more patient-driven. With the introduction of on-demand apps for house calls in Ontario (e.g., HippoMD, MD Home Call, and Medvisit), patient-driven demand is likely increasing, including for patients who are younger and not medically complex (see data from Heal Inc. in the US).7 We have added a discussion about the possibility of apps in driving the demand of home visits to the Interpretation section. (Methods, p.5; Interpretation, p.16)

R1.5. In addition, is it possible that persons who are homeless or in shelters who receive mobile health services make a notable proportion of these patients and visits?
In talking to our colleagues, we learned that physicians who work in homeless shelters in Toronto are a part of Inner City Health Associates (ICHA) and not paid on a fee-for-service basis. These physicians are paid hourly stipends through APP agreements, and therefore would not be picked up in our present sample, which relies on fee-for-service billing claims.
We do not know whether billing in homeless shelters functions differently in other areas of Ontario. However, Toronto has the largest number of shelters, and likely would make up the bulk of this patient population. Additionally, our sample would not pick up on home visits to patients without OHIP coverage. (No change)

R1.6. The selection of the top 5% of physicians appears to be an arbitrary cut-point, as it's not clear from the Lorenz curve how this figure is suggested, precisely. Would top 3% or top 10% show different results? It would be helpful to state some additional rationale, for example if this cut-point has been used in other published studies; failing this, reporting if results differed based on some sensitivity testing would be helpful.
Thank you for this important point. We chose the 5% cut-off based on visual inspection of the Lorenz curve, which revealed a sharp uptick at 95% of all physicians, as well as investigator consensus. We don't know of any official methods to identify the highest volume group, but this process of group stratification is similar to Guan et al., 2017, who also chose their groupings based on the appearance of the Lorenz curve (added to Methods).
Our supplementary analysis of the volume threshold cut-offs is a sensitivity analysis for the lower volume physicians. However, the upper group (128+ home

visits), corresponds to the top 8.8% of physicians. The pattern of findings is similar in this group to our chosen top 5%. We could have chosen an even more extreme cut-off, but any higher threshold would likely accentuate the differences further. Our chosen approach of the top 5% is more conservative, yet the SMDs we obtained were already quite large. We have made it clearer that this was a sensitivity analysis in the Methods section.
For a further sensitivity analysis in response to this feedback, we have now added a comparison of the top 1% versus the remaining 99% of home visit physicians in the Appendix (Table S6). Though the pattern of results was similar to the top 5% vs. remaining 95%, the top 1% had a smaller proportion of physicians providing palliative home visits and home visits to home care recipients. This suggests that the top 1% group may be capturing more of the 'uberization' of home visits – that is, providing high-volume visits to less medically complex patients. (Methods, p.7; Appendix Table S6)

R1.7. Please consider another label for the group of physicians making up the lower 95%, based on total visits, of those providing any home visits. You define this on page 5 with quotations ('majority'), but I find it less than ideal. My suggestion would be to consistently call the 5% group "high-volume" and the remainder "low-volume".
We thank the reviewer for their suggestion, which matches with what Reviewer 2 also recommended. For clarity, we have changed the 'majority' group to the low-volume group. (Methods and throughout manuscript)

R1.8. Consider adding the number of unique persons who received one or more home visits in 2019, as a descriptive finding in the results section. Would also be helpful to report the total number of visits provided by family physicians in 2019, to put the 387,139 home visits in context.
We have moved the physician-level median number of home visit patients earlier in the Results section. We added the total number of home visit patients and total number of home and office visits to the Results section. (Results, p.10 and 11)

R1.9. The results section could be shortened, in my opinion, to report key findings only, with something like "see table 1 for more information". Also, please check for consistent language and ordering, for example "High-volume physicians were less likely to participate in capitation (21.9% vs. 13.6%, SMD = 0.22)" might be clearer if the values were (13.6% vs. 21.9%) so the first number is the group that is less likely. Also, please confirm with editorial standards for this journal as to duplication of values in the results section that are in the tables, including SMD's and IQR's.
We thank the reviewer for their suggestions to make our Results section clearer. We have removed some of the duplications of values that can be obtained from the tables and re-ordered the Results as suggested.
CMAJ Open guidelines for the Results section state to avoid repeating information present in the tables. Therefore, we have removed some of the duplicates and focused on the most important findings in the results. (Results, p.10-14)

R1.10. The sentence after the heading "Office visit-only physicians" requires a verb.
Thank you for catching this. We have modified this sentence to reflect that we examined this population. (Methods, p.7)

R1.11. Page 6, line 36 “prior 2 years”: if this is the 2 years prior to the index home visit, please state this explicitly, here as well as how “known to the physician” was operationalized.
The reviewer is correct, the variable was measured in the 2 years prior to the index visit, which we have clarified in the manuscript. Whether the patient was previously known to the physician was operationalized as any encounter in the previous 2 years in any setting other than the index encounter. (Methods, p.8)

R1.12. The home care and palliative flags are interesting, but they require context, for example if they have been used in other studies to characterize practice regarding home visits.
We have previously used these groups in our study of home visit recipients in Ontario (currently in press at CMAJ Open). We have cited this paper for further context.[5] (Methods, p. 8)

R1.13. Page 12, line 43: “It is unknown whether..” could be restated as “This study did not investigate whether..”, or “It was beyond the scope of this study to investigate whether..”
We thank the reviewer for their suggestion and have re-worded the sentence accordingly (i.e., “the benefits of a home visit with someone other than the enrolling physician may not be the same, and are as yet unknown.”).
(Interpretation, p.17)

R1.14. In Table S6, the columns are based on total annual home visit counts, whereas the criteria stated in Table S1A require both patients served and visits; I do not see an explanation for this.
We thank the reviewer for pointing out the discrepancy. We have modified Table S5 in the Appendix to reflect the categories as outlined by the volume incentive thresholds by the Ontario Ministry of Health (i.e., including a minimum number of patients served). This change did not impact the overall findings. (Appendix Table S5)

R1.15. It would be helpful in the interpretation section to offer some attention to the combination of factors that appear to be related to the large difference between high and low-volume physician home visits that are in their own or their group enrolled patients (4% vs 87.5%). The combination of lower likelihood of physician medical home enrolment (64.5% vs 84.9%) and compensation model (much lower proportion capitation or team-based) appears to explain some of this large difference.
It also may have something to do with some home visit patients being not amenable to enrolment in a practice, even when the physician that sees them at home is classified as medical home enrolment – speculating as to whether this may over-represent homeless or shelter-residing patients. You have neighbourhood-area income, but it is of course not granular enough to address this. My point here is that this finding (the 4% vs 87.5%) deserves some additional attention in the discussion.
We agree that the fact that high-volume physicians were less likely to belong to a capitation or team-based medical home (or any medical home at all) is certainly related to the large difference in percentage of enrolled patients seen, and we have added this point to the Interpretation.
In talking to our colleagues, we learned that physicians who work in homeless shelters in Toronto are a part of Inner City Health Associates (ICHA) and not paid on a fee-for-service basis. These physicians are paid hourly stipends through APP

agreements, and therefore would not be picked up in our present sample, which relies on fee-for-service billing claims.
We do not know whether billing in homeless shelters functions differently in other areas of Ontario. However, Toronto has the largest number of shelters, and likely would make up the bulk of this patient population. Additionally, our sample would not pick up on home visits to patients without OHIP coverage. (Interpretation, p.15)

Reviewer 2: Sandra McKay
Institution: VHA Home HealthCare
General comments (author response in bold)

R2.1. Introduction: Pg 3, line 45: The authors discuss the importance of home visiting for homebound & palliative patients-How is homebound conceptualized /defined? Making clear the distinction between homebound and homecare to guard against the potential that homebound and homecare could be conflated.
It would be valuable to have the authors thoughts, within the discussion section, related to the findings specific to homecare and palliative variables particularly given the stated concerns with the aging population.
We agree it is important to distinguish between homebound patients and those who receive home care, as they are not always the same.
Use of homecare is a method we have previously used to identify potentially homebound individuals. We have also found that half of long-stay home care patients can be classified as homebound.[8] We have added these details to the Methods section.
We also added to the Interpretation a discussion of the finding that high-volume home visit physicians were seeing more palliative patients than low-volume physicians, emphasizing the growing need for more palliative home visit specialists in Ontario. (Methods, p.8; Interpretation, p.18-19)

R2.2. Physician comparisons: Overall, I believe it might be helpful to the reader to clarify the physician groups studied... For example: high volume home visit physicians (n=330), low volume home visit physicians (n=6242) and no home visit physicians (8,186).
Thank you for this suggestion. We have changed the 'majority' group to the 'low-volume' group throughout the manuscript. (Methods p.7 and throughout manuscript)

R2.3. …consistent use of 'home visit' is important as many physicians may be high volume users that perform no home visits. Currently there are times when it is unclear if the physician comparison group is no home visits or low volume home visits.
I will provide a few examples where more precise language would support readability below. Page 8, line 49. High volume physicians could be updated to 'high volume home visit physicians' Page 9, line 6. ...., compared to 5 unique patients for low volume home visit physicians. Page 10, line 29-34 – the comparison physician group is not identified in the sentence.
We thank the reviewer for this point and have edited the manuscript to ensure group names are consistent throughout the Results section. (Results, p.10-14)

R2.4. As above, please review the entire methods section to ensure a comparison group is clearly stated for each statistic shared.
Throughout the Methods and Results sections, we have ensured to clarify the comparison group. (Methods and Results, throughout)

R2.5. Discussion: Could the authors comment on how the vast majority of the clients seen by high volume physicians and patients come to be connected? What facilitates these connections and to what extent would you expect these to reflect support of a an 'uber-like' or marginalized/vulnerable population (palliative, homebound) as referenced in the introduction?
How physicians and patients become connected in Ontario has not been well described, though it is likely that most physicians make an individual choice whether or not to provide home visits to their enrolled patients.[6] However, this is mostly pertinent to low-volume physicians, who belong to enrollment-based medical homes.
For high-volume physicians, we speculate that connections may be made through on-demand home visit apps, such as HippoMD, MD Home Call, and Medvisit. There is also the possibility that some of these physicians work in retirement homes, however we cannot determine this from our data. Future qualitative work is needed to determine how high-volume home visit physicians are connecting with their patients. We have added these discussion points to the Interpretation. (Interpretation, p.16 and p.19)

Reviewer 3: Claire Kendall
Institution: C.T. Lamont Primary Health Care Research Group, Elisabeth Bruyere Research Institute
General comments (author response in bold)

R3.1. One thing I might try to clarify for readers less familiar with PEM in Ontario is that the authors are, I believe, trying to tease out two things. The first is whether the patients are enrolled to the home visit physician, and the second is whether those patients might in fact be enrolled to someone else. I'm not sure the best way to make this crystal clear. In the "setting" section, there could be a line saying that patients are not restricted to seeing their usual physician.
In the interpretation section, page 11 line 49 uses the terms home visit physician and usual physician and wonder if sprinkling that terminology throughout might increase the clarity of these concepts.
We thank the reviewer for the suggestion for clarifying the nature of PEMs in Ontario, we have added further explanation to the Setting section, as mentioned. We have also added the term 'usual physician' in the Interpretation section. We hope this has increased the clarity of our Interpretation. (Methods, p.5; Interpretation, p.17)

R3.2. Related to my comment above, on page 10 line 43 re: "A median of 4% (IQR = 0-56.3%) of home visits from high-volume physicians were to patients enrolled to them or their own group, compared to 87.5% (IQR = 28.6-100%) for the majority of home visit physicians (SMD = 1.12)" …When I first read this I wondered if is this simply because fewer of these patients aren't part of a PEM. However, the context is that 73% of high volume home visit physician's patients ARE in a medical home, but the high volume physicians aren't actually seeing their own patients. I want to be sure readers appreciate this nuance, which comes out more clearly in the interpretation section.
We thank the reviewer for noticing this important contrast, which we have emphasized by putting these two findings closer together in the results section – i.e., "Although a median of 73% of the high-volume physicians' patients belonged to a medical home, only 4% of the home visits they provided were to patients enrolled to them or their own group." (Results, p.12)

R3.3. For the last line of the first para, I wonder about a line summarizing the majority home visit physicians to act as a transition sentence. The first line of the next para describes characteristics in the literature that that relate to the majority, not the top 5%, and thus the transition reads a bit awkwardly.
We thank the reviewer for their suggestion, and we have re-structured this transition for a better flow between sections. (Interpretation, p.15)

R3.4. Most home visit physicians are less likely to be in a fee for service model – is this worth highlighting from a policy perspective?
The current home visits bonuses provided by the Ontario Ministry of Health consider both the number of *patients* a physician sees and the number of *encounters* they make to promote continuity along with volume. Therefore, our finding that 83.9% of home visit physicians belong to a medical home and provide visits to their own patients is important, because it suggests policy is working mostly as intended- by encouraging enrolling physicians to provide home visits to their enrolled patients, longitudinally. We have added to the Interpretation section. (Methods, p.5; Interpretation, p.17)

R3.5. An area for future work areas could be to determine if the different types of home visit physicians have fewer ED visits among patients who received their care.
We agree that outcomes following physician home visits are important to assess, and a similar question has been addressed by Jones et al. (2020)[4] amongst older, functionally-impaired home visit patients.
They found that home care patients who were enrolled to physicians who provided more home visits had lower rates of emergency department use and hospital admissions compared to those who were enrolled to physicians who provide no home visits.4 Here, we found that high-volume physicians rarely saw patients who were enrolled to them or their group- the benefits of a home visit with someone other than the enrolling physician may not be the same, and are as yet unknown. We have added this to the Interpretation. (Interpretation, p.17)