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Title: Abortion services and providers in Canada in 2019: results of a national survey
Authors: Regina M. Renner MD MPH, Madeleine Ennis PhD, Damien Contandriopoulos PhD, Edith Guilbert MD MSc, Sheila Dunn MD MSc, Janusz Kaczorowski PhD, Elizabeth K. Darling PhD, Arianne Albert PhD, Claire Styffe BASc, Wendy V. Norman MD MHSc

Reviewer 1
General comments (author response in bold)

Fantastic article! Very well done and a great contribution to the literature in the area. The only general comment that I had was to wonder if you might be able to speak to any specific current gaps that you see from your results (i.e. areas of care in the country where this survey may point to inequitable access, beyond Quebec) of potentially to use any changing trends between your 2012 survey and your current survey to speak to trends that may highlight future issues/consideration. I appreciate that this. may be outside of scope for your current paper and as such have recommended acceptance, but I think this extension of your interpretation, either here or in another article, would be a very interesting and extremely helpful contribution, especially from a policy perspective.
Thank you for taking the time to review our article. We appreciate your insightful feedback and comments that allow us to improve our manuscript.
We aimed to capture access disparities that still exist in both Quebec as well as rural areas of Canada in this manuscript. We agree that it is important to highlight further findings and trends. These are outside of the scope for this manuscript and we present detailed findings in regards to different types of abortion care in separate manuscripts that we have submitted elsewhere.

1. PDF Page 4, Line 7 - Is the 1/3 of women having an abortion Canadian women? If so, please specify this. If not, a Canadian statistic would be more informative.
This is a Canadian statistic, which we have now specified in the Introduction. (Page: 30 "One-third of Canadian women will have an abortion in their lifetime.[2]")

2. PDF Page 5, Line 45 - Data Cleaning- were the recorded responses cleaned for potential duplicate replies, given responses were anonymized?
Yes, our data cleaning included removing respondents who appeared to be duplicate entries, based on matching responses to multiple demographic section questions or email addresses. We have elaborated on this in the Methods and reference the manuscript in which we present data cleaning in more detail. (Page: 32 "Data cleaning included removing respondents who did not complete our eligibility confirming questions or who appeared to be duplicate entries.[33]")

3. PDF Page 6, Line 15 - Please include the N for Emergency Room physicians; suggest also editing this sentence for clarity.
Less than 5 emergency physicians responded to the survey. All of them indicated they were registered with the College of Family Physicians of Canada, for which reason we have combined them with the primary care providers. In order to protect their identity we are not reporting their number of respondents. We have revised the Results for clarity.
We have further revised Table 1's legend for clarity. It lists the members of the primary care providers. (Page: 32 "By specialty, 280 primary care providers (PCPs),

145 general obstetrician-gynaecologists (Ob-Gyns), and 40 maternal-fetal-medicine subspecialists (MFMs) responded." Table 1 Legend: "1Primary care providers include 246 family physicians, fewer than 5 emergency medicine physicians, and 30 nurse practitioners")

4. PDF Page 7, Line 52 - how does the proportion of abortions classified as rural compare to the proportion of Canadian women living in a rural setting? Or, if this was meant to be providers (not abortions), same question would be helpful if known.
We added language to the Interpretation comparing the number of abortion provided rurally to the number of reproductive age females living in urban areas (Page: 35 "Rural respondents reported 10.9% of the overall procedures while 23.7% reproductive age females (15-44 years) in Canada lived rurally in 2019.[43]")

Reviewer 2
General comments (author response in bold)

Thank you for giving me the opportunity to review this manuscript. In this article, the authors describe the results of a survey of Canadian abortion providers in 2019 that aims to shed light on the abortion provider workforce across the country. The authors and study team originally launched a similar survey in 2012, and this 2019 iteration provides an important follow up. Specifically, since the 2012 survey, mifepristone (the gold standard of medication abortion) has been introduced in Canada and the product monograph from Health Canada has changed several times. As such, a robust comparison between the 2012 and 2019 data can be useful to help us better understand how mifepristone – and the associated regulatory changes – have impacted the health service delivery landscape of abortion care across Canada. Below, I make some specific suggestions about how this manuscript can be strengthened.
Thank you for your detailed comments that have improved our manuscript.

Introduction:
1. "Each year, approximately 84,000 medical and surgical abortions are obtained in Canada." I know that these data are from CIHI, but we also know there have been longstanding issues with how these data are collected and reported. Per the CIHI dataset, "Data is supplied by provincial and territorial ministries of health, hospitals and independent abortion clinics" – which leaves out primary care providers and a lot of the settings that in this study, the authors document are now providing medication abortion. Prior to the introduction of mifepristone, the CIHI data reported that about 100,000 abortions take place in Canada each year. We've seen a slow but steady decrease in the number of abortions reported to CIHI since mifepristone became available. Is it that 15,000-20,000 fewer abortions are taking place in Canada each year, or simply that fewer are being reported because of the shift in service delivery documented in this manuscript? We can't know for sure either way, but I would encourage the authors to reframe this sentence to be more accurate by specifying that this is the number of abortions that are reported to CIHI, rather than obtained. I think this is especially important to highlight because of the study design. The authors note that their participants reported 58% of the abortions that were reported to CIHI, but I don't think that the CIHI denominator is the appropriate comparison point here. Did the survey ask participants whether they voluntarily reported their abortion provision to CIHI or their respective provincial/territorial ministries of health? After reviewing this manuscript, I think that it is quite possible that a proportion of respondents that were included in this survey did not report to CIHI, which again, is important for our understanding of how the

results of this survey are (or are not) representative of the overall abortion workforce in Canada.
Thank you for raising this important point. We share your concern that the number of abortions reported by CIHI is not capturing all abortions provided in Canada; especially not abortions provided by primary care providers. We did not ask our respondents whether they reported their abortions to CIHI or their respective provincial/territorial ministries of health.
Therefore, we have revised the first sentence in the Introduction to clearly state we are citing the number of abortions reported to CIHI, and not all abortions in Canada. Additionally, we removed the sentence in the Interpretation that compares the reported abortions in our manuscript to those reported by CIHI.
(Page: 30 "Each year, approximately 84,000 medical and surgical abortions are reported to the Canadian Institute of Health Information.[1]")

2. "One third of females will have an abortion in their lifetime." I find the use of "females" in this sentence as a noun rather than an adjective to be quite jarring to read. Additionally, the referenced study is specifically about the Canadian context so that is important information to include.
We have revised the sentence to address your concerns, including specifying that this is a Canadian statistic. (Page: 30 "One-third of Canadian women will have an abortion in their lifetime.[2]")

3. In the introduction, the authors describe the landscape of abortion care in 2012 to help contextualize abortion provision before the approval of mifepristone. However, it is not clear why there is a focus on 2012. The authors either need to explain why 2012 is an important comparison point or frame the introduction more generally. Based on the methods section, it seems that this survey is a follow up from a previous version of the survey that the authors launched in 2012. Introducing this earlier in the manuscript would be beneficial and help readers to better contextualize why this particular data collection is important.
Thank you for this suggestion. We have added language to introduce our 2012 survey earlier in the manuscript. (Page: 30 "According to our first Canadian Abortion Provider Survey (CAPS) in 2012, abortion care in Canada was provided by fewer than 300 physicians….")

4. "We hypothesize that these changes have the potential to positively impact abortion care, especially office- and primary care-based MA, and to decrease urban-rural access disparities." Quality of care is not the same as access to care, and the current phrasing of this hypothesis is a bit unclear about what exactly you are referring to. I suggest that the authors rephrase this for clarity, and if the hypothesis is specifically about access and service delivery sites, that should be specified.
Thank you. We have implemented your suggestion. We focus on quality of clinical abortion care in separate manuscripts, and agree that the focus of this manuscript is on access to care. (Page: 30 "We hypothesize that these changes have the potential to facilitate provision of abortion care, especially office- and primary care-based MA, and rural abortion care.")

5. The authors state their hypothesis which is logical but is not something that can actually be assessed with this study design and these data. I think that more clearly articulating the study aims and contextualizing why that is important would strengthen the introduction of this manuscript. Similarly, the authors state that these data are

“important for educational and policy work” but don’t really explain why or come back to this in the discussion/interpretation section.
We have reworded our hypothesis to more closely match our aims and study design.
The Interpretation includes examples of how our data are important for knowledge translation and education. We added language to the Interpretation to explain how our data can support educational and policy work (Page: 30 - Introduction: “We hypothesize that these changes have the potential to facilitate provision of abortion care, especially office- and primary care-based MA, and rural abortion care.” Pages: 48 - Conclusion: “Our data can inform evidence-based regulations, policies and education to improve equitable access to high quality abortion care across Canada, including in Quebec.”)

6. “Evidence assessing the impact of these changes and their knowledge translation into practice is limited.” The current study cannot actually assess the impact of the changes that the authors are talking about. Because the way that the research aims are written is currently a bit muddled, I urge the authors to be cautious with the language that they use in this section and to specify whether they are commenting on the available research more broadly or if they are saying that this study intends to fill this gap. However, although this study can give us related findings and help us build up a body of evidence about how service delivery patterns have shifted, the study design limits the assessment that we can carry out with these data.
This is an exploratory study that contributes to the body of evidence that will fill the research gap.
We have revised the language in the Introduction paragraph to improve clarity and not overstate what we are able to assess with a national cross-sectional survey. (Page: 30 “We hypothesize that these changes have the potential to facilitate provision of abortion care, especially office- and primary care-based MA, and rural abortion care. Documentation of the Canadian abortion workforce following these changes and their knowledge translation into practice is limited.22-24 We conducted a national survey of abortion providers in Canada aiming to explore the characteristics and distribution of the workforce and the services they provide.”)

Methods:
7. “We modified our 2012 survey instrument,3, 9, 29 incorporating latest evidence and expert opinions, to address our study aims.30” I’m not clear why the citations are separated out this way. As well, can you provide further detail about what was modified from the 2012 version? This seems like very important information for readers to help us better understand the implications of the findings.
Our citations 3, 9, and 29 in our originally submitted manuscript refer to our 2012 instruments, while citation 30 refers to a published abstract that details the survey instrument development and piloting. As we agree that the revisions between the 2012 and 2019 survey would be of interest to readers, we have recently submitted a manuscript detailing this process. To capture that, we modified the Methods and provided the appropriate citation. (Pages: 30-31 “To address our study aims we adapted our 2012 survey instrument[3, 9, 26] and incorporated latest evidence and expert opinions using a modified Delphi method followed by piloting.[27-30] We describe the development of our survey instrument in detail elsewhere.[27]”)

8. Can you include more information about the translation framework and process that was used? Did the professional translators use an iterative process? Were the French

and English versions back translated in order to ensure consistency between the two versions of the survey?
We professionally translated the survey into French, and the Francophone investigators on our team reviewed the French survey for correct translation of medical terminology and relevance for Francophone respondents. In an iterative process the Francophone and English speaking investigators adjusted questions until they were clear and matching in both languages. We describe these details in a separate manuscript on the survey development that we have submitted for publication and that we are now referencing in the Methods. (Page: 31 "We describe the development of our survey instrument in detail elsewhere.[27]")

9. How long did it take the average user to complete the survey?
a. Upon reviewing the figures, I see that this is specified in a table, but I think listing it in the text would be helpful for readers.
We have added language to the Methods (Page: 31 "It took respondents between 30-80 minutes to complete the survey.")

10. Additionally, because this is a bilingual survey, how was it decided who received the English or French version of the survey? Did participants get to choose their survey language or was it determined through some other process?
All recruitment materials contained links to both the French and English versions of the survey.
Many of our recruitment partners recorded the language preferences of their members, and were able to send the appropriate invitation. Other recruitment partners sent out the invitation in the language the majority of their members would speak.
We communicated with hospital and clinic administrators who were distributing our survey link in their preferred language (English or French).
We added language to the Methods. (Page: 31 "To reach potential participants, we distributed bilingual generic survey links through multiple collaborating healthcare professional organizations, including….")

11. "We employed a modified Dillman technique to maximize response rate, which included recruitment partners emailing survey reminders one, two, and four-six weeks after the initial invitation was distributed." What is meant by "four-six weeks" here?
In total, each of our recruitment partners distributed 4 survey invitations. They sent the final invitation 4 to 6 weeks after the initial invitation was sent. This flexible approach allowed each recruitment partner to send the final invitation at a convenient time depending on their preferences/schedule.
We revised the Methods for clarity. (Page: 31 "We employed a modified Dillman technique to maximize response rate, which included recruitment partners emailing survey reminders one, two, and four to six weeks after the initial invitation was distributed.[32]")

12. Can you explain what was considered a non-eligible response and how fraudulent responses were identified?
As per Editorial Comment # 2 and Reviewer 1 Comment # 2, we have added more details on both non-eligible respondents and fraudulent responses in the Methods. (Pages: 31-32 "As this was a web-based, anonymized survey with recruitment via distribution of a generic survey link that offered financial incentive we screened all incoming responses for fraud using non-sensical answer combinations in the

demographics. After we detected potential fraud, we adapted and combined multiple validated fraud detection components into a complex algorithm, details described elsewhere.[33] Data cleaning included removing respondents who did not complete our eligibility confirming questions or who appeared to be duplicate entries.[33]")

13. I think that the information detailed underneath Figure 1 about how people who did not complete the survey were still included in analysis should be specified in the methods section.
Please see our response to the similar Editorial comment #3. We have revised Results and Figure 1 legend for clarity. (Pages in Results: 32 - "The response rate for each question was greater than 60%. The denominator for each reported percentage consists of the number of respondents who answered that question." Legend to Figure 1: "We included questions that were not answered by all respondents in the analysis. The response rate for each question was greater than 60%. The denominator for each reported percentage consists of the number of respondents who answered that question.")

Results:
14. Did you collect data about provider race/ethnicity? If so, I would be interested to see that reported on. If it wasn't included in the survey questions, I would be interested to know why and urge the authors to consider including a related question in future investigations
We did not collect data on provider race/ethnicity as this information had not been collected in prior iteration of the Canadian or U.S. survey instruments. We agree that this information might be useful in a future survey.

15. "Among respondents, 83.4% (388) provided first trimester MA, 99.4% of which used mifepristone, 47.1% (219) provided first trimester surgical abortion, 23.4% (109) provided second trimester surgical abortion, and 24.7% (115) provided second/third trimester MA." For clarity, I would suggest splitting this sentence describing the kinds of abortion care provided by participants into two sentences. The first sentence can focus on provision of first trimester MA.
Thank you for your suggestion. We have split up the sentences, with the second focusing on first trimester MA. (Page: 33 "Among respondents, 83.4% provided first trimester MA, 47.1% first trimester surgical abortion, 23.4% second trimester surgical abortion, and 24.7% second/third trimester MA (Table 1). Of first trimester MA respondents, 99.4% used mifepristone; few reported using methotrexate-misoprostol or misoprostol alone.")

16. What other medication abortion regimen did participants report using aside from mifepristone? I am assuming it's methotrexate/misoprostol but I would be interested for this to be specified in the text.
Correct, few respondents reported using methotrexate-misoprostol or misoprostol alone in some cases. We have added this information to the Results. These results are presented in more detail in our separately submitted manuscript of first trimester medical abortion. (Page: 32 - Of first trimester MA respondents, 99.4% used mifepristone; few reported using methotrexate-misoprostol or misoprostol alone.")

17. "First trimester MA contributed to 27.7% of all reported abortions …" 'Contributed' seems like an inappropriate verb choice in this sentence. Maybe "accounted for"?

Thank you, we have implemented your suggested change. (Page: 32 “First trimester MA accounted for 27.7% of all reported abortions…”)

18. “Eighteen respondents travelled to a second province to provide care; 38.9% to the Territories.” This sentence is unclear to me because it describes one subset of the sample with a number and the other subset with a percentage, but I am not sure what the denominator of the percentage is. Is it 38.9% of the 74 respondents who travelled to a second location, or of the 18 who travelled to another province to provide care?
You raise a good point. We have revised the sentence for clarity. (Page: 34 “A few (3.9%) respondents travelled to a second province to provide care; 38.9% of those to the Territories.”)

19. How were “rural areas” defined and categorized? Were you using a Stats Can definition or something else? I assume that it is the facilities that were classified as rural or urban, rather than participants, but this not totally clear from the first sentence in the “Rural versus Urban Providers” paragraph.
a. Upon reviewing the figures, I see that anything outside of a CMA was classified as “rural”. I don’t think the authors necessarily need to address this in the manuscript, but I would be interested to know if the authors see any potential limitations associated with this categorization.
We asked respondents to report the first three digits of their primary practice’s postal code. Their postal code refers to whatever their primary practice was; for some a private office for some a facility outside of a hospital, for some a hospital. We defined urban providers as those located within Statistics Canada’s defined census metropolitan areas (CMA).50 and indicate so in the footnote of Table 3. During data analysis, we discussed among co-authors that this definition limits the further differentiation between rural and remote areas. To be able compare our results to our 2012 survey and other publications we opted to keep the Stats Can definition.

20. “SOGC clinical practice guidelines were followed by more than 90% of respondents across all specialties (Table 1) and in most regions (Table 2).” It seems important to specify that this is what participants reported; this study cannot evaluate whether or the extent to which these guidelines were actually followed. I also think that this discussion of guidelines seems a bit untethered in the results because the authors don’t explain what the guidelines are related to. Understandably, the full extent of the guidelines is beyond the scope of this manuscript, but including information about the general domains that the guidelines touch on could be helpful to facilitate readers’ understanding.
Thank you for raising this point.
We have ensured the Interpretation and Table indicate that this is responded reported adherence to the national clinical abortion practice guidelines. We have removed the paragraph in the Results elaborating on guidelines to comply with the word count limitations after making the other requested modifications to the manuscript.
We agree that the extent of reported guideline adherence is beyond the scope of this manuscript. We report on guidelines specific clinical care in our separate manuscripts on clinical care. (Page: 35 “Reassuringly, 95% of participants reported following the SOGC guidelines for abortion care.” Tables 1 and 2)

21. Figure 2 is very hard to understand because three of the columns have the same label of “outside hospital”.
As per Editorial Comment #14, we have modified Figure 2 to more cleanly separate the sections of the bar graph. Each of the “outside hospital” labels is associated with a type of care (e.g. first trimester MA), listed directly below. (Figure 2.)

Interpretation:
22. “The vast majority (83.4%) provided first trimester MA, half provided first trimester surgical abortion and a quarter second trimester surgical and second/third trimester medical abortion services respectively.” This sentence is confusing and some additional punctuation and words could help to add clarity to it.
We have revised this sentence based on your suggestions. (Page: 32 “Among respondents, 83.4% provided first trimester MA, half provided first trimester surgical abortion, and a quarter second trimester surgical and second/third trimester MAs respectively.”)

23. “As in our 2012 survey, the highest proportion of respondents were from the most populous provinces: BC, Ontario and Quebec, and roughly in proportion to provincial population.” Can the authors please clarify was proportional to the provincial population and what this means? I’m not sure if they are referencing the number of providers or the number of procedures in proportion to the provincial population.
We are referring to the number of providers in that sentence and have revised the sentence for clarity. Another sentence in the Interpretation refers to the number of procedures (Page: 34 “As in our 2012 survey, the highest number of respondents were from the most populous provinces: BC, Ontario and Quebec, and roughly in proportion to the provincial population.[3]” Page: 35 “Rural respondents reported 10.9% of the overall procedures, while 23.7% reproductive age females (15-44 years) in Canada lived rurally in 2019.[43]”)

24. When describing the “rejuvenation” of the abortion workforce, can the authors make some more specific and direct comparisons to the 2012 findings?
Rejuvenation refers to the high proportion of our survey respondents reporting less than 5 years of experience in abortion care, rather than in comparison to our 2012 data. This data was not reported in 2012 and we therefore cannot compare it to 2012.

25. “Almost all of our respondents (99.4%) reported implementation of mifepristone for first trimester MA.” This sentence is a bit confusing. Can you clarify that you are referring to those who provided first trimester MA care, not 99.4% of the overall sample? To me, “implementation” also seems like it might not be the best word choice here, but I leave that up to the authors and editors.
We have revised the sentence for clarity. (Page: 34 “Almost all of our first trimester MA respondents (99.4%) reported use of a mifepristone regimen.”)

26. “This supports our hypothesis 22, 23that the arrival of mifepristone first trimester MA and removal of restrictive regulations could move abortion care into office-based, primary and comprehensive reproductive/healthcare settings.” Indeed, this is a possible and likely interpretation of your findings, but I think this needs to be presented in a more tempered way and presented as a possible interpretation of the findings rather than “supporting the hypothesis”. As I mentioned above, the articulated hypothesis seems

mismatched with this particular study design, so this needs to be discussed in a much more nuanced way.
We have revised the Interpretation to temper our statement. (Page: 34 "The arrival of mifepristone first trimester MA and removal of restrictive regulations likely facilitated the move of abortion care into office-based, primary and comprehensive reproductive/healthcare settings.")

27. The discussion section seems lacking in terms of a meaningful comparison between the 2012 and 2019 data. What has changed? How has the introduction of mifepristone changed the service provision landscape of abortion care in Canada? This seems to be the important takeaway. The authors also discuss the potential of mifepristone to reduce urban/rural disparities in access, but how do the 2019 data compare to the 2012 data? We see a higher proportion of medication abortion procedures in rural areas, but it's possible that these same providers were previously providing instrumentation abortion, in which case, the introduction of mifepristone has not reduced disparities in access. In this vein, I think the authors need to be careful throughout the manuscript not to overstate the implications of the current study.
The aim of the 2019 survey was to explore the abortion care workforce in Canada after the implementation of mifepristone, allowing NPs to provide abortion care and clinical guideline changes which occurred after the 2012 survey. The 2012 survey primarily recruited abortion clinics/facilities while the 2019 survey primarily recruited individual clinicians in order to capture the anticipated increased primary care workforce. This difference in recruitment limits the degree to which we can compare 2012 and 2019 data. Our data analysis and interpretation of the 2019 data focused on our internal consistency and other Canadian literature.
As we indicate in response to prior comments we have modified the manuscript in order to highlight the exploratory nature of this study and not to overstate its implications.

28. As I mentioned above, I would like to see the authors return to (or expand on) the idea of how these data might be useful to "inform future educational and policy work".
Please see our response to your comment 5 and related revisions.

29. "Changes to the regulations and guidelines for abortion provision, especially the arrival of mifepristone and subsequent removal of restrictive regulations in Canada, have been associated with an increase in the workforce, an increase in first trimester MA and a diffusion of care to primary care settings and particularly to rural areas. Evidence-based regulations, policies and education furthering these changes will continue to be instrumental to improve equitable access to high quality abortion care across Canada, including in Quebec." The conclusion section needs to be tempered and pulled back. This is one possible interpretation of your findings, but this is not something that can be ascertained with the current study design.
We have revised our Conclusions to temper and not overstate our results. (Pages: 36-37 "Our survey results align with our hypothesis that changes to the regulations and guidelines for abortion provision, especially the arrival of mifepristone and subsequent removal of restrictive regulations in Canada, have facilitated the provision of first trimester MA and a diffusion of care to primary care settings and particularly to rural areas. Our data can inform evidence-based regulations, policies and education to improve equitable access to high quality abortion care across Canada, including in Quebec.")

Copy-editing:
30. “From July to December 2020 we conducted …” Missing a comma
Thank you, we have added a comma. (Page: 30 “From July to December 2020, we conducted a national survey of healthcare professionals who provided abortion services in 2019 (Appendix A: Study protocol).”)

31. Table 3: Different fonts used in the table
We have updated Table 3 so all font is Times New Roman. (Table 3.)

Once again, thank you for giving me the opportunity to review this manuscript. I look forward to reading the authors’ responses and revisions, and I would be happy to re-review a future version of this article.
Thank you, we appreciate your time and feedback.