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Title	Virtual care use before and during the COVID-19 pandemic: a repeated cross-sectional study
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Reviewer 1	Dave Ludwick
Institution	Department of Mechanical Engineering, University of Alberta, Edmonton, Alta.
General comments (author response in bold)	I find this paper to be well written and comprehensive within the scope of work that it set out to address - that is it wanted to and was successful in illustrating that virtual care increased as a result of the pandemic and that there was limited differences across various demographic variables. You, the authors, are transparent about the shortcoming that they did not consider quality of the visit in their review. Since they appropriately scoped their paper, I cannot find this to be a shortfall, but would encourage you and the Journal to consider publishing a paper that specifically looks at this topic. **We thank the reviewer for the kind comments, and agree with the assessment about the scope of the paper.** The one very minor request for revision I had was to clarify in your methods section on line 6 of page 5 as to whether the physicians in the study were primary care or speciality. Later on in the paper, you allude to the fact that both types of practitioners were involved, but a bit more clarity up front would help the reader frame the study within the health care context. **We have added a sentence to the methods, under Population, which states, "Patient could have been seen by any type of physician, either a family physician or specialist in Ontario who could bill a virtual visit."**
Reviewer 2	Mamoru Watanabe
Institution	
General comments (author response in bold)	1) For readers unfamiliar with Ontario's billing codes it would be informative if some description could be included of what minimal activities the new billing fees requires, includes, or specifically excludes. For example, does the encounter require physician involvement directly with the patient, or can responsibilities be delegated to a physician assistant, nurse-practitioner, office nurse or office staff? Does it matter who requests the encounter, physician or the patient? Is information sharing through e-mails, Internet, voice-mail a billable encounter? What about monitoring automated electronic transfer of blood sugars levels, heart rates and rhythms, BP, temperatures etc., obtained through wearable devices? **We have added a paragraph to the methods section that details the specifics around the virtual care infrastructure pre-pandemic and during the pandemic to present day. Ontario only allows for a physician to bill a synchronous visit themselves, either using the OTN video visit platform, or their own technology (phone, or video visit). Much of the details of the visit, including the data collection, technology platform or documentation, is left to the discretion of the physician.** 2) Once papers are published, they remain in the public domain and in the archives forever and subsequent researchers will access them for many years. Some research is time-sensitive that is, the context and the environment matters a great deal – so it is important to describe in detail the situation as it was during the study period - if changes occur in subsequent years, such as changing technology, definitions or policies, the research findings can lose value and meaning so the

	half-life of the research relevance is shortened. Inclusion of detailed and precise information could protect against early irrelevance. **We have attempted to put some clear timelines on virtual care use prior to, and during the pandemic, including when the temporary billing codes for virtual care were introduced, and what infrastructure for virtual care existed prior to the pandemic. We acknowledge the significant rise of virtual use occurred during the COVID-19 pandemic, and the long term sustainability of virtual care is uncertain.** 3) Is the right hypothesis being tested? Is the right question being asked? (a) Is the hypothesis that virtual care utilization may be lower for older patients and for those from lower income groups the critical question? The observation that begs the question is what fueled the % increase in older patients, women and 4th and 5th income quintiles (Table 1)? Are these trends directly related to the Covid-19 concerns? **We have removed the hypothesis sentence from the introduction. We agree that the main objective of the paper was to quantify the use of virtual care during the pandemic and its impact on vulnerable groups, which include older adults and lower income patients. In terms of the observation made by the reviewer that there were increases in older patients, particularly women, this is likely due to medical needs of these patient populations, who often have chronic conditions. Higher income quintiles are more likely in urban parts of the province, who saw proportionately larger increases in virtual care use during the pandemic.** (b) Are the % increases in older patients and women (and I presume in lower income neighborhoods) related to residents of long-term care homes? Did the virtual visits happen at the request of formal or informal caregivers or the administrators of these facilities? **Virtual visits may have been done for residents of long term care, but could not have been done at the request of administrators or caregivers, unless they were primary care visits, and these requests were similar to requests for access to primary care for in-person visits pre-pandemic. The billing codes and rules around virtual care were essentially identical to in-person care, meaning specialist visits must be referred from the primary care providers. We unfortunately do not have the proportion of patients who were residents of LTC homes in this study.** (c) If the billing information does not capture the exact locations of the patients, what are the demographics of Covid-19 positive people/hospitalizations/deaths in Ontario? Is there some similarities/overlap with the observations in Table 1? If the answer is yes that is a powerful statement – it justifies and supports the decision-making process that created the new billings. **We do know from prior literature that older patients and those with chronic illnesses are more likely to be hospitalized by COVID. So from that perspective, there is overlap in the populations of patients, particularly with chronic diseases, who used virtual care during the pandemic. We mention that the rationale for the creation of temporary billing codes that facilitate virtual care was to reduce viral transmission, but we have added a clause in the sentence to explicitly state what was implied, which was to protect those**

	patients with chronic illness from getting COVID during a medical encounter. "As the COVID-19 pandemic evolved, payers around the globe have acted with unprecedented speed by altering fee schedules to encourage virtual visits and reduce the risk of viral transmission, and particularly protect those patients with chronic diseases who need ongoing medical attention." 4) As an aside – it may be important to define income quintiles – is 1 the highest and 5 the lowest income categories, which is how I would read it, or is it the other way around? **Income quintile 1 is the lowest income quintile and income quintile 5 is the highest income quintile. We have added this explanation to the results section in the following sentence, "Figure 4 demonstrates that the rise in virtual care use from the pre-pandemic period to during the pandemic was both clinically and statistically similar across neighborhood income quintiles, with quintile 1 being the lowest neighborhood income and quintile 5 being the highest neighborhood income quintile." We have also clarified the quintiles in the Figure.** 5) There may be several potential beneficiaries who might find observations offered by this analysis helpful in their areas of responsibility – family physicians, specialty physicians, provincial health care administrators, healthcare provider organizations, data collectors, healthcare utilization researchers among others. In the course of this study did the authors glean some unexpected insights that might be useful advice as they go forward? Such as improvement or changes in management structures or procedures, enhancements in privacy and confidentiality procedures, security compliance, technology improvements, additional encounter information, recording and storage requirements of the encounter etc? Are there health policy implications that should be considered, addressed? If the answer is yes, these observations, ideas, thoughts, could be included in the Discussion. It will add value to the research. **We thank the reviewer for the suggestion, and a key insight we added to the discussion was the importance (as previously mentioned by the reviewer) of defining and measuring the Quality of the virtual visit encounter, as defined by the IHI's quadruple aim. We should not consider virtual visits differently from all other healthcare interventions, and it should be measured as such. We have added a sentence to the discussion before the limitations section which reads, "Finally, it is critical for us to define and measure the quality of the virtual care visit, defined by the Quadruple Aim. Virtual care should not be treated differently from other elements of the healthcare experience and should lead to a positive patient and provider experience, improved health outcomes and lowered costs."**