

Article details: 2019-0204	
Title	The association between media attention and presentation of vaccination information on Canadian chiropractor's Web sites: a prospective cohort study
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<b>Reviewer 1</b>	Brian Gleberzon
Institution	Canadian Memorial Chiropractic College, North York, Ont.
General comments (author response in bold)	<p>Thank you for the opportunity to review this very interesting manuscript. Overall it is well written, well organized, and focuses on a very important topic in healthcare. The introduction and results are well written. The methodology used in this study was appropriate and well described. There are, however, some minor issues that ought to be addressed prior to publication and, more importantly, the conclusion have to be revised, since they are speculative and most likely incorrect.</p> <p><b>Thanks for the kind feedback, and we agree that causal statements regarding increased media attention and removal of vaccine material on chiropractors' websites are inappropriate. We have made efforts to only describe associations, and to acknowledge that other factors may have played a role.</b></p> <p>Minor issues:  Page 4, line 35-36. The manuscript cites the article by Lameris et al. Although it accurately relates the primary finding that, overall, 83% of CMCC students were in favor of vaccination in general, compared to only 40% as reported by an earlier study by Busse et al, the authors stated a limitation of the Lameris et al study was a high non-response rate of 33% compared to the Busse et al study. I submit this may mislead a reader, since the overall response rate in the Lameris et al study was 43% across all years.</p> <p><b>Our original phrasing was suboptimal. We meant to focus on the response rate among 4th year (graduating) students. We have revised this sentence as follows:</b>  <b>"Re-administration of the same survey in the 2011/12 academic year at CMCC found that 83% of graduating students were in favor of vaccines in general;9 however, the repeat survey suffered from a 33% response rate among graduating students vs. 75% for the original administration."</b></p> <p>It might be helpful to the reader if the authors provided an example of the type of questions used in the WRRT.  <b>We have now included sample questions for each of the 3 domains that the WRRT asks about:</b>  <b>"The 13-item WRRT assesses the quality of evidence (e.g. "Is the Web resource informed by published systematic reviews/meta-analyses?"), transparency ("Are peer-reviewed sources provided for each claim/recommendation?"), and usability (e.g. "Is the information easy to follow?") of online health information, and assigns an overall score ranging from 0% to 100%, with higher scores representing better reporting quality, and a WRRT star rating which ranges from 0 (lowest quality) to 5 (highest quality)."</b></p> <p>I was surprised the authors did not include the date they originally accessed the websites they extracted quotes from on pages 8 through 12. As the authors know, those quotes can be removed at any time, and some are no longer active when I</p>

tried to access them. I would recommend the authors include the date they accessed the website and, since they hopefully screen-shot captured those webpages as a guard against defamation claim, they can state “screen shot capture of original website available upon request”.

**We have provided date ranges for when we retrieved information from websites (e.g. we first identified websites from July 2015 to March 2016, and all websites originally identified were re-visited in April 2019), but we do not have exact dates available. We did not acquire screen shots of websites but did capture representative quotes – several which we have included in our manuscript to illustrate the vaccination-related material that was posted.**

On page 13, line 49-50, the authors state that, because of changes in leadership at the College of Chiropractors of Ontario (CCO), S-015 was not enforced, and cite two news media articles in support of that assertion. This statement is not correct as written. As a Council member of CCO and committee member of the ICRC at that time I can attest to the fact all standards of practice were enforced, as was S-001 as amended. If the authors wish to retain that statement, they must state something to the effect:

“According to some media reports<sup>36,40</sup>, the change in leadership at CCO had two results... [sentence continues as written]”

**We have made the change as suggested.**

Major Issues:

The authors conclude that removal of half of negative portrayals of vaccination from chiropractor’s websites was attributed to negative media attention. This is speculative and most likely incorrect. On the one hand, the only way to actually know why an individual chiropractor removed anti-vaccination content from their website would be to have asked them, something the authors did not do (although they could have). Although the authors attribute the removal of anti-vaccination information to media attention, they offer no data to support this assertion. It is therefore speculative at best. On the other hand, the authors virtually ignore the significance of the regulatory directives issued by CCO in 2019, directives that were much more likely the reason members removed anti-vaccination information from their websites, at least in Ontario. On April 30, 2019, CCO issued a “Professional Advisory on Vaccination and Immunization”. In it, citing outbreaks of measles across Canada, CCO essentially made it an act of professional misconduct to treat patients or advertise on the topic of vaccination; corresponding amendments to S-001 (Chiropractic Scope of Practice) were also approved by Council at that time. The authors reference position statements from the Canadian Chiropractic Association (CCA) and other provincial advocacy associations. An important distinction must be made here. Although CCA and other provincial advocacy organizations issued position statement on vaccination and immunization prior to this, essentially emphasizing that vaccination is out of the scope of chiropractic practice and an important healthcare initiative, advocacy associations have no legislative authority. There is no risk to a member’s licensure if a member chooses to ignore the CCA statement. Similarly, negative media reports do not imperil a member’s ability to practice chiropractic, to post whatever messages they wish to post on social media. By contract, CCO is a regulatory body and breaching a standard of practice is an act of professional misconduct that results in referral to a discipline panel. If found guilty, a member can have their license to practice suspended or revoked. In other words, when a licensing body declares a member shall not do something, it carries with it regulatory weight.

Moreover, during the material time of this study, there were examples of chiropractors who had to resign from important positions or had their license to practice revoked in jurisdictions across Canada. Most famously, Dr Dena Churchill voluntarily resigned from the licensing body in Nova Scotia before having her license revoked, although she was fined \$100,000 by the disciplinary panel who found her guilty of professional misconduct.

One may reasonably speculate that CCO and other chiropractic regulatory bodies across Canada strengthened their standards of practice pertaining to vaccination as a result of negative media attention, and not due to an outbreak of measles as claimed. But that is only speculative. Bearing all this in mind, the authors are left with two options, as I see it.

i. Option one is to state their finding that roughly half of websites that previously contained anti-vaccination information removed it and not provide any theories as to why that happened.

ii. Alternatively, since it is far more likely a chiropractor's behavior changed in response to directives from CCO and other regulatory bodies across Canada, the authors can offer that as a possibility.

They could opine that, despite the fact CCO stated they were responding to measles outbreaks, it is possible the advisory statement and standard of practice amendments to the scope of chiropractic practice were likely in response to media scrutiny in general, and the negative media attention specifically targeting certain Council members of CCO in executive positions (e.g. Drs Peter Amlinger, Cliff Hardick and Liz Anderson-Peacock) who posted anti-vaccination statements on their social media accounts.

**We agree with the reviewer that we cannot make causal attributions; however, our rationale for exploring websites we identified in 2015/2016 again in 2019 was motivated by our suspicion that national media attention may affect posted content on vaccination. If we do not discuss this issue, we cannot explain the rationale for our study. We are in agreement with further clarifying that our study was not designed to explore causation, and to acknowledge that other factors may have affected the websites we reviewed. Accordingly, we have added the following material to our manuscript: "Further, our study is not designed to make causal attributions between media attention and removal of information regarding vaccination from chiropractor's websites, and other factors may have influenced these decisions. For example, on March 14, 2019, the CCO issued a Professional Advisory instructing their members not to offer advice on vaccination; however, this Advisory may also have been influenced by media attention, including negative media attention specifically targeting CCO Council members in executive position."**

Lastly, the authors can now also include a news article by reporters Benedetti and MacPhail published December 4, 2019 in the National Post and refer to a strengthened position statement on vaccination issued by the CCA on December 5, 2019.

**Thank-you for drawing our attention to these recent publications, both of which we have now cited.**

**Reviewer 2**

Gregory Wademan

Institution

<p>General comments (author response in bold)</p>	<p>The first thing that I noticed about the article is the absence of clearly defined objectives in the abstract or introduction. Without a clearly defined objectives, it is hard to understand the purpose of this study without the reader resorting to assumptions about the purpose; in other words, it doesn't address the "so what" factor.</p> <p><b>We agree, and have now revised our study title, the Background and Methods section of our Abstract, and the last sentence in our Introduction section to more clearly convey the objective of our study.</b></p> <p>I found the data as presented credible and within professional standards but I was greatly troubled with the sample size. I understand that this study is restricted to the online websites but are 94 samples adequate for the purpose of this study considering there are over 3000 websites identified in the study? But without clearly defined objectives this is very hard to ascertain.</p> <p><b>We have now made clear throughout our manuscript that among the 3,733 unique websites maintained by Canadian chiropractors, only a minority (4%, n=143) provided information regarding vaccination. These websites do not represent a sample, but the findings after we reviewed the content of all 3,733 websites identified, which we believe represents essentially all English-language websites maintained by Canadian chiropractors in 2015/2016.</b></p>
<p><b>Reviewer 3</b></p>	<p>Simon Dagenais</p>
<p>Institution</p>	<p>Chalmers Research Group, CHEO RI</p>
<p>General comments (author response in bold)</p>	<p>Summary: This manuscript reports on a descriptive analysis of the information provided on vaccination on the websites of chiropractors in Canada.</p> <p>General comments: This manuscript reports on an interesting and controversial topic that is likely to gather attention from many readers. However, it's unclear what it will bring to this topic since the methods used are not scientifically rigorous. The methods are poorly described, the sample size is extremely small, and the ascertainment of information quality using the WRRT tool seems questionable.</p> <p><b>We have further clarified that most chiropractor's websites did not provide information regarding vaccination, and that our study is focussed on the 94 unique sites that did. We have also provided more details regarding the reliability and validity of the WRRT tool.</b></p> <p>The quality of the writing is also mixed, with some sections so short that authors have reduced complex topics to just a few words, making them difficult to understand. Overall, this seems like a graduate student project that should be interpreted as a pilot study to be pursued in a more robust study. As such, it's not likely to be published in a quality peer-reviewed journal.</p> <p><b>The allowable word count for CMAJ Open is 2,500 words. Our manuscript currently sits at 2,490 words, which leaves little opportunity for expansion. If the reviewer was able to provide specific examples of where they would like to see more details, we could explore opportunities to include additional material in an Appendix.</b></p> <p>Specific comments: Abstract (note: comments may also apply to relevant portions of main text)</p>

Title is unclear (eg, why “representation”?)

**We have revised our title as follows to better clarify the objective of our study: “The Association between Media Attention and Presentation of Vaccination Information on Canadian Chiropractor’s Websites”**

Background:

The opening sentence is very short and therefore vague and unclear (ie, it begs the question, “why is vaccination a contentious issue for some chiropractors?”); is there another way to state this less subjectively and vaguely?

**The allowable word count for the structured Abstract is 250 words, which precludes expansion of this background statement. We do provide details in the Introduction section to further describe this issue and present evidence for the prevalence of anti-vaccination attitudes among Canadian chiropractors.**

Methods:

Who is “we”? Why are the methods written this way?

**We refers to ourselves, the study authors. It is our practice to write in the active versus passive voice to clearly convey the responsible parties for each step (e.g. “we followed reporting standards...” vs. “reporting standards were followed...”).**

The methods seem quite vague (eg, how did you generate a database of chiropractors? How did you identify their websites? How was the quality of information assessed?)

**We generated a database of all licensed Canadian chiropractors in June 2015 by extracting details on every member listed in the regulatory College website for each province. For each licensed member, we performed a Google search with variations of their name, clinic name, and location to determine which chiropractors maintained an English-language website. Pairs of reviewers independently evaluated the quality of all vaccination content using the Web Resource Rating Tool (WRRRT). We have included these details in our manuscript.**

I’m not familiar with the WRRRT tool used in this study and think it needs more description since it’s central to the methods (eg, what does it mean to portray vaccination in a positive, neutral, or negative manner? This all seems rather subjective. How does the scoring work? What do the scores represent?)

**We have added the following details regarding the WRRRT:**

**“The WRRRT was developed in response to a 2012 systematic review that failed to identify any existing instrument that was focussed on assessment of the quality of the evidence used to create online information, and was reliable and practical.<sup>24</sup> The 13-item WRRRT assesses the quality of evidence (e.g. “Is the Web resource informed by published systematic reviews/meta-analyses?”), transparency (“Are peer-reviewed sources provided for each claim/recommendation?”), and usability (e.g. “Is the information easy to follow?”) of online health information, and assigns an overall score ranging from 0% to 100%, with higher scores representing better reporting quality, and a WRRRT star rating which ranges from 0 (lowest quality) to 5 (highest quality). The WRRRT has been shown to be highly reliable, with an intraclass correlation coefficient for the total score of 0.994 (95%CI 0.991 to 0.996).<sup>24</sup>**

**The same pairs of reviewers classified each website as providing positive, negative, or neutral information regarding vaccination. Any disagreements were resolved by discussion, or by an arbitrator when necessary.”**

Why were websites revisited 3 years later? Was anything done with the initial results? Were the chiropractors involved interviewed to learn more about the information on their websites and why it could change?

**After we collected our initial data on chiropractors' websites in 2016, there was considerable media coverage of anti-vaccination statements made, and posted on publicly available websites, by some chiropractors. As we had collected information before this media attention emerged, this provided an opportunity to conduct a natural study exploring whether this coverage influenced the publication of vaccination information on these same websites. We did not have ethics approval to contact and interview chiropractors, as we had not contemplated re-visiting websites for alterations to content when we began our study.**

Results:

This study seems to be based on the analysis of content from a nonrandom sample from 1% of chiropractors in Canada; how is this a valid and representative sample of anything? Why is this study worthy of publication in a peer-reviewed scientific journal? At best, this is a pilot study that can be pursued in a larger scale study. This seems like a fatal flaw that should relegate this manuscript to a poster presentation at a small regional meeting. I don't know how this can be rectified without massively increasing the sample size and changing the sampling methods. **We reviewed every English-language chiropractic website in Canada, which was 3,733 websites in total. Thus, our results are completely representative.**

Interpretation:

I would be very cautious about saying the “majority” when the study was based on such a small sample size, especially when the topic discussed is potentially controversial. I don't see how it's useful to extrapolate anything from this sample of websites.

**We did not use a sample of websites, we explored every English-language chiropractic website in Canada. Of the 3,733 chiropractic websites, 143 (4%) contained information regarding vaccination.**

Main text:

Introduction:

Please define “conservative management”

**As the reviewer is no doubt aware, chiropractors provide a wide range of non-surgical, non-pharmacologic therapy, typically including spinal manipulation but often including modalities (e.g. TENS, low level laser, ultrasound, IFC), exercise, education, and sometimes acupuncture and/or supplements and other treatments. Given the word count limit, and the limited relevance of this information to our study, we are hesitant to expand on this issue in the manuscript text but will do so if directed by the Editor.**

The description of the range of providers within chiropractic seems overly broad and is difficult to understand without context

**With the Journal's suggestion to keep the Introduction section to “no more than two paragraphs”, and our current Introduction at 3 paragraphs, we do**

**not feel able to further expand on this issue.**

The statement “Historically, chiropractic has been extremely critical...” should be modified, as an opinion cannot be ascribed to a profession. Perhaps “Historically, some prominent chiropractors have been extremely critical...”?

**We have made this change.**

When authors reference “traditional” practitioners, it’s unclear who they are referencing; is it the “vitalists” from the previous sentence? Is “traditionalist” a good thing? It’s hard for readers to understand this without context. Also, what is meant by “many”? Provide specific numbers.

**In the first paragraph of the Introduction section we define traditional practitioners as analogous to vitalists and define their practice philosophy as “beliefs that malpositioned spinal vertebrae (‘subluxations’) interfere with the nervous system, leading to a wide range of complaints and diseases”. It is not within the scope of our study to provide a critical assessment of traditional chiropractic practice. In the second paragraph we provide the results of surveys that have explored the prevalence of anti-vaccination attitudes among Canadian chiropractors.**

The survey of CMCC students should be described in more detail since it seems to justify the current study (eg, describe the methods, results, analyses, etc.); what is meant by “endorsed vaccination”? What type of vaccination? For which patients? Under what circumstances? I’m not sure a topic this complex can be reduced to such a short phrase.

**Given the word count limit, and the Journal’s direction to keep the Introduction to 2 paragraphs (we are already at 3), we do not feel it is possible to provide the requested details. However, if the Editor would like us to expand on this survey, we would be happy to do so.**

Describe the Alberta survey in more detail.

**Given the word count limit, and the Journal’s direction to keep the Introduction to 2 paragraphs, we do not feel it is possible to provide the requested details. However, if the Editor would like us to expand on this survey, we would be happy to do so.**

It seems somewhat paternalistic to state that “the general public lacks the necessary skill...”; the same statement could likely apply to many health care providers, policy makers, etc., so patients are not unique in this characteristic  
**We have changed “general public” to “consumers”.**

Methods:

It’s unclear why authors state that they following reporting guidelines since these are intended to apply to the manuscript, not to the study methods.

**We have removed this statement.**

Describe the data sources more fully (eg, are all chiropractors in every province members of the regulatory colleges? Do all colleges share the names of all members?)

**Any chiropractor that is legally practicing in Canada must be registered with their provincial College, and each College website provides a search page to identify practitioners. We have provided each College’s “find a chiropractor”**

**website in our reference section.**

Describe the methods used to search more fully (ie, provide sufficient details that if someone else was attempting to replicate your methods, they would understand how to do so).

**We have included the following details on how we acquired each registered chiropractor in each province: “We generated a database of all licensed Canadian chiropractors in June 2015 by extracting details on every member listed in the regulatory College website for each province by using the search engine on their ‘find a chiropractor’ page and leaving all fields blank so that every member was listed.”**

Describe the website search function more fully (ie, did all websites have a search function? Did the authors ascertain the quality of that search function?)

**All websites provided a search function, and we have referenced each site in our reference section. We compared our results with estimates for the CCA regarding the number of practicing chiropractors in Canada, which were concordant. We have added the following statement to our Strengths and Limitations section:**

**“It is possible that our search of chiropractic College membership lists did not identify all practitioners; however, we identified 9,131 chiropractors and the CCA advises there are approximately 9,000 licensed chiropractors practicing in Canada,<sup>52</sup> suggesting our results were comprehensive.”**

More information is needed about the WRRT; it’s unclear how it can assess the quality of information on a complex topic. Perhaps authors can explain how it has been used in similar studies in the past?

**We have now added details regarding the WRRT to our Methods section.**

How did authors search for national news stories about vaccination and chiropractic?

**One of us (JWB) is a chiropractor and receives media alerts from the College of Chiropractors of Ontario when negative stories appear in the lay press (with some guidance about how to respond if approached by the media). We also used Google to search for “chiropractic” and “vaccination” with the News filter to explore for any additional stories. Again, we are concerned about the word count, and we do list quite a few news articles in our reference section; however, we can expand on this in our manuscript if directed by the Editor.**

Results:

It’s unclear why long passages from websites are included in the results section. These sections make the results section difficult to follow. Perhaps these are better suited to a letter to the editor or other venue?

**The results of our study rest heavily on our assessment of material provided on websites. Thus, we feel it is essential to present quotes from websites to provide readers with confidence in our interpretation.**

Interpretation:

What do authors mean by “critical”? Important? Or against?

**We have changed “critical” to “negative” to clarify our meaning.**

	<p>It's unclear why authors are discussing administrative changes within the CCO in the context of this article. Unless they interviewed chiropractors and asked them about the impact of CCO changes on the content of their websites, this seems like speculation.</p> <p><b>Much of the media attention has focussed on the lack of attention by chiropractic College's to anti-vaccination material on some of their member's websites, and highlighted anti-vaccination statements by senior executive members of some Colleges. Thus, this issue is relevant to our study. We have deleted the following material where the relevance was less clear:</b></p> <p><b>"More recently, the CCO has proposed an amendment that would disallow any academic chiropractor from assuming a leadership position within the CCO,44,45 perhaps as a way to guard against competing views. These challenges have resulted in speculation as to whether the chiropractic profession is capable of self-regulation,45,46 and some chiropractic opinion-leaders have called for splitting the profession into two factions: evidence-based chiropractors and traditional chiropractors."</b></p>
<b>Reviewer 4</b>	Heather Shearer
Institution	Department of Graduate Education and Research, Canadian Memorial Chiropractic College, Toronto, Ont.
General comments (author response in bold)	<p>The authors have done a nice job with this descriptive study, especially by presenting both descriptive statistics as well as the type and quality of vaccination statements posted on a small number of chiropractors' websites. This work addresses an important public health issue, whereby the benefits of vaccination are supported by high quality scientific evidence. This study highlights the need for further evidence-based education on this topic to a minority of chiropractors in Canada.</p> <p><b>We thank the reviewer for their kind feedback.</b></p> <p>Suggested Edits:</p> <p>Abstract: Consider modifying your interpretation (line 45-7). Can you be certain the national media attention was the only cause of the removal of online material? There may be other potential causes. For instance, some provincial licensing bodies (e.g. in B.C.) have implemented automated monitoring of registrants' websites to ensure they comply with the efficacy claims policy. Changes would also apply to the Interpretation section in the body of the manuscript.</p> <p><b>We have been careful to highlight that our study was only designed to explore associations, and not causation. We have also added the following material to our Interpretation section:</b></p> <p><b>"Further, our study is not designed to make causal attributions between media attention and removal of information regarding vaccination from chiropractor's websites, and other factors may have influenced these decisions. For example, on March 14, 2019, the CCO issued a Professional Advisory instructing their members not to offer advice on vaccination;53 however, this Advisory may also have been influenced by media attention, including negative media attention specifically targeting CCO Council members in executive position 37."</b></p> <p>Introduction: 1. Several of the references in the introduction regarding chiropractors' viewpoints on vaccination are from the early 2000s. There is likely no or minimal similar research in this population but I suggest the authors consider</p>

noting this (perhaps at the end of the paragraph – line 42).

**We have added the following sentence to our Introduction section to acknowledge this issue:**

**“Empirical evidence regarding anti-vaccination attitudes among Canadian chiropractors is limited.”**

A transition sentence to the final paragraph and the importance of vaccination as a public health issue should be included. 2. Pg. 5, Ln 45.

**We are concerned about word count, as our original submission was already at the limit (2,490 vs. the 2,500 limit), and other additions requested by the Editor and reviewers have increased our current word count to 2,739. We also feel that the readership of CMAJ Open will be aware of the importance of vaccination as a public health issue.**

Methods:

Can you please clarify how you determined what statements were +ve, neutral, -ve and/or provide examples. For instance, is a statement such as 'we encourage patients to speak to their medical doctor or pharmacist regarding vaccinations and immunizations' considered neutral or positive? You provide examples later in the thematic analysis, but methodology had to be established a priori in determining how to classify the statements.

**Encouraging patients to seek out information would be a neutral statement. We conducted calibration exercises to ensure reliability between reviewers; however, our reviewers did not have trouble assigning themes as positive, neutral, or negative. Statements advising that vaccination was effective or acknowledging that the benefits exceed the possible harms were classified as positive, statements directing patients to seek out information were classified as neutral, and statements that vaccination caused autism, cancer, crib death or dementia were classified as negative. We can provide this clarification if directed by the Editor.**

Pg. 5 - Can you provide Kappas with 95% CIs for ratings of evidence from websites (update methods & results sections accordingly).

**We completed all subjective steps in duplicate (e.g. screening of websites, assessment of vaccination content for themes and quality), but did not calculate a statistical measure of agreement.**

The authors state they completed data abstraction and subsequently there were national news reports re anti-vaccinations statements (Pg. 6, Ln 47). Since this couldn't have been anticipated, what was the original aim/research question? It wouldn't have been to 'explore the impact of media...' as stated on pg 4. The research question, aim and analyses may have changed from the original intent - this needs to be clarified.

**The reviewer is entirely correct. We had not anticipated the media attention to the issue of chiropractors and vaccination when we began our review, and we revised our study in response. We have now made this explicit in the final sentences of our Introduction section:**

**“In 2016, we reviewed the websites of Canadian chiropractors for content regarding vaccination and, subsequently, there was considerable media attention regarding this issue. This provided an opportunity to conduct a natural study exploring whether media attention was associated with changes to vaccination material on the websites we identified.”**

Interpretation:

Pg. 14, line 10: Transition sentence is needed here. Or, consider making this its own paragraph and expanding with updated information from the CCO and news publications from mid-late 2019.

**We have created a new paragraph and included updated references from both the CCA and news publications that appeared in Dec. 2019.**

Authors should consider elaborating how this study reflects only chiropractors' views of vaccination posted on websites and the challenges (but importance) of obtaining accurate data regarding typical practice patterns on this topic (e.g. verbal communication during DC-patient interactions).

**We have added the following statement to our Limitations section to address this issue:**

**“Finally, our study only captured vaccine information published by chiropractors on their websites, which does not represent the frequency of discussion with patients on this topic.”**

Conclusion: This is a strong statement to make without directly ascertaining reasons for change in website content from each of the involved practitioners. You cannot be certain that media coverage was the only reason for changing content, despite likely being a/the major contributing factor. Some possible other reasons include DCs taking CE courses (and understanding the evidence-based vaccination information), having new practitioners join their team/practice and requiring the website be update, choosing to comply with regulatory bodies' standards of practice,...).

**We agree and have added the following material to our Interpretation section:**

**“Further, our study is not designed to make causal attributions between media attention and removal of information regarding vaccination from chiropractor’s websites, and other factors may have influenced these decisions. For example, on March 14, 2019, the CCO issued a Professional Advisory instructing their members not to offer advice on vaccination; however, this Advisory may also have been influenced by media attention, including negative media attention specifically targeting CCO Council members in executive position.”**

Please replace 'associated' with more appropriate wording on Pg. 3, line 45

**As our study was not designed to determine causation, we feel that “association” is the appropriate term.**

(abstract) and pg. 15, line 10 as no statistical tests to measure association were used. Consider trend, indication, results suggest,...

**We report that, following media attention, approximately half of all vaccination content on chiropractors’ websites was removed. We feel that “association” is the appropriate term as we cannot claim causation.**

Minor comments:

Table 2 heading: missing wording at end of heading

**Thank-you. We have corrected this omission.**

Appendix 2: suggest slight change in 2nd column heading title to 'as of' vs. 'in'

since you don't know when the content was changed between 2016 to 2019  
**We have made this suggested change.**

General comments: Table 3 is especially helpful in illustrating the information and viewpoints (within themes) put forth by this small group of chiropractors. This will help guide regulatory bodies, national and provincial associations where to direct efforts in educating their membership and adhering to scope of practice.

**Thanks for making this point, which we agree with.**

Strengths:

-Sampled the entire population of DCs with websites

-methodology was generally well described

-The authors used a reliable tool to assess evidence on DCs websites

**Thank-you for the kind feedback.**