

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

|                            |                                                                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TITLE (PROVISIONAL)</b> | Factors influencing participation in physical activity for persons living with dementia in rural and northern communities in Canada: A qualitative study |
| <b>AUTHORS</b>             | Freeman, Shannon; Pelletier, Chelsea; Ward, Kristin; Bechard, Lauren; Regan, Kayla; somani, salima; Middleton, Laura                                     |

### VERSION 1 – REVIEW

|                        |                  |
|------------------------|------------------|
| <b>REVIEWER</b>        | Wheatley, Alison |
| <b>REVIEW RETURNED</b> | 03-Feb-2022      |

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GENERAL COMMENTS</b> | <p>Thank you for the opportunity to review this interesting and well-written paper. I have provided some comments and suggestions which I believe would strengthen it.</p> <p><b>Title and abstract</b><br/>'Rural and northern communities' seems to be a Canadian term with a particular meaning and as an international reader, the implications were not immediately obvious. I felt that either some geographical specificity (e.g. 'Canadian rural and northern communities') or the inclusion of one of the explanatory terms from later in the paper (e.g. remote, sparsely populated) would be helpful at the very start.</p> <p><b>Introduction</b><br/>Could you give some further information and explanation of the social-ecological model that is being applied in this paper? This would be helpful for making sense of the diagrams that come later.</p> <p><b>Methods</b><br/>Thank you for the inclusion of the clearly completed methods checklist. However, there were a couple of areas that could be clarified further.<br/>a) More detail is needed on data saturation (or data adequacy, if this term is preferred)<br/>b) Researcher characteristics were given for SF but not other members of the research team involved in data collection and analysis. Ideally this information should be incorporated into the text rather than only the checklist, along with some reflexive discussion of how this impacted on the research.</p> <p><b>Results</b><br/>a) Was there a reason for not assigning pseudonyms/participant numbers to quotations? Typically this provides the reader with a way of reassuring oneself that the analysis is not overly reliant on a small number of participants, which is not available here.<br/>b) The figure and table should be more clearly explained; for example, I was unsure what the various levels of the figure</p> |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>indicated, and whether the mitigation strategies described in the table were in use by participants or hypothetical/theorised based on challenges. They should also be better integrated with the text, perhaps through harmonising the subheading titles with those in the figure?</p> <p>Discussion</p> <p>a) I believe it is usual for BMJ Open papers to include very brief points on strengths and limitations after the abstract with a more considered version in the discussion. There is no section on strengths and limitations in the discussion for this paper so it may be that the points at the beginning should be adjusted for this purpose.</p> <p>b) How generalizable do you feel the findings are to other settings? Are there implications for rural and remote communities in other countries?</p> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                        |                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>REVIEWER</b>        | Yatsugi, Harukaze<br>Kyushu University, Department of Behavior and Health Sciences,<br>Graduate School of Human-Environment Studies |
| <b>REVIEW RETURNED</b> | 14-Feb-2022                                                                                                                         |

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GENERAL COMMENTS</b> | <p>I had some comments that the authors may like to consider.</p> <p>1- Page5:Introduction:<br/>When compared to age-matched controls, persons living with dementia were found to spend more of their time engaged in sedentary behaviours[11] and were less likely to meet physical activity guidelines.[12]<br/>According to this sentence, what do you mean? And, what do you insist?<br/>I strongly suggest that you have to consider and discuss not only physical activity but also sedentary behaviors along with your study results.</p> <p>2- Page7: Introduction:<br/>Persons living in rural and northern communities face increased barriers to physical activity (e.g., transportation, snow/ice) and have fewer opportunities to engage in physical activity through specialized programming,[22] contributing to an increased risk of noncommunicable disease and disability compared to their urban counterparts.<br/>According to this sentence, what do you mean?<br/>You should describe the study protocol precisely because physical activity is strongly affected by the season (when the study is conducted).</p> <p>3- Page9; Results<br/>You should write (explain) in order which you describe in Table. I can't understand what you explain about the item (level).<br/>You had better describe the paragraph as level.</p> <p>4- Page21; Discussion<br/>You should write (explain) along with the results.<br/>I can't understand what you explain about the item (level).<br/>You had better describe the paragraph as level.</p> |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                                                            |
|--|------------------------------------------------------------------------------------------------------------|
|  | Finally, I strongly suggest that you improve the description to refer to previous epidemiological studies. |
|--|------------------------------------------------------------------------------------------------------------|

|                        |                                                                             |
|------------------------|-----------------------------------------------------------------------------|
| <b>REVIEWER</b>        | Kosurko, An<br>University of Helsinki Faculty of Social Sciences, Sociology |
| <b>REVIEW RETURNED</b> | 21-Feb-2022                                                                 |

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GENERAL COMMENTS</b> | <p>Thank you very much for this well-written article on an important and timely topic! My comments pertain to the claims being made as they relate to the specific evidence that you provide in your results section. I recommend a few things for your consideration below and I have attached a pdf of the article with comments and questions for your consideration.</p> <p>Please double check that the conclusions in your abstract line up with the conclusions in the article and that your results sections are titled appropriately for findings.</p> <p>I suggest a sentence or two explaining how the social ecological model works and how it is applied in the study.</p> <p>For a clearer definition of your outcomes, I recommend some further thought on the choice of subtitles for each section, to look at what each piece of evidence is contributing to your claims. How does this section relate to the table that you have provided?</p> <p>There are some recommended references for you to consider with regard to the rural context of your study and how it may contribute to your framing of your findings and your discussion. Is "rural and northern context" both the context of and a finding (i.e. influencing factor) in your study? Is this a problem? What is meant by "Rural and Northern" as opposed to simply rural for the purpose of your study?</p> <p>For clearer presentation of results, check for overlaps in themes, particularly when it comes to "lack of resources/ referral systems/ communications processes) are you organizing the findings by theme, level or type of institution (i.e. health systems / community / individual)</p> <p>With regard to limitations of your study, perhaps you could open the discussion about unique rural contexts and circle back to the notion that rural is not a one-size-fits-all descriptor, as you introduce in the literature review. This may strengthen your claim that context is an important factor. What is it about the rural context in your study that is unique that strengthens this claim?</p> <p>Thank you for the opportunity to make comments on this thoughtful article. I hope these comments are useful.</p> |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**VERSION 1 – AUTHOR RESPONSE**

|                                                                                                                                                                        |                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reviewer: 1. Dr. Alison Wheatley</b>                                                                                                                                |                                                                                                                                                                                  |
| Title and abstract<br>'Rural and northern communities' seems to be a Canadian term with a particular meaning and as an international reader, the implications were not | <ul style="list-style-type: none"> <li>• Thank you for your comment. We added "in Canada" as suggested to the title and noted that both communities are at a distance</li> </ul> |

|                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>immediately obvious. I felt that either some geographical specificity (e.g. 'Canadian rural and northern communities') or the inclusion of one of the explanatory terms from later in the paper (e.g. remote, sparsely populated) would be helpful at the very start.</p>                                         | <p>from an urban centre in the abstract.</p> <ul style="list-style-type: none"> <li>• We have moved the description of what rural/northern is up in the introduction section.</li> <li>• We have also added "in Canada" when we noted northern and rural where appropriate throughout the manuscript</li> </ul>                                                                                                                                                                                                                                 |
| <p><b>Introduction</b><br/>         Could you give some further information and explanation of the social-ecological model that is being applied in this paper? This would be helpful for making sense of the diagrams that come later.</p>                                                                          | <ul style="list-style-type: none"> <li>• We have added further explanation to the introduction as suggested.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>Methods</b><br/>         Thank you for the inclusion of the clearly completed methods checklist. However, there were a couple of areas that could be clarified further.<br/>         a) More detail is needed on data saturation (or data adequacy, if this term is preferred)</p>                             | <ul style="list-style-type: none"> <li>• We have added more details on page 9 noting that we felt that both the number of participants was acceptable to achieve data saturation. While we were able to gather a lot of data, we have described in the limitations section, on page 24, the need for further research to include more persons living with dementia and their care partners.</li> </ul>                                                                                                                                          |
| <p>b) Researcher characteristics were given for SF but not other members of the research team involved in data collection and analysis. Ideally this information should be incorporated into the text rather than only the checklist, along with some reflexive discussion of how this impacted on the research.</p> | <ul style="list-style-type: none"> <li>• We have added researcher characteristics for including that the research assistant was a graduate student involved in data collection (RF) and we have also added that two experienced qualitative researchers (SF and CP) were involved in data analysis along with research trainee (KW). We have also added positioning that SF, CP, and KW are all women who live in northern BC and have lived experience with persons living with dementia, care partners, and health care providers.</li> </ul> |
| <p><b>Results</b><br/>         a) Was there a reason for not assigning pseudonyms/participant numbers to quotations? Typically this provides the reader with a way of reassuring oneself that the analysis is not overly reliant on a small number of participants, which is not available here.</p>                 | <ul style="list-style-type: none"> <li>• We recognize this and agree with the reviewer that typically participant numbers and pseudonyms would be provided with each quotation. However, in the case of our recordings and transcriptions, it was difficult to consistently tell which individual was speaking. Therefore, our team selected quotations from different focus groups and interviews to ensure that we included a variety of provider perspectives. We were able to determine the speakers</li> </ul>                             |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>according to participant type as we have a list of who attended each session. As it was not possible to add a participant number to all of the quotes, we felt it best to be consistent and did not identify participants with an id number.</p>                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>b) The figure and table should be more clearly explained; for example, I was unsure what the various levels of the figure indicated, and whether the mitigation strategies described in the table were in use by participants or hypothetical/theorised based on challenges. They should also be better integrated with the text, perhaps through harmonising the subheading titles with those in the figure?</p>                                                                                                          | <ul style="list-style-type: none"> <li>• We have adjusted the grammar on the table for consistency as these are recommendations from participants on what they have done which helped to mitigate the challenges they identified in their community.</li> <li>• We have added the titles from the figure to each of the headings as suggested by the reviewer.</li> </ul>                                                                                                                                                                                                                                                                                       |
| <p>Discussion<br/> a) I believe it is usual for BMJ Open papers to include very brief points on strengths and limitations after the abstract with a more considered version in the discussion. There is no section on strengths and limitations in the discussion for this paper so it may be that the points at the beginning should be adjusted for this purpose.<br/> b) How generalizable do you feel the findings are to other settings? Are there implications for rural and remote communities in other countries?</p> | <ul style="list-style-type: none"> <li>• As noted above in response to a similar comment by the editor, we have reworded the strengths and limitations on page 3 and added a limitations section on page 23.</li> <li>• While generalizability is not the goal of our study, we do feel that the findings may be of interest to researchers and recommend that further research be conducted in other rural and northern communities in Canada. We also note that our research was collected before the COVID-19 pandemic and it will be useful for future research to examine what effect this has had. We have added a note about this on page 23.</li> </ul> |
| <p><b>Reviewer: 2 Dr. Harukaze Yatsugi, Kyushu University</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>1- Page 5: Introduction:<br/> When compared to age-matched controls, persons living with dementia were found to spend more of their time engaged in sedentary behaviours[11] and were less likely to meet physical activity guidelines.[12] According to this sentence, what do you mean? And, what do you insist?<br/> I strongly suggest that you have to consider and discuss not only physical activity but also sedentary behaviors along with your study results.</p>                                                | <ul style="list-style-type: none"> <li>• We have added more specificity to the control groups to enhance clarity.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>2- Page 7: Introduction:<br/> Persons living in rural and northern communities face increased barriers to physical activity (e.g., transportation, snow/ice) and have fewer opportunities to engage in physical activity through specialized programming,[22] contributing to an increased risk of noncommunicable disease and disability compared to their urban counterparts.</p>                                                                                                                                        | <ul style="list-style-type: none"> <li>• We have moved this section in the introduction earlier to enhance clarity and flow for the reader. It is important to recognize that geography can influence physical activity and we agree that physical activity is strongly affected by the season especially</li> </ul>                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>According to this sentence, what do you mean?<br/>You should describe the study protocol precisely because physical activity is strongly affected by the season (when the study is conducted).</p>                                                                                                                                                                                                                    | <p>in northern areas. These findings are described on page 11 under the heading natural environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>3- Page9; Results<br/>You should write (explain) in order which you describe in Table.<br/>I can't understand what you explain about the item (level).<br/>You had better describe the paragraph as level.</p>                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• We have added the headings from the table and figures to the section subheadings in the results section. The subheadings and the levels in table 1 flow in the same order. We hope this is now clearer for the reviewer.</li> </ul>                                                                                                                                                                                                                                                                                  |
| <p>4- Page21; Discussion<br/>You should write (explain) along with the results.<br/>I can't understand what you explain about the item (level).<br/>You had better describe the paragraph as level.</p>                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• We appreciate this suggestion and have added some additional references to this section.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Finally, I strongly suggest that you improve the description to refer to previous epidemiological studies.</p>                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• We have added in some additional studies and references as suggested.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>Reviewer: 3 Dr. An Kosurko, Trent University</b></p>                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p>Please double check that the conclusions in your abstract line up with the conclusions in the article and that your results sections are titled appropriately for findings.</p>                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Thank you for your notes and comments provided on the attached pdf. We have done our best to respond to the comment and suggestions throughout the manuscript.</li> <li>• We have aligned the conclusions in the abstract with the conclusions in the paper more closely and also adjusted the subheadings in the findings section as requested.</li> </ul>                                                                                                                                                          |
| <p>I suggest a sentence or two explaining how the social ecological model works and how it is applied in the study.</p>                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• We have added further detail in the introduction section.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>For a clearer definition of your outcomes, I recommend some further thought on the choice of subtitles for each section, to look at what each piece of evidence is contributing to your claims. How does this section relate to the table that you have provided?</p>                                                                                                                                                 | <ul style="list-style-type: none"> <li>• We have added in the levels from the figure to the subheadings in the results to make the connection clearer.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>There are some recommended references for you to consider with regard to the rural context of your study and how it may contribute to your framing of your findings and discussion. Is "rural and northern context" both the context of and a finding (i.e. influencing factor) in your study? Is this a problem? What is meant by "Rural and Northern" as opposed to simply rural for the purpose of your study?</p> | <ul style="list-style-type: none"> <li>• You are correct in that the context within each of our participants lived and work was rural and northern. We felt it important to describe this for the readers as not all northern communities are rural and not all rural communities are northern. We have added "in Canada" where appropriate as suggested by reviewer one. Yet, within Canada there is diversity in shared characteristics of what rural communities are (e.g. geographic distance to an urban centre differs greatly between rural</li> </ul> |

|                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                | <p>communities in different areas of BC). Therefore, we felt that specificity in our description was important. We have moved the description of this to earlier in the introduction section to help make it clearer for the reader.</p> <ul style="list-style-type: none"> <li>• You are also correct that rural and northern emerges as a very prominent theme identified as shaping the environment level in the socio-ecological model.</li> </ul> |
| <p>For clearer presentation of results, check for overlaps in themes, particularly when it comes to "lack of resources/ referral systems/ communications processes) are you organizing the findings by theme, level or type of institution (i.e. health systems / community / individual)</p>                                                                                                                  | <ul style="list-style-type: none"> <li>• Thank you very much. We have adjusted our paper and feel that it is more consistent now and that the presentation of the results are clearer.</li> </ul>                                                                                                                                                                                                                                                      |
| <p>With regard to limitations of your study, perhaps you could open the discussion about unique rural contexts and circle back to the notion that rural is not a one-size-fits-all descriptor, as you introduce in the literature review. This may strengthen your claim that context is an important factor. What is it about the rural context in your study that is unique that strengthens this claim?</p> | <ul style="list-style-type: none"> <li>• We have added this on page 4</li> <li>• Further evidence with examples provided are on page 11 as the examples in the description of the natural environment.</li> </ul>                                                                                                                                                                                                                                      |

### VERSION 2 – REVIEW

|                        |                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>REVIEWER</b>        | Yatsugi, Harukaze<br>Kyushu University, Department of Behavior and Health Sciences,<br>Graduate School of Human-Environment Studies |
| <b>REVIEW RETURNED</b> | 06-Apr-2022                                                                                                                         |

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GENERAL COMMENTS</b> | <p>Thank you for this opportunity.<br/>I have some comments suggestion and suggestions.<br/>I hope its make your manuscript better.</p> <p><b>INTRODUCTION</b><br/>1. I think you need to mention current dementia condition in Canada between 1st paragrapf and 2nd paragrapf.</p> <p><b>METHODS</b><br/>1. I couldn't understand what are SF, RF, CP, and KW first time.<br/>Are these from person's (authors) name, right?<br/>I understood after checking other reviewers' comments and your responce.<br/>I recommend that you explain about this abbreviation in Contributorship Statement.</p> <p>2. Nothern BC<br/>Is this mean Northern British Columbia?</p> |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>This is first time appearance.<br/>You should explain about abbreviation carefully.<br/>I find you use BC word too.</p> <p><b>DISCUSSION</b><br/>1. I recommend you describe limitation more.<br/>This study didn't assess (consider) objectively measured physical activity.<br/>Strictly speaking, you mention about not physical activity but rather human behavior in this study.<br/>So, I think it's a kind of methodological limitation.</p> <p><b>CONCLUSION</b><br/>1. I think you had better check ABSTRACT and main text again.<br/>Conclusion sentences are something different between those in my impression.</p> <p>That's all my ccomments.<br/>Thank you!</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                        |                                                                             |
|------------------------|-----------------------------------------------------------------------------|
| <b>REVIEWER</b>        | Kosurko, An<br>University of Helsinki Faculty of Social Sciences, Sociology |
| <b>REVIEW RETURNED</b> | 25-Apr-2022                                                                 |

|                         |                                                     |
|-------------------------|-----------------------------------------------------|
| <b>GENERAL COMMENTS</b> | Thank you for the opportunity to review this paper. |
|-------------------------|-----------------------------------------------------|

### VERSION 2 – AUTHOR RESPONSE

| <b>Reviewer: 2 Dr. Harukaze Yatsugi, Kyushu University</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Comments from the Reviewer                                                                                                                                                                                                                                                                                       | Response from Author                                                                                                                                                                                                                                       |
| <p><b>INTRODUCTION</b><br/>1. I think you need to mention current dementia condition in Canada between 1st paragrapf and 2nd paragrapf.</p>                                                                                                                                                                      | <ul style="list-style-type: none"> <li>We have added in a sentence about the prevalence of dementia in Canada on page 1.</li> </ul>                                                                                                                        |
| <p><b>METHODS</b><br/>1.I couldn't understand what are SF, RF, CP, and KW first time.<br/>Are these from person's (authors) name, right?<br/>I understood after checking other reviewers' comments and your responce.<br/>I recommend that you explain about this abbreviation in Contributorship Statement.</p> | <ul style="list-style-type: none"> <li>This is the way authors names are typically inserted in a manuscript. If the journal editor wishes us to write the full names we will do so. But to our knowledge the use of author initials is correct.</li> </ul> |
| <p>2. Nothern BC<br/>Is this mean Northern British Columbia?<br/>This is first time appearance.<br/>You should explain about abbreviation carefully.<br/>I find you use BC word too.</p>                                                                                                                         | <ul style="list-style-type: none"> <li>We have written out BC each time and not used the abbreviation.</li> </ul>                                                                                                                                          |
| <p><b>DISCUSSION</b><br/>1. I recommend you describe limitation more.<br/>This study didn't assess (consider) objectively measured physical activity.</p>                                                                                                                                                        | <ul style="list-style-type: none"> <li>We have added this point as suggested to the limitations section on page 25.</li> </ul>                                                                                                                             |



|                                                                                                                                                                    |                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strictly speaking, you mention about not physical activity but rather human behavior in this study. So, I think it's a kind of methodological limitation.          |                                                                                                                                                                                                                                   |
| <b>CONCLUSION</b><br>1. I think you had better check ABSTRACT and main text again.<br>Conclusion sentences are something different between those in my impression. | <ul style="list-style-type: none"> <li>The authors agree that the conclusion is acceptable and in-line with our current findings. It is normal for there to be different sentences in the abstract and the conclusion.</li> </ul> |

**VERSION 3 – REVIEW**

|                        |                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>REVIEWER</b>        | Yatsugi, Harukaze<br>Kyushu University, Department of Behavior and Health Sciences,<br>Graduate School of Human-Environment Studies |
| <b>REVIEW RETURNED</b> | 09-May-2022                                                                                                                         |

|                         |                                                                                                                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GENERAL COMMENTS</b> | Thank you for giving me this opportunity. It's my great honor.<br><br>I have no further comments.<br>This manuscript has been modified prpperly.<br><br>I wish your manuscript will be an important contribution. |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|