Author's response to reviews

Title: Identifying factors likely to influence compliance with diagnostic imaging guideline recommendations for spine disorders among chiropractors in North America: a focus group study using the Theoretical Domains Framework.

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Author's response to reviews: see over
June 10th, 2012

Dear Implementation Science Editor,

We are pleased to submit this revised research paper entitled: ‘Identifying factors likely to influence compliance with diagnostic imaging guideline recommendations for spine disorders among chiropractors in North America: a focus group study using the Theoretical Domains Framework.’ (Bussières AE, Patey AM, Francis JJ, Sales AE, Grimshaw JM, for the Canada PRIme Plus Team).

As previously noted, if accepted, it is proposed that this article would be one in a Series of articles documenting the development and use of the Theoretical Domains Framework (TDF) to advance the science of implementation research.

We conducted focus groups to identify chiropractors’ beliefs about managing uncomplicated back pain without x-rays and to explore barriers and facilitators to implementing evidence-based recommendations on lumbar spine x-rays among these providers.

We wish to thank reviewers for their constructive comments and suggestions that helped improved our submission. The following table highlights comments we have addressed in the text and in additional files.

Thank you for considering this revised submission.

Kind regards,

 André Bussières DC, FCCS, MSc, PhD (Candidate)  
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Table 1 Reply to the reviewers’ comments for Implementation Science submission by Bussières et al.

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<th>Comment</th>
<th>Researchers’ Reply</th>
<th>Page #</th>
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<tr>
<td><strong>Reviewer 1. Dr Rosie McEachan</strong></td>
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<td>1. could the authors please summarise the key clinical and non-clinical factors found to be associated with test ordering (refs 38-46)</td>
<td>A summary list of potential barriers and enablers identified in the literature now provided as Additional File 1. (Additional File have been renumbered accordingly)</td>
<td>P.6</td>
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<td>2. Context. What do you mean by different imaging patterns?</td>
<td>The sentence now reads: ‘…that had differing x-ray ordering rates,…’</td>
<td>P.7</td>
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<td>3. Please clarify – with regards to the quality performance indicators does ordering of x-rays good or bad?</td>
<td>The sentence now reads: ‘ASH assigns chiropractors to one of six levels based on quality performance indicators such as inappropriate (or high) x-ray ordering practice’</td>
<td>P.7</td>
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<td>4. Please could you clarify whether an utterance relates to just one individual or whether it could include others views as well. For example...</td>
<td>Text was changed to: ‘We initially coded each utterance into relevant theoretical domains from the TDF onto an Excel spreadsheet. In addition, the following sentence was added: ‘Utterances were counted twice if a participant gave a response similar to that of another participant.’</td>
<td>P.8 (Analysis)</td>
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<td>5. Could the authors please report any reliability information they have regarding coding</td>
<td>The following sentence was added: ‘One author (JJF), a health psychologist, provided a critique of the analysis and interrogated the coding to ensure a robust and defensible coding of the data into beliefs and relevant domains’. The order of criteria for the identification of relevant domains was modified to reflect a lesser importance of the frequency of specific beliefs (now item 3 instead of 1): Finally we identified relevant domains based upon the following criteria: 1) presence of conflicting beliefs, 2) evidence of strong beliefs that were perceived to impact the behaviour, and 3) high frequency of specific beliefs.</td>
<td>P.8 (Analysis) P.9</td>
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| Supplementary files | The following list of abbreviations was included in Additional File 2:  
| 6. Supplementary file 1 – please could you ensure there is a glossary for all acronyms (e.g HMO) | ASH: American Specialty Health Network  
| | DIGASD: Diagnostic Imaging Guidelines for Adult Spine Disorders  
| | HMO: Health Manage Organization  
| | Red Flags: Indicators of serious pathology  
| | RCT: Randomized Control Trial  
| Discretionary revisions | The following paragraph was added at the end of the discussion:  
| Discussion | ‘Discussions after each focus group suggested the interview guide did not feel repetitive and questions relating to domains felt relevant to the participants. Furthermore, the frequency of responses throughout focus groups (Table 1) indicated that participants remained engaged despite the number of questions asked (43 with prompts) and associated length of focus group interviews (around 90 minutes).’  
| | The following sentence was added:  
| 7. Re. length of the interview schedule – in essence the ‘face validity’ of the schedule. | ‘Validation of the TDF has resulted in a refined version addressing these shortcomings (Cane 2012).’  
| | This was covered on page 17, 2nd paragraph, item 2) – ‘focus groups may not be well suited to assess emotions among a group of health care professionals.’  
| | Thank you for pointing this important lack of clarity.  
| 8. Re. the overlap with utterances across different domains | This was clarified in the Analysis (P.9):  
| | ‘Beliefs, coded as being similar or identical statements, were then grouped together according to their likelihood to either increase (i.e., perceived barriers to guideline adherence), decrease (i.e., perceived to facilitate or help guideline adherence) or have no influence on x-ray ordering.‘  
| 9. Re. impact that the chosen methodology (focus group) may have had on elicitation of beliefs regarding emotion. |  

| Reviewer 2. Dr Saravana Kumar | The only |  
| 1. The objectives of this research were to explore barriers and facilitators to implementing evidence-based recommendations on lumbar spine X-rays and yet there is little to no mention about facilitators (with primary focus on barriers only). The only | Thank you for pointing this important lack of clarity.  
| | This was clarified in the Analysis (P.9):  
| | ‘Beliefs, coded as being similar or identical statements, were then grouped together according to their likelihood to either increase (i.e., perceived barriers to guideline adherence), decrease (i.e., perceived to facilitate or help guideline adherence) or have no influence on x-ray ordering.‘  
| | p. 10  
| | p. 20  
| | p. 20  
| | p. 17  
| | p. 9  

|  | Finally, the following was added in the results section under ‘Key themes identified within Relevant Domains’:  
|  | ‘Interrater reliability was not assessed as 100% consensus was achieved at each step’ | p. 10  

|  | p. 20  
| | p. 17  
<p>| | p. 9 |</p>
<table>
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<tr>
<th>Reference to facilitators is in the first sentence of the conclusion. From my perspective, if the objective was to explore both barriers and facilitators, then they both should be discussed. I find this research focussed on barriers with inadequate coverage on the facilitators.</th>
<th>behaviour.’ Further clarification was added under Key themes identified within Relevant Domains (p.10), as well as for illustrative quotes for each key domains: - Beliefs likely to increase x-ray ordering (barriers) - Beliefs likely to decrease x-ray ordering (facilitators). Clarifications were also added to Tables 1 and 2</th>
<th>P.10 P. 11-15 P.24 and p.25</th>
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<td>2. Rigour and trustworthiness in qualitative research is paramount. While there are statements which indicate rigour was considered as part of the data collection and data analysis process (such as use of an independent observer, use of multiple coders), additional details on rigour could be provided. Important concepts such as member checking, reliability of coding process, self-reflection could also be explored here.</td>
<td>The following sentence was added: One author (JJF), a health psychologist, provided a critique of the analysis and interrogated the coding to ensure a robust and defensible coding of the data into beliefs and relevant domains. The order of criteria for the identification of relevant domains was modified to reflect a lesser importance of the frequency of specific beliefs (now item 3 instead of 1): Finally we identified relevant domains based upon the following criteria: 1) presence of conflicting beliefs, 2) evidence of strong beliefs that were perceived to impact the behaviour, and 3) high frequency of specific beliefs. Finally, the following was added in the results section under ‘Key themes identified within Relevant Domains’: ‘Interrater reliability was not assessed as 100% consensus was achieved at each step’</td>
<td>P.8 (Analysis) P.9 P. 10</td>
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<td>3. While the authors clearly state that they chose to use Theoretical Domains Framework for this research, there is no justification as to why they chose this...</td>
<td>The following rationale was added: ‘The Theoretical Domains Framework (TDF) covers a broad spectrum of individual and organizational theories thereby limiting the risk of omitting important areas when exploring factors which may impact decision making regarding the use of evidence in clinical practice.’</td>
<td>P.6</td>
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<td>4. The small sample size is a major concern... Furthermore, while this research is pitched as being undertaken in US and Canada, only seven participants “represent” Canada (with 14 from US). While the small sample size</td>
<td>We had intended to include at least 10 providers from Canada but as mentioned, recruitment was challenging. We specified the following on page 19: ‘Recruitment was challenging and two potential Canadian participants failed to show up.’ In addition, the following sentence was added (P.19) to further address this concern: ‘...This is particularly relevant to our secondary</td>
<td>P.19</td>
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<td>has been acknowledged, this limitation should be strengthened.</td>
<td><strong>objective aiming to compare responses from American (n=14) and Canadian (n=7) chiropractors.</strong></td>
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<td>5. This is a personal observation and unsure as to what the research requirements might be in other countries. I note that the research had ethical approval from the Ottawa Hospital Research Ethics Board in Canada while the research was undertaken in Canada and the US. Were they not any requirements for ethical approval in US to undertake this research?</td>
<td>Formal ethics approval in the US was not deemed necessary by the OHREB. However, REB was provided with a signed collaborative agreement from ASH. The following was added on P.9. We are happy to provided Implementation Science editor with this letter should it be needed: <strong>Ethics:</strong> A signed collaborative agreement by the American Specialty Health Network was submitted to the Ottawa Hospital Research Ethics Board, Canada who granted ethic approval.</td>
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<td>P.9</td>
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