

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (Error! Hyperlink reference not valid.) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	The dimensions of safety culture: A systematic review of quantitative, qualitative and mixed methods for assessing safety culture in hospitals
AUTHORS	Churruga, Kate; Ellis, Louise A.; Pomare, Chiara; Hogden, Anne; Bierbaum, Mia; Long, Janet; Olekalns, Aleksandra; Braithwaite, Jeffrey ;

VERSION 1 – REVIEW

REVIEWER	O'Donovan, R University College Dublin
REVIEW RETURNED	09-Mar-2021

GENERAL COMMENTS	<p>Thank you for the opportunity to review your paper examining the methods and tools used to assess safety culture in hospitals. This is a clearly written and comprehensive paper that highlights the limited number of studies using qualitative or mixed methods approaches to assessing safety culture and the contribution that qualitative and mixed methods approaches can make to gaining a more in-depth understanding of safety culture in hospitals.</p> <p>I suggest the following minor revisions. Lines 59-60 of page 11. Can you please reference which study used sixty-one surveys? line 54 of page 19: Revise the title of the subsection to include “future research” and more clearly outline the important implications your review has for future research within this section. In the "strengths and limitations" subsection, please acknowledge that the review did not include grey literature and may therefore be limited by publication bias.</p>
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REVIEWER	Campione, Joanne Westat, North Carolina, HDRE
REVIEW RETURNED	16-Mar-2021

GENERAL COMMENTS	<p>The manuscript entitled, “The dimensions of safety culture: A review of quantitative, qualitative, and mixed-methods for assessing safety culture in hospitals” was well-written and a comprehensive literature review. I have mostly overarching comments and suggestions for improvement.</p> <ol style="list-style-type: none">1. The intended audience for the paper is not clear. The finding suggest “future attempts to assess safety culture in hospitals
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should consider incorporating qualitative methods.” Is that for hospitals measuring their culture and/or researchers who want to investigate the contextual aspects of safety culture to improve culture measurement, find barriers, learn best practices, etc. I believe only the latter has the time and resources for qualitative methods. Furthermore, staff may feel uncomfortable expressing their perceptions of their facility’s culture and, thus, the survey helps with anonymity and participation.

2. Therefore, I think it would help if you could characterize the 701 papers by 1-3 categories of study purpose. (Unfortunately, because the appendix was PDF, I was unable to read the study titles. I was also unable to see Figure 1.) The lumping of all papers that used a tool/method to assess safety culture seems too broad in analyzing the prevalence of methods.

3. The authors measured the use of methods/tools among their final 701 papers. Table 4 and the appendix are very large but have a lot of information. Could the authors make a graph of numbers shown in table 4 and/or the last row of the appendix?

4. This paper seems to be an extension to the paper done by Michelle Halligan and Aleksandra Zecevic. It may help to share with the reader their conclusions and the additional knowledge gained by your study.

5. One of the objectives of your study was to examine the dimensions of safety culture and you found 11 of them. If you could include your findings to Table 1, that would really strengthen the study and show dimension consensus or lack of. Also, you could try to align some aspects of your "other" category to those reported in table 1.

6. The discussion about how qualitative and mixed-methods studies found new or “other” aspects was very interesting and may warrant more discussion.

7. The development process of the key surveys would be interesting to know. for example ... Was cognitive interviewing done? Are the surveys psychometrically sound? What kind of studies used their own new surveys?

8. On page 17 line 8, what is meant by “with the exception of leadership”? Didn’t the qualitative and/or mixed methods study assess leadership?

VERSION 1 – AUTHOR RESPONSE

<p>Reviewer: 1 Dr. R O'Donovan, University College Dublin</p>	
<p>Thank you for the opportunity to review your paper examining the methods and tools used to assess safety culture in hospitals. This is a clearly written and comprehensive paper that highlights the limited number of studies using qualitative or mixed methods approaches to assessing safety culture and the contribution that qualitative and mixed methods approaches can make to gaining a more in-depth understanding of safety culture in hospitals.</p>	<p>Thank you for the constructive comments on our manuscript.</p>

<p>I suggest the following minor revisions. Lines 59-60 of page 11. Can you please reference which study used sixty-one surveys?</p>	<p>We appreciate you pointing out this confusing wording. To clarify these surveys were only used once, each in their own single study. We have revised the manuscript to make this clearer.</p>
<p>line 54 of page 19: Revise the title of the subsection to include "future research" and more clearly outline the important implications your review has for future research within this section.</p>	<p>Following feedback from Reviewer 2, we have included a discussion of the different categories of purposes for studies assessing safety culture and indicated those that are more research or quality improvement focused. We now refer explicitly to the stakeholders our implications are addressing throughout this section.</p>
<p>In the "strengths and limitations" subsection, please acknowledge that the review did not include grey literature and may therefore be limited by publication bias.</p>	<p>Thank you, we have now included a discussion of publication bias and how it may have impacted our findings.</p>
<p>Reviewer: 2 Dr. Joanne Campione, Westat, North Carolina</p>	
<p>The manuscript entitled, "The dimensions of safety culture: A review of quantitative, qualitative, and mixed-methods for assessing safety culture in hospitals" was well-written and a comprehensive literature review. I have mostly overarching comments and suggestions for improvement.</p>	<p>Thank you, we appreciate the feedback and suggestions for how to improve our review.</p>
<p>1. The intended audience for the paper is not clear. The finding suggest "future attempts to assess safety culture in hospitals should consider incorporating qualitative methods." Is that for hospitals measuring their culture and/or researchers who want to investigate the contextual aspects of safety culture to improve culture measurement, find barriers, learn best practices, etc. I believe only the latter has the time and resources for qualitative methods. Furthermore, staff may feel uncomfortable expressing their perceptions of their facility's culture and, thus, the survey helps with anonymity and participation.</p>	<p>This is an interesting point that we have incorporated into our "Implications for assessing safety culture for research and improvement" section on p. 22. We have also identified which implications may be more relevant for which stakeholders.</p>
<p>2. Therefore, I think it would help if you could characterize the 701 papers by 1-3 categories of study purpose. (Unfortunately, because the appendix was PDF, I was unable to read the study titles. I was also unable to see Figure 1.) The lumping of all papers that used a tool/method to assess safety culture seems too broad in analyzing the prevalence of methods.</p>	<p>Thank you for this excellent suggestion. As you recommended, we coded the study purpose/aim of all included studies into one of four categories: 1. Descriptive or exploratory assessment of safety culture including comparisons between groups (e.g., doctors and nurses, countries) and studies establishing a "baseline" or identifying areas for improvement; 2. Testing relationships among components of safety culture, or between safety culture and other measured variables; 3. Methodological focus including validation studies or those furthering the assessment of safety culture; 4. Evaluation of an intervention, typically a program to improve safety, safety culture or quality. This process is described in the Methods on pp. 9-10 and reported in the Results on p. 12.</p>

	We also took this extensive coding process as an opportunity to perform one final quality check on the large library of included studies. This led to the identification of a few more duplicate references and a couple of other inconsistencies that have now been corrected. We have revised our final numbers accordingly.
3. The authors measured the use of methods/tools among their final 701 papers. Table 4 and the appendix are very large but have a lot of information. Could the authors make a graph of numbers shown in table 4 and/or the last row of the appendix?	We have now included a graph of this information in Figure 3.
4. This paper seems to be an extension to the paper done by Michelle Halligan and Aleksandra Zecevic. It may help to share with the reader their conclusions and the additional knowledge gained by your study.	We appreciate the suggestion and have added some information on this to our Conclusion (p. 25).
5. One of the objectives of your study was to examine the dimensions of safety culture and you found 11 of them. If you could include your findings to Table 1, that would really strengthen the study and show dimension consensus or lack of. Also, you could try to align some aspects of your "other" category to those reported in table 1.	Thank you for the suggestion. We have added Figure 4, which summarises the overlaps in the safety culture themes identified by this review with those of past reviews. We have also included a discussion of this issue on p. 21 of the manuscript.
6. The discussion about how qualitative and mixed-methods studies found new or "other" aspects was very interesting and may warrant more discussion.	We agree that this is an interesting finding. We have added a little more by way of comparing our findings to previous reviews on p. 21.
7. The development process of the key surveys would be interesting to know. for example ... Was cognitive interviewing done? Are the surveys psychometrically sound? What kind of studies used their own new surveys?	Indeed, this is a very interesting area for further consideration. It is beyond the scope of this manuscript but we are planning a follow up piece of work examining the historical underpinnings, survey development and psychometric properties of these key surveys.
8. On page 17 line 8, what is meant by "with the exception of leadership"? Didn't the qualitative and/or mixed methods study assess leadership?	You are right, they did. This wording is confusing. We have removed it.

VERSION 2 – REVIEW

REVIEWER	O'Donovan, R University College Dublin
REVIEW RETURNED	16-Jun-2021

GENERAL COMMENTS	I am grateful to the authors for engaging with the suggestions for improvement made and believe these suggestions have been addressed in their revised manuscript.
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REVIEWER	Campione, Joanne Westat, North Carolina, HDRE
REVIEW RETURNED	23-Jun-2021

GENERAL COMMENTS

Nicely done.