PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	The association between organisational and workplace cultures, and patient outcomes: systematic review
AUTHORS	Braithwaite, Jeffrey; Herkes, Jessica; Ludlow, Kristiana; Testa, Luke; Lamprell, Gina

VERSION 1 – REVIEW

REVIEWER	Jennifer Weller University of Auckland New Zealand
REVIEW RETURNED	21-May-2017

GENERAL COMMENTS	This is a very thorough and important review. The methods are clearly described and rigorous. I have only minor comments. The authors report an analysis and grading of the quality of each article, reported in Table 2. When weighing up the findings, the quality of the different manuscripts does seem to be important. In a number of studies, indeterminate or mixed findings were reported but the quality of these studies isn't reported in the results section and rather difficult to determine even from the main data table. I couldn't help wondering if these inconclusive findings were from small or low quality studies. Could there be a publication bias for negative studies? Would this be a limitation – not of the study, but of what we could conclude? While generally very well written, there are a few very long sentences that took me a while to decipher. Mostly this occurred when multiple examples were inserted. Breaking these up into separate sentences could improve clarity. Examples: Page 12, lines 248-256; Page 13, lines 273-275. Page 15, lines 317-321. The authors comment on heterogeneity of studies, definitions and measures – is it worth commenting on the potential for some commonality? The final sentence called for better quality studies, but many of the studies included were graded as high quality. Could the authors discuss how the quality of research in this field could be improved?

REVIEWER	Ian Kessler
	King's College, London, UK
REVIEW RETURNED	24-May-2017

GENERAL COMMENTS	This is thorough and useful review of the literature on the relationship between organisational and workplace cultures and patient outcomes. The review is revealing in highlighting the largely positive links between such cultures and patient outcomes, while also noting gaps in the literature, in particular, the absence of much work on this relationship beyond a hospital setting.
	I have the following comments which range from points of detail to more general observations:
	- P4 line 74- the authors note 'discourse is often centred on normative considerations'. Maybe a few references to this normative discourse on culture in healthcare setting might be included here.
	- P4 lines 84-89 a distinction is now made between organisational and workplace cultures, and how they relate to patient outcomes. This is an important and welcome distinction. However, it is a distinction barely used in presenting or analysing the literature reviewed. Thus, we are given no idea of how many studies focused on the different types of culture- how many studies explored organisational and ow many workplace culture? There is no indication of whether one type of culture- organisational to workplace cultures- had a stronger relationship with patient outcomes than the other. It is plausible to suggest that a 'positive' workplace culture might be more positively related to such outcomes than an organisational culture, perhaps more obviously in tune with local circumstances and needs. Such an issue is not explored. Indeed, in general, there is also little attempt to explore how researchers theorise the relationship between organisational and workplace culture and patient outcomes. In particular, do researchers seek to explain the relationship between these two type of culture and patient outcomes in different ways? (See my point above about why workplace culture might be more strongly associated with patient outcomes.) Are there any indications in the literature that these cultures might be tension? Or might the authors want to comment on possible tensions? Thus, do organisational cultures standardise and undermine bespoke culture linked to local context? These kinds of questions are not built into the review or used to discussed its findings.
	- A more detailed point: are 'practices' part of a culture or a consequence of it? On p4 line 85 practices are included in the definition of organisation culture. On p5 in the table organisational cultural is defined without any mention of practices.
	- P6 line 118-19: The main 'hypothesis' is presented as 'positive organisational cultures are related to positive patient outcomes and vice versa'. A number of points follow. First what is a positive organisational culture? How did the studies define 'positive'? (Or was this a concept the authors used in assessing the literature and if so, how did they define 'positive'?) Were the article of a 'positive culture' definitions consistent? Were other concepts used to characterise cultures- such as a 'strong' culture- and if so how were these defined? Second, as hinted at above, this hypothesis refers to 'positive organisational cultures' and outcomes. Is the same relationship between workplace culture and outcomes being hypothesised? Third the 'vice versa' part of the hypothesis needs to be spelt out.

Is the argument that strong patient outcomes can lead to a strong organisational/workplace cultures(?) This is a conceivable plausible argument but argued through and presented. (Of course given that most of the studies reviewed were cross- sectional, the direction of causation between outcomes and culture has not really been established). Or does the 'vice versa' element imply that negative cultures lead to negative outcomes? (I am assuming that this is the intended meaning but it needs to be clearer.)

- P6 line123 I am not sure why the term Complex Adaptive Systems (CASs) has been introduced. The term is not really explained or used in the article. I think there is one further mention of CAS towards the end of the article. Is the argument that culture assumes a particularly important function in CASs? If so why and how? Were articles selected according to whether they viewed healthcare systems as CASs?(I assume not). Is it just being assumed that all healthcare are CASs? If so, why and in what sense? How has the notion of the CAS contributed to the conduct and analysis of the review?

- P6 line 132 while the search strategy used the terms 'organisational and workplace culture', were terms such as 'occupational', 'professional', 'ward' or 'clinical culture' used?

- Interesting to note (p7 line 155) that articles using 'employee perceptions' of outcomes were excluded from the review but articles including 'patient satisfaction' as an outcome (p12 line 251) were included- both subjective, self-report measures. Although I suppose patients might be better placed to self-assess outcomes than employees (always?)

- P7 line 156- 'Only associations relevant the research question were included'. I assume 'the research question' is the same as the hypothesis- consistency of terminology would help.

- P9 line 195 At this point in the article the terms the 'climate' and 'environment' are used for the first time. Are these terms seen as synonymous with 'culture'? (Touches on whether researchers defined culture in different ways (and with any analytical consequences?)) If not how did they differ from 'culture'? Did the search included the use of these terms? (on p17 This point about inconsistent definitions of 'culture' is raised. I feel it should be highlighted earlier in the article.)

REVIEWER	Russell Mannion
	University of Birmingham
REVIEW RETURNED	16-Jun-2017

| GENERAL COMMENTS | This is a very rigorus and comperehenice overview of health care cultures and outcomes and will be a valuable resource for other reserachers. My one suggestion is that you spend more of the opening section describing and comparing the different interpretaions of culture, before settling on a specific definition. |

Reviewer 1 Comments for the authors

Comment: This is a very thorough and important review. The methods are clearly described and rigorous.
I have only minor comments.

Response: Thank you for your support of our work.

Comment: The authors report an analysis and grading of the quality of each article, reported in Table 2. When weighing up the findings, the quality of the different manuscripts does seem to be important. In a number of studies, indeterminate or mixed findings were reported but the quality of these studies isn't reported in the results section and rather difficult to determine even from the main data table. I couldn't help wondering if these inconclusive findings were from small or low quality studies.

Response: We have clarified this by signalling in the discussion when a study of lower-quality is being discussed. We have also signalled in the indeterminate studies section when a study with a relatively small sample size (less than 500 participants) compared to other studies included in the review is discussed.

Comment: Could there be a publication bias for negative studies? Would this be a limitation – not of the study, but of what we could conclude?

Response: We agree that publication bias should be mentioned. We have added text in the limitation section accordingly, explaining this.

Comment: While generally very well written, there are a few very long sentences that took me a while to decipher. Mostly this occurred when multiple examples were inserted. Breaking these up into separate sentences could improve clarity. Examples: Page 12, lines 248-256; Page 13, lines 273-275. Page 15, lines 317-321.

Response: As part of doing a thorough review of the manuscript, on the basis of editorial and reviewer comments, we have shortened and made more accessible several of the more complex sentences, including the ones mentioned. Thank you for the close reading of the manuscript.

Comment: The authors comment on heterogeneity of studies, definitions and measures – is it worth commenting on the potential for some commonality?

Response: Commonalities such as study design, setting, country, have now been outlined under study characteristics. We have updated Figure 2 to show which studies assessed organisational culture, workplace culture, a mix of both or a hybrid of both.

Although there are some common tools used to measure culture e.g., the Nursing Working Index (NWI) Scale, used in 18 studies, studies varied significantly in their use of outcome measure, as shown in Supplementary file A.

Comment: The final sentence called for better quality studies, but many of the studies included were graded as high quality. Could the authors discuss how the quality of research in this field could be improved?

Response: We think more studies taking an interventional approach, or with a more robust design, e.g., with a control group, could help. We have made this point at the end of the paper.

Reviewer 2 Comments for the authors

Comment: This is thorough and useful review of the literature on the relationship between organisational and workplace cultures and patient outcomes. The review is revealing in highlighting the largely positive links between such cultures and patient outcomes, while also noting gaps in the literature, in particular, the absence of much work on this relationship beyond a hospital setting.

Response: Thank you for your comments and support for our manuscript and work.

Comment: I have the following comments which range from points of detail to more general observations:

- P4 line 74- the authors note 'discourse is often centred on normative considerations'. Maybe a few references to this normative discourse on culture in healthcare setting might be included here.

Response: We appreciate you pointing this out. We have done this.

- P4 lines 84-89 a distinction is now made between organisational and workplace cultures, and how they relate to patient outcomes. This is an important and welcome distinction. However, it is a distinction barely used in presenting or analysing the literature reviewed. Thus, we are given no idea of how many studies focused on the different types of culture- how many studies explored organisational and ow many workplace culture? There is no indication of whether one type of culture- organisational to workplace cultures- had a stronger relationship with patient outcomes than the other. It is plausible to suggest that a 'positive' workplace culture might be more positively related to such outcomes than an organisational culture, perhaps more obviously in tune with local circumstances and needs. Such an issue is not explored. Indeed, in general, there is also little attempt to explore how researchers theorise the relationship between organisational and workplace culture and patient outcomes. In particular, do researchers seek to explain the relationship between these two type of culture and patient outcomes in different ways? (See my point above about why workplace culture might be more strongly associated with patient outcomes.) Are there any indications in the literature that these cultures might be tension? Or might the authors want to comment on possible tensions? Thus, do organisational cultures standardise and undermine bespoke culture linked to local context? These kinds of questions are not built into the review or used to discussed its findings.

Response: This is a very good point; thank you for raising it. We have altered Figure 2 to show the proportion of studies that measured organisational culture and workplace culture, as well as studies that measured a hybrid of both, or used unclearly defined measures.

This Figure shows that the majority of studies could not be classified as purely organisational culture, or workplace culture, and therefore, we are not able to say whether one type of culture is more strongly associated with patient outcomes. We have explained this in the limitations section.

In terms of delving into the literature and exploring the tensions between organisational and workplace culture, this is an interesting issue indeed. We have discussed this within the team, and may do more work on this idea in future. However, for the present study, we believe this is beyond the scope of this systematic review.

- A more detailed point: are 'practices' part of a culture or a consequence of it? On p4 line 85 practices are included in the definition of organisation culture. On p5 in the table organisational cultural is defined without any mention of practices.

Response: We had done more work on this topic than is represented in this paper, as we tried to write the manuscript as a clear systematic review, without going down too many rabbit holes. As the reviewer will appreciate, it is hard to define and contain sometimes as complex as culture in a review, and it's easy to get distracted. However, there is a point made by you and reviewer three which suggests that we could do some work to add a theoretical perspective into the Introduction, to frame the review, and the Results and Discussion. We agree with this and have added a more theoretical conceptualisation to the manuscript in the introductory section without adding hugely to the word count. We appreciate the opportunity to do this.

- P6 line 118-19: The main 'hypothesis' is presented as 'positive organisational cultures are related to positive patient outcomes and vice versa'. A number of points follow.

First what is a positive organisational culture? How did the studies define 'positive'? (Or was this a concept the authors used in assessing the literature and if so, how did they define 'positive'?) Were the article of a 'positive culture' definitions consistent? Were other concepts used to characterise cultures- such as a 'strong' culture- and if so how were these defined?

Second, as hinted at above, this hypothesis refers to 'positive organisational cultures' and outcomes. Is the same relationship between workplace culture and outcomes being hypothesised?

Third the 'vice versa' part of the hypothesis needs to be spelt out. Is the argument that strong patient outcomes can lead to a strong organisational/workplace cultures(?) This is a conceivable plausible argument but argued through and presented. (Of course given that most of the studies reviewed were cross- sectional, the direction of causation between outcomes and culture has not really been established). Or does the 'vice versa' element imply that negative cultures lead to negative outcomes? (I am assuming that this is the intended meaning but it needs to be clearer.)

Response: First point. It's useful to have this drawn to our attention. We have explained the idea of a positive work place and organisational culture. Other concepts such as "strong" were not explicitly assessed, but were included in the definition of "positive".

Second point. We have also drawn out the differences between a positive workplace and organisational culture in the manuscript.

Third point. On reflection, as we are not trying to be causative, but to explain associations, we have removed the 'vice versa' idea.

Thank you for each of these points. They have helped strengthen the manuscript.

- P6 line123 I am not sure why the term Complex Adaptive Systems (CASs) has been introduced. The term is not really explained or used in the article. I think there is one further mention of CAS towards the end of the article. Is the argument that culture assumes a particularly important function in CASs? If so why and how? Were articles selected according to whether they viewed healthcare systems as CASs?(I assume not). Is it just being assumed that all healthcare are CASs? If so, why and in what sense? How has the notion of the CAS contributed to the conduct and analysis of the review?

Response: We accept this idea. In other, related work we are analysing health systems in terms of complexity science, so this swayed us. We have removed these references to CAS as it ends up being a distraction to the main argument.

- P6 line 132 while the search strategy used the terms 'organisational and workplace culture', were terms such as 'occupational', 'professional', 'ward' or 'clinical culture' used?

Response: The terms, "occupational", "professional", "ward" and "clinical" were not used in our search strategy. Instead, the search strategy covered "corporate culture" and "service culture" as well as a variety of culture terms such as "climate", "ethos" and "environment". Our terms were mapped to those used by previous reviews such as Parmelli et al.'s (2011). Whilst we acknowledge these do not cover all terms used to describe culture in health care it was necessary to exclude terms specific to a profession or a particular environment—such as the hospital environment encompassing ward culture—in order to capture the evidence across as many health care settings as possible. An example of the full search strategy for Ovid MEDLINE is now available in Table 1 of the manuscript.

Comment: Interesting to note (p7 line 155) that articles using 'employee perceptions' of outcomes were excluded from the review but articles including 'patient satisfaction' as an outcome (p12 line 251) were included- both subjective, self-report measures. Although I suppose patients might be better placed to self-assess outcomes than employees (always?)

Response: Yes, you are right; we think patients' satisfaction is an outcome measure, and is being treated that way in many studies, including those that don't just deal with organisational culture in the way that our review does. In our protocol, and in practice in doing the review, we determined that employee perception was not an outcome measure—it did not meet our definition, provided in Box 1.

Comment: P7 line 156- 'Only associations relevant the research question were included'. I assume 'the research question' is the same as the hypothesis- consistency of terminology would help.

Response: We have removed the term "research question" in order to make the terminology more consistent.

Comment: P9 line 195 At this point in the article the terms the 'climate' and 'environment' are used for the first time. Are these terms seen as synonymous with 'culture'? (Touches on whether researchers defined culture in different ways (and with any analytical consequences?)) If not how did they differ from 'culture'? Did the search included the use of these terms? (on p17 This point about inconsistent definitions of 'culture' is raised. I feel it should be highlighted earlier in the article.)

Response: We have now provided a definition of climate in Box 1. 'Climate' and 'environment' are often used synonymously with culture in the papers which we reviewed. We have made this clearer earlier in the article as you suggest. We did not focus on 'single climate' and have deleted the phrase.

Reviewer 3 Comments for the authors

Comment: This is a very rigorus and comperehenice overview of health care cultures and outcomes and will be a valuable resource for other reserachers.

Response: Thank you for your support of our work.

Comment: My one suggestion is that you spend more of the opening section describing and comparing the different interpretaions of culture, before settling on a specific definition.

Response: This is a well-made suggestion; see our response to reviewer two as well. We were trying to be brief and focusing on the systematic review rather than explanations of culture, which is ably done by others. But without blowing out the word count we've dealt with your comment in the manuscript so that we don't leave it to the reader to think that there is only one perspective on culture, or that it is an uncontested concept—a point you have made very ably at various times in the literature.

VERSION 2 – REVIEW

REVIEWER	Jennifer Weller University of Auckland, New Zealand
REVIEW RETURNED	24-Aug-2017

GENERAL COMMENTS	I enjoyed reading the revised version of this manuscript. I have no further comments.