PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	A systematic RADaR analysis of responses to the open-ended question in the Culture of Care Barometer survey of a Dutch hospital
AUTHORS	Maassen, Susanne; Spruit, Lotte; Weggelaar-Jansen, Anne Marie; Vermeulen, Hester; Oostveen, Catharina J.

VERSION 1 – REVIEW

REVIEWER	Zhu, Aiqun The Second Xiangya Hospital of Central South University, Clinical Nursing Teaching and Research Section
REVIEW RETURNED	07-Dec-2023

| GENERAL COMMENTS | The study team has taken up a good analytical approach, namely a systematic RADaR analysis for the one open ended question. Suggest further modifications.
1. On Page 5, line 52-54. Worldwide healthcare organizations face severe workforce shortages that pose a threat to the quality of care. Hence, a major challenge for healthcare organizations is to attract and retain sufficient numbers of healthcare employees. What is the extent of this? How many have resigned or lost their jobs?
2. On Page 5,66-77
There is too much description in this paragraph, and it cannot be denied that the Likert type scale is relatively objective, graded, and operable.
3. On Page 7,102-105, Suggest deletion
To address the study aim, …… in the CoCB-NL?

4. On Page 8,134-135 Suggest deletion
5. On Page 8,123-126.
Data was collected via the digital tool LimeSurvey®. The survey comprised several validated questionnaires measuring the employee's experience of 'work environment' (CoCB-NL23 24), 'safety climate' (Safety Attitudes Questionnaire, subscale Safety Climate22 27), 'work engagement' (Utrecht Work Engagement Scale 28), 'work-life balance' 29 and 'work ability' (Work Ability Index item 1 30).
In the whole article, these questionnaires are not used in the survey: 'safety climate' (Safety Attitudes Questionnaire, subscale Safety Climate22 27), 'work engagement' (Utrecht Work Engagement Scale 28), 'work life balance' 29 and 'work ability' (Work Ability Index item 1 30) .

The five CoCB-NL factors ('organizational support ',' leadership ',' unity&team work ',' relationship with manager ', and' employee |

influence&development ') in the text. Is it consistent with references 23 and 24?

6. In the method, it was mentioned that there were 14671 people in the hospital. As for the results section, it is not clear how many questionnaires were sent? How much did you receive?

7. Suggest changing Table 2 to a supplementary table.
8. On Page 10,205-230. Themes aligning with the CoCB-NL closed ended questions, there is no need to repeat too much as Figure 1 already shows.

9. On Page 13,232-252.
In total we identified nine additional themes, but eleven new themes are presented in Table 2. Suggest presenting new or old factors and new themes in a table format. No need for excessive textual expression.

10. This study mainly applies CoCB-NL, a 5-point Likert scale, and an open-ended survey. As a research whole, what are the outcomes of CoCB-NL, a 5-point Likert scale in evaluating hospital culture?

11. On Page 16,310-320,
Suggest concisely and orderly describing the Strengths in terms of methods and results.

12. Please standardize the reference format uniformly. After modification, it is hoped that the number of references will be moderate.

REVIEWER	Zeng, Derong
	Kyoto University
REVIEW RETURNED	10-Dec-2023

| GENERAL COMMENTS | Abstract |
| | 1. Objectives: The objectives are clearly stated, but it might be beneficial to briefly mention the RADaR technique in the objectives for context. |

Abstract
1. Objectives: The objectives are clearly stated, but it might be beneficial to briefly mention the RADaR technique in the objectives for context.
2. Design, Setting, Participants: Well-described, but consider adding a brief explanation of why a university hospital was chosen.
3. Results: The results are comprehensive; however, a brief mention of the implications of these findings could be added.
4. Conclusions: The conclusion ties back to the objectives effectively. Consider adding a sentence on how these insights can specifically influence future policy or practice in healthcare settings.

Introduction
1. Background: The introduction provides a solid background. You could strengthen it by briefly discussing previous similar studies, if any, for context.
2. Rationale: The rationale behind focusing on the open-ended question is clear, but the choice of the Dutch CoCB-NL specifically could be elaborated.
3. Definition of WE: Well-articulated. Perhaps include how this definition applies specifically to the Dutch healthcare context.
4. Survey Limitations: Good discussion on limitations of Likert-type scales. Maybe consider discussing how the RADaR method specifically addresses these limitations.

	Methods 1. Design: The retrospective analysis using RADaR is well-explained. It might be helpful to justify the choice of a retrospective design. 2. Sample & Setting: Clearly described. Consider discussing any potential biases in the sample. 3. Data Collection: Adequately detailed, but including the rationale for choosing the specific surveys and tools (like LimeSurvey®) could be beneficial. 4. Ethical Considerations: Well covered. 5. Qualifications of Researchers for Theme Coding: The paper should detail the qualifications and experience of the individuals involved in the theme coding process. Specifically, it would be beneficial to know if they have experience in qualitative research and have previously used the RADaR analysis method. This information is crucial to assess the credibility of the coding process and the reliability of the findings. Adding this point will provide a clearer understanding of the expertise and experience behind the data analysis, which is critical in qualitative research to ensure accurate interpretation and coding of the data. Results 1. Data Analysis: The multi-phase approach is well-explained. A brief discussion on how this method ensures reliability and validity of the results would be helpful. 2. Themes Identified: The themes are clearly outlined. Consider discussing the potential impact of these themes in real-world healthcare settings. 3. Emerging Themes: Well-discussed. It would be useful to explore how these themes compare with existing literature. Discussion 1. Study Aims: The discussion effectively ties back to the aims. Maybe explore more about how these findings could be generalized or applied to other settings. 2. Interpretation of Themes: The interpretation is insightful. Consider discussing how these interpretations compare or contrast with existing studies. 3. Limitations: Good discussion of limitations, but you might want to elaborate on how these could impact the findings or their applicability. Conclusion 1. Summary of Findings: The findings are well-summarized. Consider adding a brief statement on future research directions. 2. Practical Implications: Well-discussed. Maybe emphasize specific policy changes or practices that could be implemented in healthcare settings based on these findings.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1: Dr. Aiqun Zhu

Thank you Dr. Aigun Zhu for providing us with the positive feedback and constructive suggestions to improve our manuscript.

The study team has taken up a good analytical approach, namely a systematic RADaR analysis for the one open ended question.

Thank you for your compliment.

1. On Page 5,line 52-54. Worldwide healthcare organizations face severe workforce shortages that pose a threat to the quality of care. Hence, a major challenge for healthcare organizations is to attract and retain sufficient numbers of healthcare employees.
What is the extent of this? How many have resigned or lost their jobs?

Thank you for this remark. We have added this information to the introduction: According to the WHO the global deficit of nurses, constituting half of the healthcare workforce, reached 5.9 million in 2018. In an article in the Nursing Times, the US Bureau of Labor Statistics projects that "more than 275,000 additional nurses are needed from 2020 to 2030.[1] and employment opportunities for nurses are projected to grow at a faster rate (9%) than all other occupations from 2016 through 2026." (Line 53-57)

2. On Page 5,66-77
There is too much description in this paragraph, and it cannot be denied that the Likert type scale is relatively objective, graded, and operable.

Thank you for the critical reflection on this paragraph. We do not intend to deny that a Likert type scale is a proven solid method. However, we do want to emphasize that, in the context of measuring work environment, using only closed-ended questions with a numerical outcome to elicit an personal experience, it could lead to missing information. We have shortened the paragraph and toned down the statements on the Likert type scale.

3. On Page 7,102-105, Suggest deletion: To address the study aim, …… in the CoCB-NL?

We have deleted the research questions, as this information was already included in the study aim.

4. On Page 8,134-135 Suggest deletion

The text in lines 134-135 (now 141-142 'Patient and public involvement ……. study.' is compliant with the author instructions of BMJ Open which state that the method section must include a patient and public involvement statement. Authors | BMJ Open

5. On Page 8,123-126.
Data was collected via the digital tool LimeSurvey®. The survey comprised several validated questionnaires measuring the employee's experience of 'work environment' (CoCB-NL23 24), 'safety climate' (Safety Attitudes Questionnaire, subscale Safety Climate22 27), 'work engagement' (Utrecht Work Engagement Scale 28), 'work-life balance' 29 and 'work ability' (Work Ability Index item 1 30). In the whole article, these questionnaires are not used in the survey: 'safety climate' (Safety Attitudes Questionnaire, subscale Safety Climate22 27), 'work engagement' (Utrecht Work Engagement Scale 28), 'work life balance' 29 and 'work ability' (Work Ability Index item 1 30) .

The five CoCB-NL factors ('organizational support ',' leadership ',' unity&team work ',' relationship with manager ', and' employee influence&development ') in the text. Is it consistent with references 23 and 24?

The CoCB-NL was part of an annual employee survey. For transparency, we have described all the questionnaires presented to the participants throughout the entire survey. However, for the purpose of this study, we only used participants' responses to the open-ended question of the CoCB-NL. We have added a few words for clarification.

The five factors of the CoCB-NL' are described in a paper referenced with reference 26 (previously no 24). This paper describes the cross-cultural validation study of the CoCB for Dutch healthcare. The study referenced with reference 25 (previously no 23) describes the development and validation of the original CoCB. We have removed the blinding on reference 26 according to the BMJ Open author guidelines.

6. In the method, it was mentioned that there were 14671 people in the hospital. As for the results section, it is not clear how many questionnaires were sent? How much did you receive?

In the method (sample & setting section) we have described that there were 14671 employees employed in the organization at the time the survey was send out. All employees were invited to participate in the annual employee survey of the organization. We rephrased the sentences to make this more clear. Further down in the methods (data collection section) we described that 6144 employees responded and 2287 of them also responded to the open-ended question. The total response rate is 42% (6144/14671).

7. Suggest changing Table 2 to a supplementary table.

Thank you for your suggestion. According to the BMJ author guidelines we have removed Table 2 from the result section and added it as a supplementary file.

8. On Page 10,205-230. Themes aligning with the CoCB-NL closed ended questions, there is no need to repeat too much as Figure 1 already shows.

We agree with the reviewer that it is not necessary to repeat all results presented in Figure 1. We therefore only describe the most prominent results regarding the themes aligning with the CoCB-NL factors . We have reviewed the paragraph and have removed lines that repeat information that is already visible in figure 1.

9. On Page 13,232-252.
In total we identified nine additional themes, but eleven new themes are presented in Table 2. Suggest presenting new or old factors and new themes in a table format. No need for excessive textual expression.

We agree with the reviewer that Table 2 could display better the themes and subthemes found. The theme 'diversity and inclusion' includes three sub-themes: 'equal treatment for all', 'information for all' & 'discrimination'. We have adjusted the table's description and added an asterisk to the subthemes for identification. According to the BMJ author guidelines we have removed Table 2 from the result section and added it as a supplementary file. Authors | BMJ Open Figure 1 visualizes how sub-themes relate to the themes found.

10. This study mainly applies CoCB-NL, a 5-point Likert scale, and an open-ended survey. As a research whole, what are the outcomes of CoCB-NL, a 5-point Likert scale in evaluating hospital culture?

While our study aimed to 1) identifying new insights or additional information on healthcare employees' perceptions of their WE and 2) identifying missing themes in the CoCB-NL questionnaire, we have in this study, only focused on analysing the responses to the open-ended question of the CoCB-NL. Therefore, a comprehensive evaluation of the employees' WE or an evaluation of the hospital culture was beyond the scope of our study.

11. On Page 16,310-320,
Suggest concisely and orderly describing the Strengths in terms of methods and results.

Thank you for pointing out to us that the text on strengths and limitations could be improved. We made more explicit in the text what the strength and limitation were of our study.

12. Please standardize the reference format uniformly. After modification, it is hoped that the number of references will be moderate.

We have carefully checked the reference format precisely after revising the manuscript. The reference list was formatted by Endnote.

Reviewer2: Dr. Derong Zeng

Thank you Dr. Derong Zeng for providing us with the positive feedback and constructive suggestions to improve our manuscript.

Abstract
1. Objectives: The objectives are clearly stated, but it might be beneficial to briefly mention the RADaR technique in the objectives for context.

Thank you for your suggestion. The RADAR technique is a method used to analyze the open comments, therefore we consider it part of the study design.

2. Design, Setting, Participants: Well-described, but consider adding a brief explanation of why a university hospital was chosen.

The CoCB-NL is relatively new in the Netherlands and is currently only used in university hospitals. We have clarified the choice for a university hospital in the abstract.

3. Results: The results are comprehensive; however, a brief mention of the implications of these findings could be added.

Thank you for your suggestion. We consider implications to be part of discussion and conclusion. We have elaborated on the implications of our study in this section of the abstract. (lines 41-45).

4. Conclusions: The conclusion ties back to the objectives effectively. Consider adding a sentence on how these insights can specifically influence future policy or practice in healthcare settings.

We agree that we could be more specific on how the result of our study could be used in health care organizations. We therefore have rephrased the conclusion section of the abstract. (lines 41-45)

Introduction
1. Background: The introduction provides a solid background. You could strengthen it by briefly discussing previous similar studies, if any, for context.

Thank you for your remark. We have added context information on the challenges healthcare organizations face due to staff shortages and added an example of a study analyzing comments on open-ended questions (Boussat et al., 2018). We are not aware of studies on the content of open-ended questions about hospital employees' WE, one of the reasons to conduct our study.

2. Rationale: The rationale behind focusing on the open-ended question is clear, but the choice of the Dutch CoCB-NL specifically could be elaborated.

We agree that this information is missing.
We have elaborated on our choice for the CoCB-NL more clearly in lines 101-103: The COCB-NL found it origin in the COCB, developed by Rafferty et al 25 and both showed good validity and reliability in a previous studies.25, 26 Therefore, the instrument has become part of the annual employee survey of a university hospital.

3. Definition of WE: Well-articulated. Perhaps include how this definition applies specifically to the Dutch healthcare context.

Thank you for the suggestion. We have added how the definition applies to healthcare in general. (Line 66)

4. Survey Limitations: Good discussion on limitations of Likert-type scales. Maybe consider discussing how the RADaR method specifically addresses these limitations.

Thank you for your remark. The analysis of comments on open-ended questions could provide useful context information and indications and directions for improvements of WE, and therefore address the limitations of Likert-type scales. The RADar technique is only a method to analyze these comments, therefore we consider this only relevant for the method section.

Methods
1. Design: The retrospective analysis using RADaR is well-explained. It might be helpful to justify the choice of a retrospective design.

We agree that the choice for a retrospective design is confusing. We therefore chose to delete the term 'retrospective' in line 115.
For this study, we were given access to a pre-existing dataset with responses to the open-ended question of the COCB-NL. These data were part of the most recent employee satisfaction survey of the hospital involved.

2. Sample & Setting: Clearly described. Consider discussing any potential biases in the sample.

Thank you for your suggestion. Response bias is a potential risk for the validity of the results of our study. All 14671 employees were invited to participate in the study. Although the response rate is quite high (42% (6144/14671)), it is not 100%. Considering the large dataset, we believe that the risk for response bias is limited. This point is mentioned in the 'strenghts and limitations' section of the discussion. Additionally, we have rephrased the strengths and limitation section of the discussion.

3. Data Collection: Adequately detailed, but including the rationale for choosing the specific surveys and tools (like LimeSurvey®) could be beneficial.

The COCB-NL was part of the hospital's annual employee survey. For transparency we have described all the questionnaires presented to the participants in the survey. However, for the purpose

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of this study, we only used participants' responses to the open-ended question of the CoCB-NL. LimeSurvey was chosen by the hospital for its compliance with their data security principles. We have added a few words for clarification to the data collection section.

4. Ethical Considerations: Well covered.

Thank you for the remark.

5. Qualifications of Researchers for Theme Coding: The paper should detail the qualifications and experience of the individuals involved in the theme coding process. Specifically, it would be beneficial to know if they have experience in qualitative research and have previously used the RADaR analysis method. This information is crucial to assess the credibility of the coding process and the reliability of the findings.
Adding this point will provide a clearer understanding of the expertise and experience behind the data analysis, which is critical in qualitative research to ensure accurate interpretation and coding of the data.

Two of our research team members are highly experienced in qualitative research methods (CvO & AMW, both holding a PhD for many years). Two other researchers (SM & LS) are PhD students, respectively last year and first year. To establish credibility in our methodology we performed the data analyses stepwise with a lot of room for peer feedback, independent coding followed by comparison and discussion, and confirmation by co-researchers. All comments are read by at least two researchers. We have described this process in the data analyses section. Based on your suggestions we have added some information about the researchers qualifications in lines 162, 169, & 184).

Results
1. Data Analysis: The multi-phase approach is well-explained. A brief discussion on how this method ensures reliability and validity of the results would be helpful.

Thank you for your remark. We have discussed the method applied in the discussion section of the manuscript, and especially in the strengths and limitations section of the discussion.

2. Themes Identified: The themes are clearly outlined. Consider discussing the potential impact of these themes in real-world healthcare settings.

Thank you. We have described the results of our research as factually as possible in the results section. The impact of these findings for healthcare organizations and the development of instruments to measure WE, are addressed in the discussion section. For example in lines 274-279.

3. Emerging Themes: Well-discussed. It would be useful to explore how these themes compare with existing literature.

Thank you for your suggestion. In the results section we have written only the results. In the discussion, we compare the new found themes to existing literature. For example in lines 288-296.

Discussion
1. Study Aims: The discussion effectively ties back to the aims. Maybe explore more about how these findings could be generalized or applied to other settings.

We agree that a statement on the generalizability of the study results must be part of the discussion. Hence, regarding generalization to other settings we state section the following in the strengths and

limitation section: This study is based on data from a single survey conducted in a university hospital during a specific point in time. The strength is the substantial size of the dataset, and the inclusion of all employees in this large university hospital. However, there is a risk of response bias in this survey, as only 42% of employees responded of which 37% responded to the open-ended question. This might impact the generalizability of our findings to other (university) hospitals worldwide. Additionally the study was performed in the last phase of the Covid-19 pandemic in the Netherlands. Hence, the dire circumstances and the employees' need to work from home may have influenced the results. Because of the size of the dataset and the participation of all the employees of this large university hospital, it is likely that other employees of (university) hospitals worldwide will recognize the themes found in our study. (lines 324-333)

2. Interpretation of Themes: The interpretation is insightful. Consider discussing how these interpretations compare or contrast with existing studies.

Thank you for bringing to our attention that all themes can be discussed in the discussion section. In this study, the themes are broad, encompassing every aspect of the work environment. It is not feasible to delve deeply into discussing all themes compared to existing literature. Therefore, we have chosen to focus only on the overarching themes most relevant to our findings: team effectiveness, team connectedness, diversity & inclusion. We believe that contrasting our findings with existing literature on corporate vision, administrative burden, and performance pressure does not contribute to the objectives of this manuscript: 1) give the responses on the open comment question of the CoCB-NL new insights or additional information on healthcare employees' perceptions of their WE and 2) identifying any themes missing in the CoCB-NL questionnaire.

3. Limitations: Good discussion of limitations, but you might want to elaborate on how these could impact the findings or their applicability.

Thank you for your suggestion. We have altered the strengths and limitations section of the manuscript based on this suggestion and expanded information on the applicability.

Conclusion
1. Summary of Findings: The findings are well-summarized. Consider adding a brief statement on future research directions.

We specified the text in line in more specific directions for future research on content (how to measure WE, and specifically the application of the CoCB(-NL), methodology (the application of the RaDaR technique) and implications (how to improve a WE).

2. Practical Implications: Well-discussed. Maybe emphasize specific policy changes or practices that could be implemented in healthcare settings based on these findings.

Thank you for your thorough feedback and suggestions for our study. In response to this last comment, we point out the lines 351-353: As WE is constantly changing and employees perceptions of their WE evolve over time, we recommend analyzing comments on the open-ended question to ensure adequate improvements in measuring WE. This recommendation is aimed at everyone concerned with WE improvement, e.g. HR advisors, managers, and researchers. We do not aim with this manuscript to give guidance on improving work environment.

Information relating to your article, including author names and affiliations, title, abstract and required statements (e.g. competing interests, contributorship, funding) will be taken directly from the information held in ScholarOne, and not from the article file. Please check that this information has been entered correctly and has been updated as appropriate. If your revised article is accepted, you

will only be able to make minor changes (e.g. correction of typesetting errors and proof stage) prior to publication.

We checked carefully the information in ScholarOne. We kindly request to use our Orcid references.

We greatly appreciate the reviewer's valuable input, which helped us refine the presentation and accessibility of our research.

VERSION 2 – REVIEW

REVIEWER	Zhu, Aiqun The Second Xiangya Hospital of Central South University, Clinical Nursing Teaching and Research Section
REVIEW RETURNED	11-Feb-2024

GENERAL COMMENTS	The author conducted an in-depth analysis of healthcare employees' perceptions of their work environment using RADaR technology and identified some new themes, which provide reference for improving the work environment and addressing workforce shortages.

REVIEWER	Zeng, Derong Kyoto University
REVIEW RETURNED	17-Feb-2024

GENERAL COMMENTS	Well done.Good luck.

VERSION 2 – AUTHOR RESPONSE