**Detailed Responses to Reviewers**

November 8th, 2022

XXXX, RN, PhD

Editor, Frontiers in Public Health

Dear Dr. XXX,

We are pleased to submit a revised version of our manuscript, *Patient Safety and Staff Psychological Safety: A Mixed Methods Study on Aspects of Teamwork in the Operating Room* (Manuscript ID: 1060473), incorporating the reviewers’ constructive comments.

We have carefully considered each comment and added new content to the manuscript as necessary, with all additions highlighted in yellow. Additional minor edits made to improve clarity have been noted using tracked changes. The attached document details our responses.

We believe that the revised manuscript is more focused and will be of more value to readers. Moreover, we believe that the findings of this study are important and have the potential to add value to the body of literature published in this domain.

All authors have seen and approved the final version of the manuscript.

Thank you again for reviewing and considering our work.

Sincerely,

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**Detailed Responses to Reviewers**

**Manuscript title: Patient Safety and Staff Psychological Safety: A Mixed Methods Study on Aspects of Teamwork in the Operating Room
Manuscript ID: 1060473**

**Reviewer 1**

**Comment 1.1:** *I found the topic is timely and relevant. The author/s done great job. Yet, the manuscript needs some work before I recommend it for publication.*

Response: Thank you for your review. We have re-evaluated the manuscript as per your insightful comments and we hope it is now better.

**Comment 1.2:** *The paper is silent about the link between human resource management practices and team work as well as team outcomes. I would suggest consultation/review of relevant literature on this[e.g. 1. Gile et al. Human Resources for Health (2018) 16:34 . Teamwork considered as among the bundles of ' Empowerment -Enhancing practices', effect of psychological safety on a team level outcomes and patient outcomes need to be highlighted. OR this should be reflected under the limitations part]. Also consider reviewing Martina Buljac(2018.Teamwork and Teamwork Training in Health care: An Integration and a Path Forward.*

Response: We appreciate the comment. The link between human resource management practices, teamwork, and team outcomes has been added to the introduction, discussion, and conclusions. We have incorporated the references you suggested. In the introduction, elements about empowered-enhanced practice have been added, along with their association with team performance and patient outcomes (lines- ), while in the discussion we have clarified the association between team engagement and staff psychological safety and patient safety (lines--). The importance of training and its contribution to improve confidence and coordination among team members has also been added to the discussion (lines ---).

**Comment 1.3:** *Why you opt for sticking to the 'teamwork' definition reiterated in the manuscript than other several definitions/justify pls.*

Response: We appreciate the comment. The definition of teamwork mentioned is a commonly accepted definition. However, based on your comment, we have added several more references supporting the definition and added a specific definition for teamwork in the operating room (lines--).

**Comment 1.4**: *What were the other important factors determining Patient safety (economic, sex/gender. age, ..)
psychological safety (e.g. age, gender/sex-being female staff or male in a team, service year, position, workload...) are key to boost team work and engagement, and team performance? If this is not under the scope, mention these (partly) under the limitation section.*

Response: Thank you for the comments. The other factors mentioned are important for patient safety and teamwork. However, they were not measured by the Ministry of Health in their observations and therefore we have mentioned this as a limitation of the study (lines---).

**Comment 1.5**: *Methodology/study design part needs to be clearly articulated: what specific sampling technique was used and why/why not?*

Response: We appreciate the comment. The sampling technique has been clarified in two aspects. First, in the participants section, we have clarified that the observations were performed in hospitals that meet the criteria for general hospitals by the Ministry of Health and represent a wide variety of hospitals in relation to their size and location (lines---).

Second, in the data collection section, we have emphasized that the sample included all observations performed by the MOH between 2018 and 2021 and that these were performed according to accepted guidelines for direct observations. We have also described the methodology for the random observation of surgical cases, taking care not to observe the same surgical team members more than once a day (lines ---).

Furthermore, we have added a limitation, in that the study represents a dataset of sampling observations for four years, which may limit the generalizability of the findings.

**Comment 1.6:** *In the qualitative part, how did you ensure the quality and validity of data and where is the contribution/roles of co-authors? Why Tracy's criteria than other criteria prefered/pls justify this? Particularly clarify/elaborate the steps you followed for qualitative analysis (some relevant literatures could give some insights:Gile et al. BMC Health Services Research (2022) 22:763*[https://doi.org/10.1186/s12913-022-08046-7](http://links.email.frontiersin.org/ls/click?upn=AAaFa03elZRFPXQ6ShiKwOJrGNtPfoTFzafc-2FUi8NQfBFTTw5AXbr62iCY0d75oaC1K7kdZWrvzeIM4n8AgrJw-3D-3DG0s2_X0NILMeI5Js1StdfpWHZeOhYeu61WIZBb-2Fc-2B2VF3ioSGQqF03bx9zDFuPfOsNadXbXXvkSDgJbYjOKHhrLnbujXh2YZI1EdWUpJFIpnsHyWz8HGAxh3FwU0xLWVxt7tM9TEfG8svGcy1RuUoXLOHVLQVsWDScDxmXzvDoYd2A5Rn0o46-2BT7MLoU0HPIwLzHP8GaONqx9EwOrbfOUE0ImakqBro-2FhI6t93ILDOPbtHPuP2Z9MBEPZDPD169l8Eu8bb-2BsbUVm3-2BVjO6iulICxWHSSIE1SJCiymEgGVP925hV6UMzRBsTPjwXCZvXl2pIiD)).

Response: Thank you for your comment. As per your suggestion, we have expanded the description of the qualitative analysis, and for each step we have added the contribution of each author in the thematic analysis, based on the reference suggested (lines ----\_).

We followed Tracy’s criteria because they are widely accepted criteria for qualitative best practice, and we have used them previously in other studies.

**Comment 1.7***: I would make conclusions a bit extensive*.

Response: Thank you for your suggestion. We have added the association of effective teamwork to team engagement and thus to team performance in aspects of staff psychological safety and patient safety (lines---).

**Reviewer 2**

**Abstract**

**Comment 1:** *It is unclear what is meant by 2,184 observations of the performance of safety standards. What are safety standards? Are they preoperative check-ins?
Was the thematic analysis inductive or deductive?*

Response: Thank you for the comment. We have clarified that the observations evaluated the performance of preoperative safety standards (surgical safety checklist and surgical count) (line 23).
The thematic analysis was inductive; this information has been added to the methods (line 29).

**Comment 2*:*** *Please clarify how the study is mixed methods – did the quantitative analysis inform the development of the interview questions?*

Response: We appreciate the comment. The study was design as a mixed methods study to analyze teamwork. The quantitative analysis evaluated the effect of preoperative teamwork on intraoperative teamwork, and the qualitative analysis evaluated aspects of role definition, both individually and as part of a team. The qualitative work did not evolve from the quantitative work. Both types of analysis aimed to investigate aspects of teamwork in relation to safety standards. This has been clarified in the aims of the study, in the introduction.

**Comment 3**: *The term "observations" is confusing as it is used in qualitative and quantitative research to refer to different things. Please clarify what is being referred to here and apply it throughout.
Is the ‘time out’ phase also part of the preoperative process?*

Response: Thank you for the comment. The term “observations” was used for the quantitative data collection. We have clarified this in the abstract (line---) and in the quantitative data collection section, that the observations were direct observations; we have also explained the observers’ training and the observation tool used (line ---).

The “time-out” phase is part of the preoperative process, as it is performed before the first surgical cut, hence it is considered part of the preoperative phase. This has been clarified in the quantitative section, under preoperative teamwork (line--).

**Introduction**

**Comment 4:** *The first paragraph does not convey the context or highlight the problem or gap in the literature. For example:
• High stress and vulnerable patients – these characteristics are not unique to theatre. Consider identifying other characteristics that are unique to the OR.
• The sentence: “standard safety checks are sometimes omitted” is not connected to the rest of the paragraph.
• Various disciplines with differing priorities….
• What sort of errors?
• What are surgical never events?
• Reducing to zero – there is some debate around whether this is a target that should be promoted.*

Response: Thank you for the comment. The paragraph has been rephrased as per your suggestion, to emphasize the risk to patient safety in the operating room and the importance of interprofessional teamwork to avoid adverse events (lines---). We have also added examples of surgical Never Events (lines----).

**Comment 5**: *The second paragraph is incomplete. For example, the definition of teamwork is not linked to surgical outcomes. There is no concluding sentence that summarises the argument, the gap in the literature and links to the next paragraph.*

Response: Based on your suggestion, the paragraph has been rephrased. We have added a definition of teamwork of surgical teams and clarified that ineffective teamwork in the operating room can lead to reduced patient safety and an increased likelihood of the occurrence of adverse events (lines---).

**Comment 6**: *The third paragraph is again, incomplete. It's not clear what the argument or evidence is in this paragraph. Please consider revising the introduction structure so that the overall narrative is clear and consider revising the structure of each paragraph so that the arguments presented in them are clear and well-argued.
It's still not clear what never events are.*

Response: Thank you for the comment. The paragraph has been rephrased and now better expands the concept of teamwork in relation to staff psychological safety and in relation to the previous paragraph about teamwork and patient safety. We have also added that empowered staff psychological safety, which leads to better patient outcomes.

**Methods**

**Comment 7:** *2,184 surgical cases means procedures on 2,184 separate patients? Did the patients provide consent?*

Response: Yes, 2,184 surgical cases means 2,184 procedures on separate patients. The observations were performed by the Ministry of Health, and we received the dataset from them. There was no requirement for consent as no patient data were collected.

**Comment 8**: *It's not clear from the methods section what the observations were. Consider including an example. The appendix 1 observations items checklist – is this a standardised checklist that is used elsewhere or was it developed for the current study? How were items determined to represent teamwork? It is not clear where the surgical safety checklist came from.*

Response: Thank you for the comment. We have clarified the description of how the observations were performed and the way the surgical cases observed were chosen (lines 115-118).
The observations evaluated the adherence of teams in performing surgical safety checklists and surgical counts to their required performance, based on international and national guidelines (for example, the surgical safety checklist was based on the World Health Organization guidelines). The checklist was created by the Ministry of Health, based on these guidelines.

The items representing teamwork are the items from a checklist that require mutual performance of a physician and a nurse, two nurses, or all of the staff together (lines 124-127).

**Comment 9**: *Was the study reviewed and approved by a human research ethics committee? It's implied by the sentence “participants provided verbal consent to participate…” but not explicitly stated whether the study was reviewed*

Response: The study was reviewed and approved by a human research ethics committee, as described in the ethics section. Ethical approval for the study was obtained from the Medical Research and Ethical Committee of the Israeli Ministry of Health (MOH 032-2019), on 27 December 2019. The need for informed consent was waived because only deidentified data were used. The individuals interviewed provided verbal consent to participate and received no compensation.

**Results**

**Comment 10:** *It's now referred to as 2,184 surgeries – this is the third different way this has been referred to. Consider picking one.*

Response: Thank you for referring to this. It has been clarified throughout the manuscript that the observations were performed on 2,184 separate surgical cases; this was also noted in the results (line 198).

**Comment 11:** *Were any preliminary analyses conducted to ensure the assumptions underlying the multivariate binary logistic regression model? Please report the results of these analyses.*

Response: Thank you for the comment. Basic assumptions were checked. The observations were performed on different surgical teams, as clarified in the methods, which decreased the possibility of independence of errors (lines 114-116). Multicollinearity was analyzed and showed that none of the independent predictor’s VIFs exceeded 1.25, which supported the absence of collinearity.

**Comment 12:** *Consider moving the sentence beginning “table 2” to the end of the paragraph.*

Response: The sentence has been rephrased (line 202).

**Comment 13**: *In the sentence “the variables tested (...” please specify the teamwork being referred to.*

Response: Thank you for the comment. The variables have been specified (line 203).

**Comment 14**: *Please report the results of the differences between hospital size or location in a table. Please clarify how these variables were entered into the model.
Were the people interviewed involved in the surgeries observed?*

Response: Thank you for the comment. There was no difference in the results in relation to hospital size or location, and this has been added to the results (line 218).

This variable entered to the model based on their requirement for teamwork as previously clarified in the methods section (lines 124-126).

The individuals interviewed were not involved in the surgeries observed, as most of them were in administrative roles. This has been clarified in the results (lines 221-222).

**Discussion**

**Comment 15:** *Most of the discussion is focused on synthesising the quantitative findings, with only two concise paragraphs discussing the qualitative findings. Convergent mixed methods designs merge the quantitative with the qualitative at the interpretation stage. However, that is not the case in this discussion. How might the level of conflict reported in the interviews help us understand the degree of teamwork observed in the quantitative findings? Consider rewriting.*

Response: Thank you for the comment. We have rephrased the discussion and believe that it has been improved. For example, the challenges in preoperative teamwork and its chaotic aspects were supported by the qualitative findings related to perceptions of an individual’s role and challenges around team communication (lines 336-338). Another addition emphasizes the perception of the importance of working in a designated team and its relation to the finding that staff turnover decreases teamwork (lines 353-354).

**Comment 16**: *The conclusion talks about promoting psychological safety and soft skills, neither of which are discussed in the discussion. Consider revising.*

Response: Thank you for the comment. We have added some sentences to the discussion emphasizing the importance of teamwork training in soft skills, to improve team members’ confidence in each other (lines 371-374).