**Detailed Response 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 carefully considered each comment and have accordingly added new content to the manuscript, all highlighted in yellow. Additional minor edits made to improve clarity are noted in tracked changes. The attached document details our responses.

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

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

Thank you for reviewing and considering our work.

Sincerely,

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**Detailed Response 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 re-evaluated the manuscript per your insightful comments and hope it is 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 and team work so as team outcomes was incorporated by us in the introduction, discussion and conclusions. We used the references suggested by you. In the introduction, elements of empowered-enhanced practice were added with their association to team performance and patient outcome (Lines- ), and in the discussion the association between team engagement to staff psychological safety and patient safety (Lines--).

The importance of training and its contribution to improve confidence and coordination among team members was added in 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: I appreciate the comment. The definition mention for teamwork is the common accepted definition. However, based on your comment, we added several more reference supporting the definition and added a specified 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 it is mentioned 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 was clarified in two aspects. First, in the participants section, we clarified that the observations were performed in hospitals that stand the criteria of general hospitals by the Ministry of Health and represent a wide variation of hospitals in relation to their size and location (Lines---\_.
Second, in the data collection section, we emphasized that the sample include all the observations performed by the MOH at 2018-2021 and were performed based on accepted guidelines of direct observations. We also described the methodology of the random observations on surgical cases taking into consideration not to observe on the same surgical team members more than once a day. (Lines ---)

Also, we added a limitation to the study about the dataset sampling representing observations of four years, what may challenge the ability to generalize 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. Per your suggestion we expanded the description of the qualitative analysis and in each steps and added the contribution of each author in the thematic analysis based on the reference suggested. (Lines ----\_
We followed Tracy's criteria because they are the accepted criteria for qualitative best practice used by us before in other studies.

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

Response: Thank you for your suggestion. We 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 clarified that the observations evaluated the performance of preoperative safety standards (surgical safety checklist and surgical count) (Line 23).
The thematic analysis was inductive and it was 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 in order to analyze teamwork. The quantitative analysis evaluated the effect of preoperative teamwork on intraoperative teamwork and the qualitative analysis evaluated aspects of role definition individually and as part of a team. It was not evolved from the quantitative part. Both analyses were aimed to investigate aspects of teamwork in relation to safety standards. It was clarified in aim 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. Observations were used for the quantitative data collection. We clarified in the abstract (Line---) an in the quantitative data collection that the observations were direct observations and explained the observers' training and observation's tool used (Line ---)
'Time out' is part of the preoperative process since it is performed before the first surgical cut. Hence, in the preoperative phase. It was 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 was rephrased per your suggestion in order to emphasize the risk for patient safety in the operating room and the importance of interprofessional teamwork to prevent adverse events (Lines---). Also we added examples to 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: As for your suggestion, the paragraph was rephrased. We added a definition to teamwork of surgical teams and clarified that ineffective teamwork in the operating room leads to poorer patient safety and 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 was rephrased and now better expands the concept of teamwork in relation to staff psychological safety in relation to the previous relation in paragraph 2 to teamwork and patient safety. We also added that empowered staff psychological safety 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, 2184 surgical cases means 2184 procedures on separate patients. The observations were performed by the Ministry of Health and we received the dataset. There was not requirement for a consent since the patient data was not 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 clarified the way the observations were performed and way the surgical cases observed were chosen (Lines 115-118).
The observations evaluate the adherence of team in performing surgical safety checklist and surgical count based on international and national guidelines to their required performance (For example, surgical safety checklist is based on the World Health Organization guidelines). The checklist was created by the Ministry of Health based on the guidelines.
The items representing teamwork are the items from the checklist that require mutual performance of a physician and a nurse, or two nurses or all 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 it. It was clarified througout the manuscript that the observations were performed on 2184 separated surgical cases, and 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. Assumption regarding independence of errors was not relevant since the observations were performed on different surgical teams and it was added to methods (Lines 114-116).
The assumption of mutlicollinearity

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

Response: The sentence was 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 were 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's size or location and it was added to the results (Line 218).
This variable entered to the model based on their requirement for teamwork as clarified previously in the methods (Lines 124-126).
The people interviewed were not involved in the surgeries observed since most of them were in administrative roles. It was 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 rephrased the discussion and believe that now it is better synthesizes. For example the challenges in preoperative teamwork and it chaotic aspects were supported by the qualitative finding of perceptions of individual role and challenging team communication (Lines 336-338). Another addition emphsizes the perception of importance of working in a designated team and its relation to the finding that 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 added few sentences in the discussion emphasizing the importance of teamwork training in soft skills to improve the team's members confidence in each other (Lines 371-374).