

# Peer Review File

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## **Reviewer #1:**

### **Comments:**

Thank you for your submission. The overall concept of your study is interesting, although I have some study and manuscript concerns which are listed below.

Comment 1. Your manuscript title should reflect the study design you have used.

Reply 1: We have revised our title as suggested (see page 0, lines 2 and 3)

Changes to text: (page 0, lines 2 and 3) Associations Between Patient Experience and Clinical Outcomes at a Level I Trauma Center: a Cross-sectional, Survey-based Study.

Comment 2. Your introduction is way too long. There is too much information and it is difficult to follow. Focus in on the priorities of your research project. Some of this information could be incorporated into other sections of the manuscript. Please review and amend.

Reply 2: We have shortened the introduction section substantially, removing some sections and moving others to the discussion (see pages 2-7, lines 73-204, and pages 15-16, lines 359-393).

Comment 3. There are factual statements made without adequate referencing throughout manuscript. Please review and amend.

Reply 3: We have reviewed the manuscript and updated factual statements with references, all of which were located in the introduction (and as mentioned by Reviewer 2, minor comments) (see page 2, lines 73-91).

Changes to text: (page 2, lines 73-91) Helping trauma survivors achieve the best possible recovery is a crucial global health issue because traumatic injury is the third leading cause of death and disability-adjusted life years (DALYs) (1). Over one-quarter of these trauma survivors sustain debilitating injuries that can lead to poor long-term health outcomes, chronic physical and mental health issues, and loss of employment and other productive and meaningful activity (2). While continuously improving the patient experience for this population is important for health care finance, ensuring optimal patient experience can also have a major impact on an individual's successful recovery (3-5). According to the Donabedian model (6), better trauma care structures and processes should lead to improved patient outcomes (7, 8). However, the associations between trauma patient experience and outcomes are inconsistent (9-11). Furthermore, traditional representations of trauma care processes limit the importance of patient experience and don't take patient-centered care into account (12, 13). The purpose of this study is to determine if patient experience is associated with important clinical outcomes in an urban Level I trauma center in the United States. Understanding whether enhancing patient experience affects outcomes is important for both the patient and the health care system. If strong associations exist, trauma care leaders may be able to enhance the recovery of their patients and the financial sustainability of the care they provide by improving patient experience.

Comment 3b. Page 14; Lines 347-375 state the survey questions used in your project. The various topics, questions and answers are difficult to comprehend. Are you able to add the telephone script or a listing of your survey questions with answer options to your manuscript?

Reply 3b. We have revised the 'measures' section of the methods (see pages 9 and 10, lines 242-253) to clarify what questions were asked and what responses were available to respondents. We also added an appendix with a list of the survey questions and answers (see pages 31-33, lines 780-860).

Changes to text: (pages 9-10, lines 242-253) Patient experience was measured using the standard questions from the HCAHPS survey. These were questions related to nurse communication (Questions 1, 2, and 3), doctor communication (Questions 5, 6, and 7), overall hospital rating (Question 18), likelihood of recommending the hospital to others (Question 19), and aspects of their care transition (Questions 20, 21, and 22). Self-reported health status was collected by asking participants to rate their current overall health and mental/emotional health. Demographic characteristics, including age, sex, and race, were collected as part of this study's survey, and used as covariates during analysis. Injury severity scores (ISS), based on ACS classification of not severe (ISS < 16) and severe (ISS ≥ 16)(49), were collected from each participant's electronic health record (EHR) and used as a covariate. The ISS has been the most commonly used injury severity rating for several decades and is standard practice in trauma centers with ACS certifications (53). A list of survey questions and answers can be found in Appendix 1.

Comment 4. The sample size description (Page 17; Lines 411-414) and Figure 1 information (Page 35) are inconsistent. Figure 1 is also lacking adequate information. Ninety-five patients were not enrolled, they were eligible. Fifty-one patients did not all decline participation, some were unable to be contacted. Please review and amend.

Reply 4: We have amended the sample size description as revised (see page 12, lines 296-299) and inserted an updated Figure 1 (see page 29, line 766)

Changes in text: (page 12, lines 296-299) **Sample size.** Of the 95 initial potential participants, 18 had phone numbers on file that were either disconnected or not-in-service. Additionally, 42 didn't answer a working number three times and five answered but declined participation. In total, 30 individuals completed the survey, a response rate of 31.5% (Figure 1).

(see page 29, line 766)

Comment 5. There is no mention of how you analysed your qualitative data in the statistical analysis section (Page 15; Lines 376-409) or qualitative analysis section (Page 19-20; Lines 459-489). Please review and amend.

Reply 5: The qualitative analysis sections have been removed from the manuscript per the recommendation of other reviewers.

Comment 6. In the results section (Page 17; Lines 411-457), please provide participant numbers (n=X) with all instances of a percentage. Please also ensure that 'patients' is used for those that have been approached for your study, and 'participants' is used for those that have enrolled/participated.

Reply 6. We have revised the manuscript as suggested, clearly distinguishing between patients and participants (see page 12-14, lines 306-314, 331-332, 339).

Changes to text: (page 12, lines 306-314) In this sample, 20 participants (67%) gave the hospital an overall

positive rating and 24 participants (80%) would “definitely” recommend the hospital to their friends or family. Half of the participants (n=15) experienced positive nurse communication (giving the highest scores on all 3 questions) and positive care transition. Doctor communication scores were slightly lower, with 11 (37%) participants considering their interactions positive. Only 3 (10%) participants considered their overall health excellent, while 7 (23%) reported excellent overall mental health. In total, 7 (23%) participants had at least one readmission within 30 days of discharge and had lengths of stay longer than they expected. Only 4 (13%) participants experienced hospital-acquired complications. The mean length of stay for all participants was 8.2 days ( $\pm$  6.7

(Page 13, lines 331-332) was associated with a significantly lower risk of HACs (the outcome) (6.7% among participants with positive nurse communications experienced HACs compared to 40% among participants

(Page 14, line 339) significantly lower rates of 30-day readmissions when participants reported positive nurse

Comment 7. There are inappropriate statements made throughout the manuscript such as “However, despite the limitations inherent in a small sample size, our study’s response rate of 31.5% is greater than the response rate achieved in the national HCAHPS survey (26.7% in 2017)” (Page 24; Lines 578-579) and “The reliability and validity of these surveys were tested and affirmed by correlation tests” (Page 26; Lines 614-615). Please review and amend.

Reply 7. We reviewed the and amended the text as advised, moving it to earlier in the discussion section about limitations and removing the idea that the response rate helps us overcome the limitation of a small sample size (see page 24, lines 403-407). We removed the qualifier “affirmed” from our statement about testing reliability and validity (see page 26, line 466-467).

Changes to text: (Page 17, lines 403-407) First, although our study’s response rate of 31.5% is greater than the response rate achieved in the national HCAHPS survey (26.7% in 2017) (70), the major limitation of this study is the small sample size of 30 participants. With only 30 participants, we were not able to apply multivariate models to adjust for potential confounders or attempt to prove causal connection.

(Page 20, lines 466-467) The reliability and validity of these surveys were tested using correlation tests.

Comment 8. Page 25; Lines 598-602 state “The standard cutoff time for HCAHPS responses is six weeks, but we interviewed patients who could have had hospital stays as much as 15 months prior to answering our phone survey”. Recall bias is major concern with this study. How was this managed?

Reply 8. We added a brief explanation on how we were able and not able to manage recall bias (see pages 18-19, lines 438-447), as well as statement on recall bias from a 2009 article in BMJ. We also added a section in the results descriptive analyses section providing clear information on the time between hospital discharge and survey (see page 12, lines 300-302).

Changes in text: (pages 18-19, lines 438-447) The standard cutoff time for HCAHPS responses is six weeks, but the average time between hospital discharge and study survey was almost one year. We were able to manage recall bias for several of the survey questions related to health factors, such as readmissions and complications, by confirming these responses in the participants’ EHRs. While all these responses were recalled correctly by participants, we were unable to perform similar confirmations on responses about their interactions with care providers. However, Black and Jenkinson (73) state that a delay between care delivery and a survey asking about that experience and associated outcomes may be needed to allow the patient to realize all potential benefits of their health care experience and distinguish between minor

inconveniences and serious failings by providers.

(see page 12, lines 300-302) The average time between hospital discharge and survey for the sample was 11.87 (standard deviation = 3.55) months, ranging from 3.87 months to 16.07 months.

Comment 9. Table 1 (Page 32) Overall Mental or Emotional Health Self-Rating and Overall Health Self-Rating was reported in 2 categories (“Excellent to Good” and “Fair to Poor”), but there were three answers grouped in one and two answers grouped in the other. Please make this clear.

Reply 9: We clarified the categories in Table 1 as advised (see page 26, table 1).

Changes in text: (Page 26, table 1)

Self-rating (n, %)

Excellent/Very Good/Good

Fair/Poor

Comment 10. Table 2 (Page 33) Under “Predictors”, what constitutes “Positive” and “Excellent”? Please make this clear.

Reply 10: We added clarification to the description under Table 2 (see page 27) as advised for the term positive. We did not add clarification for the term excellent as it is a single response to a single question as indicated in the Appendix 1-Survey Questions and Responses.

Changes in text: (Page 27, table 2) Nurse communication, doctor communication, and care transition are considered positive when all responses to questions in those categories are all top-box (or the most positive/highest scoring, i.e. “always”) responses. Positive “would recommend hospital” indicates the participant selected “definitely yes” to the question asking whether they would recommend the hospital to others.

Comment 11. There are incorrect and incomplete references. There is also a broken weblink. Please review and amend.

Reply 11. We have reviewed and corrected all references and fixed the broken weblink

(see pages 21-25, lines 505-663). We’ve also updated the reference style to meet the Journal of Hospital Management and Health Policy’s and AME journals’ guidelines.

Comment 12. I feel that the sample size of this project may be an issue, has this manuscript been reviewed by a statistician regarding the statistical analyses that have been performed and the assumptions that have been made?

Reply 12: A biostatistician is a member of our research team (Mr. Tian) and we discussed the limitation of our sample size and how we could address it during analyses and study discussion. For this reason, we state that we did not attempt any multivariate analyses (see page 12, lines 292-293). We also amended the manuscript to further describe and emphasize this major limitation and how it informs future research. Furthermore, we revised language that stated our results as definitive to language suggesting are results are exploratory and further research is needed (see pages 17-18, lines 414-422)

Changes in text: (pages 17-18, lines 414-422) Although this major limitation impacts the validity of the resulting relationships between patient experience and outcomes, this study presents an exploratory perspective on the topic and informs the development of further research that can more definitively test the proposed hypothesis. Future research should include a larger sample size that will allow analysis of causal

relationships, provide more context to why patients have and perceive different experiences, reduce biases, and improve internal validity.

## **Reviewer #2:**

### **Comments:**

This is a really strong manuscript with a clearly thought-out approach to the research question and data analysis plan. I don't know if this is your first time receiving reviewer feedback, but if it is, this is the strongest first submission I've reviewed. Thorough introduction (if a bit long, could you cut this down?). It's an interesting topic with important findings. I have no major concerns with the research or write-up, only a few 'medium' suggestions and several minor suggestions that are really more editing than anything else.

Reply to main comment: We have reduced the length of the Introduction/Background by several pages (see pages 2-8, lines 73-204).

Medium suggestions:

Comment 1. LOS – can be highly skewed. Did you test for this? Or can you control for this? Either by log transforming it or using a negative binomial regression instead of a general linear.

Reply 1: LOS was not used as a dependent variable in a regression model and the difference in LOS between severity groups were compared using Wilcoxon rank test, which is applicable when data are skewed. The line about LOS in a regression model has been removed (see page 11, lines 285-288).

Changes to text: (page 11, lines 285-288) For the binary outcomes of being readmitted for emergency or acute care within 30 days of discharge, developing complications, and staying longer than expected, we used Poisson regression to test the difference in proportion of the outcomes (58) and incorporated robust error variance to get reliable estimates.

Comment 2: Can you report on how long the time was between patient visits and surveys? I know you collected data Mar/April 2020 but if most participants were in the trauma center Nov/Dec 2018 it would be a much larger recall bias than if most survey participants were Nov/Dec 2019.

Reply 2: We calculated the total time between patient hospital discharge and added it to the beginning of the descriptive analyses section in our results (see Page 12, lines 300-302).

Changes in the text: (Page 12, lines 300-302) The average time between hospital discharge and survey for the sample was 11.87 (standard deviation = 3.55) months, ranging from 3.87 months to 16.07 months. was added to the descriptive analyses

Comment 3. The qualitative analysis piece of the manuscript feels out of place. I would remove this paragraph and just focus on the quantitative parts, especially as the qualitative piece doesn't tie in to any clinical outcomes.

Reply 3. We've removed the qualitative component of this study from the manuscript.

Comment 4: I would change all of the language to gender neutral (their instead of her/his) to help with keeping it de-identified.

Reply 4: We've removed the qualitative component of this study from the manuscript, Eliminating any use of gendered language.

Comment 5: Table 1 – some organizations don't want demographic info reported if the counts are less than 5 because they are worried about identification. I'm not insisting this is removed but was curious if you had considered this?

Reply 5: We had not considered this potential identification concern. However, we developed our study protocol under the advisement of our University's Institutional Review Board to ensure all privacy and confidentiality concerns were addressed through proper data collection and management process. For example, only 1 member of the research team has the master list that connects patient names with their unique study ID, which is stored on a password protected, university-managed drive.

Minor Comments:

Line 80 – is there a citation for the world's leading cause of disability-adjusted life years?

Reply to Line 80 minor comment: this mention of DALYs is part of the information added from the Haagsma et al. 2016 reference, however, we were not specific in saying these are values for injury DALYs and not DALYs in general. Per the recommendation of another reviewer, we used updated burden of disease data (see pages 2-3, lines 74-75, 95-100), so the original DALYs data was revised. Changes to the text: (page 2, lines 74-75) Helping trauma survivors achieve the best possible recovery is a crucial global health issue because traumatic injury is the third leading cause of death and disability-adjusted life years (DALYs) (1).

(page 3, lines 95-100) Vos and colleagues estimated that around 1.83 billion people were treated for traumatic injuries in 2019, which led to 249 million DALYs (1), a measure of population health loss that sums the years of life lost due to premature mortality and years lived with a disability (16). For individuals aged 10 to 49, road injuries are the leading cause of DALYs and males are disproportionately affected (1). As of 2010, 5.8% (56.2 million) of people injured around the world required acute care hospitalization for injury treatment (2).

Line 85 – again citation. More so if the reader doesn't know the model, they can be pointed to a source.

Reply to Line 85 minor comment: A citation as added to reference the Donabedian model (see page 2, line 86)

Changes to text (page 2, line 80) reference added.

Line 92 – affects outcomes such as...

Reply to Line 92 minor comment: We've added examples of important outcomes potentially affected by patient experience (see page 2, line 88)

Changes to text: (page 2, line 88) Understanding whether enhancing patient experience affects outcomes, such as 30-day readmissions and hospital acquired complications, is important for both the patient and the trauma health care system

Line 109 – citations needed for those facts

Reply to Line 109 minor comment: The Trauma Patient Experience section has been changed considerably and all statements have corresponding references (see pages 3-4, lines 92-105)

Changes to text: (pages 2-3, lines 97-130) **Trauma Patient Experience.** Ensuring trauma patients achieve the best possible outcomes is increasingly important as the prevalence of traumatic injuries

around the world has contributed to a global public health crisis that affects both the health and economies of nations (14, 15). Vos and colleagues estimated that around 1.83 billion people were treated for traumatic injuries in 2019, which led to 249 million DALYs (1), a measure of population health loss that sums the years of life lost due to premature mortality and years lived with a disability (16). For individuals aged 10 to 49, road injuries are the leading cause of DALYs and males are disproportionately affected (1). As of 2010, 5.8% (56.2 million) of people injured around the world required acute care hospitalization for injury treatment (2). In the United States (US), traumatic injuries account for approximately 2.5 million hospital admissions per year (17) and close to 26% of those hospitalized sustained severe injuries that can lead to disability, reduced quality of life, and unemployment (3, 15). These debilitating injuries account for approximately 30% of all life years lost (more than cancer, heart disease, and HIV combined), and US\$396 billion in annual healthcare costs and lost productivity (18).

Line 334 – St. Louis, Missouri metropolitan area (I think it should be lower case as urban is lower case in the line above)

Reply to Line 334 minor comment: This has been changed as advised (see page 9, line 224)

Changes to text: (page 9, line 224) care to patients who are injured in the St. Louis, Missouri, metropolitan area, and surrounding

Line 335 – capitalize Saint

Reply to Line 335 minor comment: This has been changed as advised (see page 9, line 514)

Changes to text: (page 9, line 228) Declaration of Helsinki (as revised in 2013). The study was approved by the Saint Louis

Line 359 – don't capitalize as none of the prior responses were capitalized

Reply to Line 359 Minor comment: the responses to survey questions were taken out of the main text, per the recommendation of another reviewer, and the entire survey (instructions, questions, and possible responses, were added as an appendix to the manuscript.

Line 427 – LOSs instead of written out

Reply to Line 427 minor comment: lengths of stay was replaced by LOSs (see page 13, line 313)

Changes to text: (page 13, line 313) and had LOSs longer than they expected. Only 4 (13%) participants experienced hospital-

Line 429 – LOS

Reply to Line 429 minor comment: length of stay was replaced by LOS (see page 13, line 314)

Changes to text: (page 13, line 314) acquired complications. The mean LOS for all participants was 8.2 days ( $\pm$  6.7 days) (Table 2).

Line 472 – extra period

Reply to Line 472 minor comment: This section has been removed from the manuscript per the suggestions of several reviewers.

Line 627 – no "as"

Reply to Line 627 minor comment: The word ‘as’ has been removed (see page 20, lines 478-479)  
Changes to text: (page 20, lines 478-479) systems and ensure trauma patients receive the highest quality care and best outcomes possible.

**Reviewer #3:**

**Comments:**

Thank you for submitting your article titled “Associations between patient experience and clinical outcomes at a level 1 trauma centre”. The basic premise of this work to equate patient experience of care with the longer-term outcomes of trauma care is a good concept and there are aspects of this work that a very well done. However, there are also aspects that need to be considered / changed or better explained prior to this study being publishable.

Comment 1. The first sentence in the abstract (line 41/2/3) is very long and could be split up to make it easier to read.

Reply 1: The sentence in the abstract has been amended as advised (see page 1, line 35-37)

Changes in text: (page 1, line 35-37) *Background*. Helping survivors of traumatic injuries achieve optimal recovery is a crucial global health issue. Traumatic injuries present major implications for the health of patients, care systems, and world economies.

Comment 2. Your introduction is well written, however there are no references at all in this section and there are clearly some concepts that have come from elsewhere. Throughout the rest of your text your referencing is done well, and this should be extended to your introduction.

Reply 2: The introduction has been revised and appropriately referenced (see page 2, lines 73-91)

Changes to text: (page 2, lines 73-91) Helping trauma survivors achieve the best possible recovery is a crucial global health issue because traumatic injury is the third leading cause of death and disability-adjusted life years (DALYs) (1). Over one-quarter of these trauma survivors sustain debilitating injuries that can lead to poor long-term health outcomes, chronic physical and mental health issues, and loss of employment and other productive and meaningful activity (2). While continuously improving the patient experience for this population is important for health care finance, ensuring optimal patient experience can also have a major impact on an individual’s successful recovery (3-5). According to the Donabedian model (6), better trauma care structures and processes should lead to improved patient outcomes (7, 8). However, the associations between trauma patient experience and outcomes are inconsistent (9-11). Furthermore, traditional representations of trauma care processes limit the importance of patient experience and don’t take patient-centered care into account (12, 13). The purpose of this study is to determine if patient experience is associated with important clinical outcomes in an urban Level I trauma center in the United States. Understanding whether enhancing patient experience affects outcomes, such as 30-day readmissions and hospital acquired complications, is important for both the patient and the trauma health care system. If strong associations exist, trauma care leaders may be able to enhance the recovery of their patients and the financial sustainability of the care they provide by improving patient experience.

Comment 3. Line 85/86 there needs to be some more description (a couple of sentences) more of the Donabedian model, as readers who are not familiar with this will need some more context.

Reply 3. We've added some brief context to the introduction of Donabedian Model (see page 2, lines 80-82).

Changes to text: (page 2, lines 80-82) According to the Donabedian conceptual model (6), which is used to examine and evaluate the structures, processes, and outcomes that influence care quality, better trauma care structures and processes should lead to improved patient outcomes (7, 8).

Comment 4. Line 105 – there should be more recent data on the burden of trauma

Reply 4: We have updated the Introduction to include the most recently available data on the global burden of injury (see pages 2-3, lines 73-75, 95-100).

Changes to text: (page 2, lines 73-75) Helping trauma survivors achieve the best possible recovery is a crucial global health issue because traumatic injury is the third leading cause of death and disability-adjusted life years (DALYs) (1).

(page 3, lines 95-100) Vos and colleagues estimated that around 1.83 billion people were treated for traumatic injuries in 2019, which led to 249 million DALYs (1), a measure of population health loss that sums the years of life lost due to premature mortality and years lived with a disability (16). For individuals aged 10 to 49, road injuries are the leading cause of DALYs and males are disproportionately affected (1). As of 2010, 5.8% (56.2 million) of people injured around the world required acute care hospitalization for injury treatment (2).

Comment 5. Overall, your background (pages 3 – 12) is long and detailed. While this is not in itself a problem, you may consider reducing some of the sections. One area you could reduce this is in the discussion of other countries. A brief discussion is appropriate however some of the detail of other countries could be removed.

Reply 5. We have reduced the length of the Introduction/Background by several pages (see pages 2-8, lines 73-204).

Comment 6. In your methods, there is no attempt to justify a sample size, apart from saying how many you have access to. Since your sample size is going to be a major issue in the results then you need to discuss this, and its limitations early.

Reply 6: A biostatistician is a member of our research team (Mr. Tian) and we discussed the limitation of our sample size and how we could address it during analyses and study discussion. For this reason, we state that we did not attempt any multivariate analyses (see page 12, lines 292-293) and mentioned the limitation in the methods section (see page 8, lines 233-235). We also amended the manuscript to further describe and emphasize this major limitation and how it informs future research. Furthermore, we revised language that stated our results as definitive to language suggesting our results are exploratory and further research is needed (see pages 17-18, lines 414-422)

Changes in text: (page 8, lines 233-235) A small pool of potential participants may lead to a small sample size, which can limit the interpretation of results (discussed further below).

(pages 17-18, lines 414-422) Although this major limitation impacts the validity of the resulting relationships between patient experience and outcomes, this study presents an exploratory perspective on the topic and informs the development of further research that can more definitively test the proposed hypothesis. Future research should include a larger sample size that will allow analysis of causal relationships, provide more context to why patients have and perceive different experiences, reduce biases,

and improve internal validity.

Comment 7. Is does not identify who did the interviews. As this is a potential source of bias then this needs to be discussed.

Reply 7. We've identified the interviewers in the recruitment and Sampling Section of the Methods (see page 8, line 235-236). We also address Interviewer Bias in the limitations in the discussion section (see page 19, lines 456-460)

Changes to text: (page 8, lines 235-236) Participants were recruited and surveyed via phone in March and April of 2020 by authors AO and KH.

(page 19, lines 456-460) Interviewer bias is another limitation inherent in a phone-based survey study. The differing ways multiple interviewers may phrase or order questions in a survey can influence the way participants respond and how data are collected (71). To reduce interviewer bias, a phone script including exact phrasing for each survey question and set of possible responses was developed by the authors and strictly followed for each phone call.

Comment 8. Patients had been admitted between Nov 18 and Jan 20, however recruitment and interviews were conducted in March and April 2020. This leads to two specific types of bias, hindsight bias and recall bias. Both of these will have significantly affected your results and need to be discussed. Many of your outcome measures rely on self-report which may have been as much as 17 months post admission.

Reply 8. We added a brief explanation on how we were able and not able to manage recall bias (see page 18, lines 438-448), as well as statement on recall bias from a 2009 article in BMJ. We also added a section in the results descriptive analyses section providing clear information on the time between hospital discharge and survey (see page 12, lines 301-303).

Changes in text: (page 18, lines 438-448) The standard cutoff time for HCAHPS responses is six weeks, but the average time between hospital discharge and study survey was almost one year. We were able to manage recall bias for several of the survey questions related to health factors, such as readmissions and complications, by confirming these responses in the participants' EHRs. While all these responses we recalled correctly by participants, we were unable to perform similar confirmations on responses about their interactions with care providers. However, Black and Jenkinson (73) state that a delay between care delivery and a survey asking about that experience and associated outcomes may be needed to allow the patient to realize all potential benefits of their health care experience and distinguish between minor inconveniences and serious failings by providers.

(Page 12, lines 301-303) The average time between hospital discharge and survey for the sample was 11.87 (standard deviation = 3.55) months, ranging from 3.87 months to 16.07 months.

Comment 9: Line 456 you have an upper CI that is greater than 100%. This is one of the issues that you face when you have a small sample size.

Reply 9: We agree that this is because of our small sample size. We amended our discussion of the small sample size limitation to include a mention of this (see page 17, lines 416-417).

Changes to text: (see page 17, lines 416-417) Furthermore, we believe the small sample size led to an upper CI interval greater than 100% in the "would recommend hospital" in analysis for the severely injured subgroup

Comment 10: The start of your qualitative analysis section discusses a quantitative measure (would you recommend this hospital to someone else).

Reply 10: Regarding qualitative analysis, all mentions of this were removed following similar feedback from other reviewers.

Comment 11: Many of the qualitative answers that you received are not relevant to your study, therefore you should strongly consider if this section adds to your paper.

Reply 11: Regarding qualitative analysis, all mentions of this were removed following similar feedback from other reviewers.

Comment 12: You should reconsider some of the emphasis you place on your results with your small sample size.

Reply 12: A biostatistician is a member of our research team (Mr. Tian) and we discussed the limitation of our sample size and how we could address it during analyses and study discussion. For this reason, we state that we did not attempt any multivariate analyses (see page 12, lines 292-293) and mentioned the limitation in the methods section (see page 8, lines 233-235). We also amended the manuscript to further describe and emphasize this major limitation and how it informs future research. Furthermore, we revised language that stated our results as definitive to language suggesting our results are exploratory and further research is needed (see pages 17-18, lines 414-422)

Changes in text: (page 8, lines 233-235) A small pool of potential participants may lead to a small sample size, which can limit the interpretation of results (discussed further below).

(pages 17-18, lines 414-422) Although this major limitation impacts the validity of the resulting relationships between patient experience and outcomes, this study presents an exploratory perspective on the topic and informs the development of further research that can more definitively test the proposed hypothesis. Future research should include a larger sample size that will allow analysis of causal relationships, provide more context to why patients have and perceive different experiences, reduce biases, and improve internal validity.

#### **Reviewer #4**

##### **Comments:**

Thank you for the opportunity to review this manuscript. The relationship between patient experience of care and clinical outcomes is certainly extremely important to research, including within trauma populations.

Comment 1: Is the sample size adequate to provide any meaningful statistical analysis (n=30), and especially any sub-group or co-variate analyses? The authors conclude that experience has the potential to influence outcomes based on a single significant finding, amongst many non-significant associations, which is highly unsurprising given the lack of power provided by such a small sample. Analysis of 'qualitative' free text comments does not add any particularly useful insights, and these data are highly limited compared to in-depth qualitative insights into patient experience.

Reply 1: A biostatistician is a member of our research team (Mr. Tian) and we discussed the limitation of our sample size and how we could address it during analyses and study discussion. For this reason, we

state that we did not attempt any multivariate analyses (see page 12, lines 292-293) and mentioned the limitation in the methods section (see page 8, lines 233-235). We also amended the manuscript to further describe and emphasize this major limitation and how it informs future research. Furthermore, we revised language that stated our results as definitive to language suggesting our results are exploratory and further research is needed (see pages 17-18, lines 414-422)

Changes in text: (page 8, lines 233-235) A small pool of potential participants may lead to a small sample size, which can limit the interpretation of results (discussed further below).

(pages 17-18, lines 414-422) Although this major limitation impacts the validity of the resulting relationships between patient experience and outcomes, this study presents an exploratory perspective on the topic and informs the development of further research that can more definitively test the proposed hypothesis. Future research should include a larger sample size that will allow analysis of causal relationships, provide more context to why patients have and perceive different experiences, reduce biases, and improve internal validity.

Comment 2: Also the manuscript is far too long. The introduction reads more like the introduction to a thesis than to a peer-reviewed journal article. I was almost 12 pages in before coming to any detail regarding the study objectives.

Reply 2: We have reduced the length of the Introduction/Background and overall manuscript by several pages (see pages 2-8, lines 73-204).

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