PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Patient safety in transitional care of the elderly: Effects of a quasi-experimental inter-organizational educational intervention
AUTHORS	Storm, Marianne; Schulz, Jörn; Aase, Karina

VERSION 1 – REVIEW

REVIEWER	R. Colin Reid University of British Columbia Canada
REVIEW RETURNED	24-Jul-2017

GENERAL COMMENTS	This study seeks to determine the effects of an educational intervention on perception of patient safety culture. Participants were 229 professional care providers in hospital and nursing home in Norway. The intervention, the Meeting Point, consisted of three structured half-day sessions designed to cover three specific theme areas. Analysis consisted of quantitative (descriptive, bivariate and multivariate) and qualitative components. Results reported indicate that several dimensions of the patient safety culture measure were positively affected over time in the hospital group by the Meeting Point intervention, but the fewer effects were found in the nursing home sample. The authors conclude that the Meeting Point intervention has the potential to improve patient safety culture, particularly in the hospital setting but that additional work is needed in the nursing home setting. This is an interesting study and has the potential to add to the research base of patient safety culture. My concerns are primarily methodological and statistical. I also think that some components of the paper require clarification. I outline these below. 1. This study involves the collection of both qualitative and quantitative data and is thus a mixed methods study. This should be acknowledged and discussed, particularly in regard to the manner in which the two methods are complementary and thus add combined explanatory value. 2. It is unclear to me what is meant by “cross-level educational program”. Please specify the levels in play here. In the abstract mention is made of “intra-organizational staff meetings” and on page 3, lines 10 and 22, “inter-organizational staff meetings” are discussed. Two settings (NH and Hosp.) are discussed elsewhere, as are the three themes of the Meeting Point. Are any or all of these meant to represent “levels”?

	3. The research hypothesis is very broad but can probably suffice, but I suggest adding a mention of expectation over time. T3 data collection takes place 12 months post-intervention and, if the expectation is that change in the dependent variables can be attributed to the intervention, this should be made explicit here. Further discussion will be required in the Discussion that provides a rationale for this attribution. 4. Minor point: On page 3, line 40 it is noted that the study ended in spring 2015 but on page 4, line 27, it is noted that the study ended in February 2015. A slight discrepancy. 5. How was the sample size estimated? If a power analysis was conducted, the specifics should be reported re expected effect size, Type 1 and Type 2 error size used, etc. If a power analysis was not conducted, a rationale should be provided and an explanation that explains how the sample size was estimated should be provided. 6. In the discussion of the intervention on page 5, an explicit statement about what can be found in the Storm, Groene et al. (2014) reference should be provided. For example, are all relevant details that are necessary for the reader to fully understand the intervention found there? Psychometric information? Etc. Suggested addition: A figure that outlines the Meeting Place intervention. 7. Were any analyses of intervention fidelity conducted? If yes, these should be noted. 8. MLM assumptions test results should be noted in the Analysis section. If all assumptions were met, one line stating this will suffice. If variable were modified, this should also be noted. 9. Where significant differences are reported in Results, the direction of the relationships should also be indicated. For example, the second paragraph on page 8 outlines two significant differences but does not explain direction. (see also pages 8 and 9) 10. Throughout the paper, significance levels of $p<.05$ and $p<.001$. This is unusual in my experience. Typically results significant at the $p<.01$ level are also indicated. If all statistically significant results were in fact either at the .05 or the .001 level, the authors may wish to add a note to explain this in the Analysis or the Results section. 11. On page 8, internal consistency is reported. If other forms of reliability (e.g., test-retest) have been established in other studies, this would be valuable information to add (probably in the measurement section). 12. The authors report that the calculated Cronbach's alphas as low as .46 are "acceptable to very good". I would argue that a minimum alpha of .7 is required for acceptability. However, the authors may have an argument (and references) that state otherwise. It would be very helpful to include an explanation about this. 13. In the Results (page 9, middle paragraph) it is reported that a "gentle increase" was estimated via MLM between T1 and T2 on 5 patient safety factors "compared to a negative development…for the control group". I would argue that such a statement is a misinterpretation of the estimates.

	In order to make such a statement, a relevant statistical test of the differences between regression coefficients would have to be conducted. In the absence of the appropriate test, it is not possible to state whether the differences between coefficients are “real” or due to chance. The same reasoning follows on page 10. This has implications for the Discussion section, where these results are reported again and further interpreted. If the authors wish to retain this interpretation, it should be explained and justified, with references, in the Analysis section. 14. Numerical error: Page 9, line 51: p-value for “overall perceptions of patient safety” is reported here as “p<.05” but in Table 6 it is “p<.001”. 15. Numerical error: Table 7 for Handoffs intervention vs control columns. A Beta of .15 with a CI of -.04, -.33 are reported. Either the Beta or the CI are incorrectly signed.

REVIEWER	Gregory M. Bump, MD University of Pittsburgh Medical Center Pittsburgh, Pennsylvania United States of America
REVIEW RETURNED	04-Aug-2017

GENERAL COMMENTS	Thank you for the opportunity to review the manuscript by Storm et al. The authors addressed an important issue. It is well recognized that transitions in patient care are a source of medical error. Transitions of care take many forms including: admission into the hospital, from the emergency department to the ward or ICU, between wards in a hospital, inter-hospital transfers, and in this case transfer from a hospital to a nursing facility. At each of these transitions new providers must meet the patient and assess the patient’s health. At each transition, there is the opportunity for knowledge to be lost. Information known to a provider but not conveyed in the records is rarely communicated unless there is a verbal hand-off. Written information is often misinterpreted. Finally, when health systems use different record keeping systems, information may not make it from one system to another. For such reasons, there is an interest in improving the communication skills between providers to decrease errors at transitions. Previous work in hand-offs has generally focused on hand-offs within a single institution. Examples include hand-offs from the emergency ward to the inpatient wards, or from operating rooms to wards. Other examples include hand-offs from day-teams to night-teams. What is unique about the work of Storm et al is they focus on transfers between institutions. Moreover, they also examine transitions between disciplines. This work is pioneering. The authors implemented an educational forum which they termed “Meeting Point”. The meeting point occurred in the fall of 2013. This involved half-day seminars. To determine if there meeting point had any effect, they administered a well-validated survey on Patient Safety Culture shortly after the seminar and then again a year later. This was compared to a survey done before the meeting point.

	The authors state in their conclusion that there were improvements over time in some key patient safety culture factors. However, when one examines the results closely one could easily conclude their intervention was a negative study with minimal impact on the end-points. If the authors agree, I recommend revising the discussion. In revising the discussion, I would focus on prior published work of multi-disciplinary (or inter-professional) team training and what has been successful and what has not. Examples in the literature include TEAMSTEPPS and I-PASS. Why did their study have minimal positive results? Was their intervention too brief? Did they have too much turnover of staff so the people they trained transitioned out of the job? Was the interaction they had at the seminars not enough interaction to make the providers across disciplines familiar enough to improve communication? Did the seminar focus mostly on communication and not serve as a stimulus for change? They have a high non-response rate (particularly in last survey) and perhaps non-responder bias was the cause? Finally, it might be that their anticipated outcome (changes in culture) was too ambitious when compared to their intervention? A few other minor comments for the authors to also consider. Abstract: The second paragraph is hard to read. The 1st sentence does not convey a clear idea. The sentence “Reports on cross-level, cross-unit…. are lacking” is really the most important concept of the paragraph in my opinion. I suggest starting with this concept and revising the second paragraph so it is clearer how their research question is different than other literature on transitions of care. Methods: Educational Interventional program the “Meeting Point”. The authors describe how many study participants took the surveys in the results. In either the results or methods could they describe how many participants went to the seminars? The statistics are well done. In the results section the authors describe the reliability data in detail and provide this in a table. The HSOPSC is a well-accepted, well-validated survey that has been published on extensively. I don’t feel this adds to the findings and could be eliminated on shortened extensively. In the results the authors describe statistically significant differences in “’Handoff and transitions’ (diff T1-T2) ((p<.05)” but in table the raw data is Mean 3.00 (CI 2.77-3.23) vs 3.00 (CI 2.79-3.19). While this may be statistically significant I do not see a relevance to the actual practice of safe patient care here. Furthermore, these small changes are inconsistent with the recommendations of interpretation from the AHRQ. The authors describe several similar small changes in their findings that while statistically significant do not reflect meaningful differences in patient safety culture. The subsequent multivariate analyses (while detailed) add more confusion on the subject than clarity. My take away is all the effect sizes are very small. If the authors agree the tables and results could be simplified to convey this more accurately.

REVIEWER	Andrea Bishop IWK Health Centre, Canada
REVIEW RETURNED	04-Aug-2017

GENERAL COMMENTS	Thank you for the opportunity to review your paper. You present a novel intervention to improve patient safety culture across health care organizations to improve transitional care for elderly patients. Overall, the paper presents some interesting findings regarding how an educational session could be used to improve perceptions of patient safety culture and improve transitional care across acute care and long-term care sectors. However, the description of the intervention itself is lacking in detail and the presence of potentially significant confounders limits the ability of the reader to draw conclusions. Specific comments are below. Abstract - It is unclear after reading the manuscript if these were indeed intra-organizational meetings (e.g., only participants from the hospital or nursing home were present) or inter-organizational meetings (e.g., participants from both settings were present) - Is the aim to improve perceptions of patient safety or to improve the use of cross-organizational transitional care program? I'm unsure of why improving the perception of patient safety culture is important. Introduction -The first sentence is confusing. I don't think you mean that transitional care presents risks, rather that transitions in care present risk? - Cross-organizational safety culture is an interesting concept and especially pertinent when looking at transitions in care. However, there is no literature presented to support this concept. Conceptually, it's difficult to see how patient safety culture could be bridged between two different organizations - or, are you creating patient safety culture to create a new team of individuals that help support transitional care. I think this concept needs to be discussed in greater length in the background for clarification. - No research objective or questions are presented in the introduction, only the study hypothesis Methods - It appears that only a small number of staff were included in the study and, in fact, sample size targets were not met. Please include your full sample size calculation. - pg. 4, line 33 - the tense needs to be changed from "will need" to "was targeted" - The description of the educational intervention is not robust enough for others to replicate the study. If this is the only interventional component, it is essential that a full description of the intervention be provided (e.g., who attended the educational sessions? were the same facilitators present for all three workshop? what was the group activity?). Also, were any fidelity or process measures captured to ensure that the intervention was delivered in the same manner? - The outcomes are clearly defined and statistical measures appropriate - More information about the eight follow-up meetings is needed - please put in full descriptions of the participants for each session. Also, why were the sessions not audio recorded to ensure fidelity?

	The main outcomes of these sessions seems to be the presence of transitional care programs, but this is not the main outcome of the paper. - It would be helpful to include a supplementary table outlining the two survey instruments Results - Low response rates between data collection time points is also problematic and lessens the ability to interpret results - Were the responses at the three time points matched? - Some of the reliability scores for the measurement scales were in the low/unacceptable range (<0.50). Were these still considered overall analysis? Was any pilot testing to done previous that would indicate that these would be reliable measures prior to full implementation? - Pg. 9, line 6. Mann-Whitney is spelled incorrectly - The results from the follow-up meetings seem to suggest the presence of potentially significant confounders for the intervention groups. This is a major limitation for a quasi-experimental design and due to the small number of time points that were included for data collection. It is also unclear whether all of the activities described as being implemented during the follow-up discussions happened post-intervention or were some of them in place already (e.g., tv screens, posters)? Discussion - Overall, the results demonstrate minor changes and it is difficult to attribute these solely to the educational intervention given the number of potential confounders - Discussion of strengths and limitations is thorough, but once again underscores the ability to make any connections between the intervention and the survey results. A more robust study design would have improved the ability to make causal inferences. Conclusion - Although I think it is fair to say that the intervention could have potential usefulness, greater description of the intervention is needed for others to replicate and generalize the findings.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1

This study seeks to determine the effects of an educational intervention on perception of patient safety culture. Participants were 229 professional care providers in hospital and nursing home in Norway. The intervention, the Meeting Point, consisted of three structured half-day sessions designed to cover three specific theme areas. Analysis consisted of quantitative (descriptive, bivariate and multivariate) and qualitative components. Results reported indicate that several dimensions of the patient safety culture measure were positively affected over time in the hospital group by the Meeting Point intervention, but the fewer effects were found in the nursing home sample. The authors conclude that the Meeting Point intervention has the potential to improve patient safety culture, particularly in the hospital setting but that additional work is needed in the nursing home setting.

This is an interesting study and has the potential to add to the research base of patient safety culture. My concerns are primarily methodological and statistical. I also think that some components of the paper require clarification. I outline these below.

1. This study involves the collection of both qualitative and quantitative data and is thus a mixed methods study. This should be acknowledged and discussed, particularly in regard to the manner in which the two methods are complementary and thus add combined explanatory value.

Response: We have added text in the study design section stating that the study contains a quantitative and a qualitative component and can be described as a concurrent embedded mixed method design (Curry & Nunez-Smith, 2015). The quantitative component include three quantitative survey measurements on patient safety culture. A qualitative component positioned after the 'Meeting Point' involved data collection at follow-up meetings with staff in the hospital and nursing home wards. We have rewritten large parts of the discussion emphasizing the value of combining the two methods and the explanatory value this adds to the study results.

2. It is unclear to me what is meant by "cross-level educational program". Please specify the levels in play here. In the abstract mention is made of "intra-organizational staff meetings" and on page 3, lines 10 and 22, "inter-organizational staff meetings" are discussed. Two settings (NH and Hosp.) are discussed elsewhere, as are the three themes of the Meeting Point. Are any or all of these meant to represent "levels"?

Response: Thank you for this comment. To avoid any confusion as to what we mean by "cross-level" we have rewritten parts of the background section using the notion of "inter-organizational" instead of "cross-level". As a consequence, we have also changed the title of the manuscript to "Patient safety in transitional care of the elderly: Effects of a quasi-experimental inter-organizational educational intervention.

3. The research hypothesis is very broad but can probably suffice, but I suggest adding a mention of expectation over time. T3 data collection takes place 12 months post-intervention and, if the expectation is that change in the dependent variables can be attributed to the intervention, this should be made explicit here. Further discussion will be required in the Discussion that provides a rationale for this attribution.

Response: We agree with the reviewer, and have added a formulation on expectation of change over time in patient safety culture related to the intervention on page 4.

4. Minor point: On page 3, line 40 it is noted that the study ended in spring 2015 but on page 4, line 27, it is noted that the study ended in February 2015. A slight discrepancy.

Response: Thank you for this comment. To ensure consistency we have noted in the text in the section on study design and setting that the study started in September 2013 and ended in February 2015.

5. How was the sample size estimated? If a power analysis was conducted, the specifics should be reported re expected effect size, Type 1 and Type 2 error size used, etc. If a power analysis was not conducted, a rationale should be provided and an explanation that explains how the sample size was estimated should be provided.

Response: A power analysis was conducted prior to the study and was described in the study protocol (Storm, Groene, Testad et al. 2014). Based on comments from reviewer 1 & reviewer 3 we have included details on the power analysis and expected effect size, type 1 and type 2 error on page 5.

6. In the discussion of the intervention on page 5, an explicit statement about what can be found in the Storm, Groene et al. (2014) reference should be provided. For example, are all relevant details that are necessary for the reader to fully understand the intervention found there? Psychometric information? Etc. Suggested addition: A figure that outlines the Meeting Place intervention.

Response: We have added some more information on the intervention in the text, we have included information on participants at the Meeting Point seminars in table 1, and a new table 2 outlining the elements, period, contents and purpose of the 'Meeting Point' based on Storm et al. 2014b. We have included the following statement "The intervention program is described in detail in the study protocol 'Quality and safety in the transitional care of the elderly (phase 2)' to clarify the contents of Storm, Groene et al 2014b.

7. Were any analyses of intervention fidelity conducted? If yes, these should be noted.

Response: Unfortunately, we have not conducted any analyses of fidelity for this study. However, we did register the number of participants at the 'Meeting Point' and 'follow-up meetings' and whether the same participants came to the three 'Meeting Point' seminars. These numbers have been added in table 1.

8. MLM assumptions test results should be noted in the Analysis section. If all assumptions were met, one line stating this will suffice. If variable were modified, this should also be noted.

Response: In general, a MLM model with continuous outcome variables assumes homogeneity of the variance, linear relations between predictors and outcome and normality in the residuals. The normality assumption was checked by normal Q-Q-plots of the residuals. As stated in the statistical methods section, we used an unstructured correlation matrix, i.e., we made no assumptions about the residuals covariance structure by estimating the structure directly from the data. Thereby judgments of assumptions about the variance-covariance structure are unnecessary. The condition of linearity can also be discarded because all included independent variables are categorical. We have added a sentence to statistical method and result section.

9. Where significant differences are reported in Results, the direction of the relationships should also be indicated. For example, the second paragraph on page 8 outlines two significant differences but does not explain direction. (see also pages 8 and 9).

Response: Thank you for this comment. We have clarified the directions in the text, and these are indicated in table 6 and reported by MLM analyses (Table 7 and 8).

10. Throughout the paper, significance levels of $p<.05$ and $p<.001$. This is unusual in my experience. Typically results significant at the $p<.01$ level are also indicated. If all statistically significant results were in fact either at the .05 or the .001 level, the authors may wish to add a note to explain this in the Analysis or the Results section.

Response: Thank you for this comment. The reviewer is right that the levels p<.05, p<.01 and p<.001 are used frequently in the literature. Usually authors refer to statistically significant as p<.05 or p<.01 and statistically highly significant as p<.001. According to a statement of the American Statistical Association in 2016 p-values should be reported precisely. However, we used the simplification in order to keep the tables more compact. We have adjusted the tables and use <.05, <.01 and <.001 as suggested.

11. On page 8, internal consistency is reported. If other forms of reliability (e.g., test-retest) have been established in other studies, this would be valuable information to add (probably in the measurement section).

Response: We have added some more information about the validation of the Hospital and Nursing Home SOPSC in the text on page 7.

12. The authors report that the calculated Cronbach's alphas as low as .46 are "acceptable to very good". I would argue that a minimum alpha of .7 is required for acceptability. However, the authors may have an argument (and references) that state otherwise. It would be very helpful to include an explanation about this.

Response: We thank the reviewer for this observation. The definition of ranges of Cronbach's alpha's is not consistent throughout the literature. Indeed, there is a wide range of Cronbach's alpha values defined as acceptable (0.45-0.95) ("The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education", Keith S. Taber, DOI 10.1007/s11165-016-9602-2). However, Hair et al. and Kline et al. arguing that values between 0.6 and 0.7 are acceptable (Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). Multivariate Data Analysis (6th ed.). New Jersey: Pearson Educational, Inc.; Kline, R. (2005). Principles and Practice of Structural Equation Modeling (2nd ed.). New York: The Guilford Press). We follow their definition and have adjusted the text accordingly.

13. In the Results (page 9, middle paragraph) it is reported that a "gentle increase" was estimated via MLM between T1 and T2 on 5 patient safety factors "compared to a negative development…for the control group". I would argue that such a statement is a misinterpretation of the estimates. In order to make such a statement, a relevant statistical test of the differences between regression coefficients would have to be conducted. In the absence of the appropriate test, it is not possible to state whether the differences between coefficients are "real" or due to chance. The same reasoning follows on page 10. This has implications for the Discussion section, where these results are reported again and further interpreted. If the authors wish to retain this interpretation, it should be explained and justified, with references, in the Analysis section.

Response: We believe that we have not misinterpreted the results. However, we might not have been precise enough in our model description and explanation. We have therefore tried to address the issue in the revised manuscript by adding the following text in a footnote: "The purpose of the hierarchical mixed linear model is to describe the effects of the "Meeting point" on the safety culture factors. The hierarchical model can be described by $Y=\beta_0+ \beta_1\times Group+\beta_2\times Survey\_1+\beta_3\ Survery\_2+\beta_4\times Group\times Survey\_1+\beta_5\times Group\times Survey\_2$ where β_0 is the intercept (i.e., the constant) of the model and $\beta_1,\ldots,\beta_5$ are the regression coefficients. Group is (=0) for the control and (=1) for the intervention group, Survey_1 the independent variable at baseline survey T1 (=0) and post-intervention T2 (=1), Survey_2 the independent variable at baseline survey T1 (=0) and post-intervention T3 (=1) and interactions Group×Survey_1, Group×Survey_2. The estimated patient safety factors for the control (CG) and intervention group (IG) are β_0 (CG) and $\beta_0+\beta_1$ (IC) at T1, $\beta_0+\beta_2$ (CG) and $\beta_0+\beta_1+\beta_2+\beta_4$ (IG) at T2, $\beta_0+\beta_3$ (CG) and $\beta_0+\beta_1+\beta_3+\beta_5$ (IG) at T3.

Thus, the change between T1 and T2 is estimated by β_2 for the control group and β_2+β_4 for the intervention group. If there would be no significant slope difference from T1 to T2 between control and intervention, β_4 would not be significant in the MLM.
14. Numerical error: Page 9, line 51: p-value for “overall perceptions of patient safety” is reported here as “p<.05” but in Table 6 it is “p<.001”.

Response: We thank the reviewer for this correct observation. The value on page 9 is corrected to p<.01.

15. Numerical error: Table 7 for Handoffs intervention vs control columns. A Beta of .15 with a CI of -.04, -.33 are reported. Either the Beta or the CI are incorrectly signed.

Response: We apologize for this typo and thank the reviewer for his detailed observation. The correct CI has been changed to -.04 to .33.

Reviewer 2
Thank you for the opportunity to review the manuscript by Storm et al. The authors addressed an important issue. It is well recognized that transitions in patient care are a source of medical error. Transitions of care take many forms including: admission into the hospital, from the emergency department to the ward or ICU, between wards in a hospital, inter-hospital transfers, and in this case transfer from a hospital to a nursing facility. At each of these transitions new providers must meet the patient and assess the patient’s health. At each transition, there is the opportunity for knowledge to be lost. Information known to a provider but not conveyed in the records is rarely communicated unless there is a verbal hand-off. Written information is often misinterpreted. Finally, when health systems use different record keeping systems, information may not make it from one system to another. For such reasons, there is an interest in improving the communication skills between providers to decrease errors at transitions.

Comment: Previous work in hand-offs has generally focused on hand-offs within a single institution. Examples include hand-offs from the emergency ward to the inpatient wards, or from operating rooms to wards. Other examples include hand-offs from day-teams to night-teams. What is unique about the work of Storm et al is they focus on transfers between institutions. Moreover, they also examine transitions between disciplines. This work is pioneering.

The authors implemented an educational forum which they termed “Meeting Point”. The meeting point occurred in the fall of 2013. This involved half-day seminars. To determine if there meeting point had any effect, they administered a well-validated survey on Patient Safety Culture shortly after the seminar and then again a year later. This was compared to a survey done before the meeting point.

The authors state in their conclusion that there were improvements over time in some key patient safety culture factors. However, when one examines the results closely one could easily conclude their intervention was a negative study with minimal impact on the end-points. If the authors agree, I recommend revising the discussion. In revising the discussion, I would focus on prior published work of multi-disciplinary (or inter-professional) team training and what has been successful and what has not. Examples in the literature include TEAMSTEPPS and I-PASS. Why did their study have minimal positive results? Was their intervention too brief? Did they have too much turnover of staff so the people they trained transitioned out of the job? Was the interaction they had at the seminars not enough interaction to make the providers across disciplines familiar enough to improve communication? Did the seminar focus mostly on communication and not serve as a stimulus for change? They have a high non-response rate (particularly in last survey) and perhaps non-responder bias was the cause? Finally, it might be that their anticipated outcome (changes in culture) was too ambitious when compared to their intervention?

Response: Thank you for these important comments. In fact, we have not been precise enough with our formulations. Table 7 shows a superior development of some safety culture for the intervention group compared to the control group (shown as statistically significant). However, Table 7 doesn't tell us if there are significant improvements of the safety score inside the intervention group. It always compares the intervention and control. Therefore, even if the intervention had minimal impact on the end-points of the intervention group, the end-points might be significantly different compared to the control, e.g., when the progression of the safety score of the intervention was flat but negative for the control group. We have tried to clarify this in the manuscript. In addition, we have rewritten the discussion and suggest some components of the 'Meeting Point' be further developed.

A few other minor comments for the authors to also consider.

Introduction: The second paragraph is hard to read. The 1st sentence does not convey a clear idea. The sentence "Reports on cross-level, cross-unit…. are lacking" is really the most important concept of the paragraph in my opinion. I suggest starting with this concept and revising the second paragraph so it is clearer how their research question is different than other literature on transitions of care.
Response: The second and third paragraph in the introduction on page 3 have been rewritten to better convey the background of the study and to clarify the key concepts used in the study.

Methods: Educational Interventional program the "Meeting Point". The authors describe how many study participants took the surveys in the results. In either the results or methods could they describe how many participants went to the seminars?

Response: Information on the number of participants at the 'Meeting Point' seminars has been added in table 1.

The statistics are well done. Thank you.

Comment: In the results section the authors describe the reliability data in detail and provide this in a table. The HSOPSC is a well-accepted, well-validated survey that has been published on extensively. I don't feel this adds to the findings and could be eliminated on shortened extensively.

Response: We have decided to keep the details of the reliability data and the Hospital and Nursing Home SOPSC as the third reviewer asked for more details about the measurement scales.

Comment:In the results the authors describe statistically significant differences in "'Handoff and transitions' (diff T1-T2) ((p<.05)" but in table the raw data is Mean 3.00 (CI 2.77-3.23) vs 3.00 (CI 2.79-3.19). While this may be statistically significant I do not see a relevance to the actual practice of safe patient care here. Furthermore, these small changes are inconsistent with the recommendations of interpretation from the AHRQ. The authors describe several similar small changes in their findings that while statistically significant do not reflect meaningful differences in patient safety culture. The subsequent multivariate analyses (while detailed) add more confusion on the subject than clarity. My take away is all the effect sizes are very small. If the authors agree the tables and results could be simplified to convey this more accurately.

Response: Thank you for this comment. There are significant changes (improvement) on several patient safety factors in the hospital intervention group as well and there is a downward development in the hospital control group. The qualitative data also reveal improvement activities so we would not say that the significant changes are irrelevant. However, we have modified our interpretation of the significant result in the text.

Reviewer 3
Thank you for the opportunity to review your paper. You present a novel intervention to improve patient safety culture across health care organizations to improve transitional care for elderly patients.

Overall, the paper presents some interesting findings regarding how an educational session could be used to improve perceptions of patient safety culture and improve transitional care across acute care and long-term care sectors. However, the description of the intervention itself is lacking in detail and the presence of potentially significant confounders limits the ability of the reader to draw conclusions. Specific comments are below.

Abstract
- It is unclear after reading the manuscript if these were indeed intra-organizational meetings (e.g., only participants from the hospital or nursing home were present) or inter-organizational meetings (e.g., participants from both settings were present)

Response: We apologize for the confusion. We now use the term inter-organizational staff meetings in the abstract, as well as changed the title of the manuscript to avoid the use of cross-level educational intervention. As such, the Meeting Point is inter-organizational (with participants across care levels) as well as cross-unit (with participants across medical and emergency hospital wards).

- Is the aim to improve perceptions of patient safety or to improve the use of cross-organizational transitional care program? I'm unsure of why improving the perception of patient safety culture is important.

Response: Thank you for this comment. The study aims to improve staff perceptions of patient safety culture using an educational program 'The Meeting Point' including inter-organizational staff meetings combining educational sessions with a discussion platform focusing on quality and safety in transitional care of the elderly. We have also added text to the introduction to better explain the connection between the intervention and patient safety culture.

Introduction
-The first sentence is confusing. I don't think you mean that transitional care presents risks, rather that transitions in care present risk?

Response: Thank you for this clarification. We have changed the wording of the sentence and rewritten parts of the first paragraph of the introduction on page 2 to clarify this matter.

- Cross-organizational safety culture is an interesting concept and especially pertinent when looking at transitions in care. However, there is no literature presented to support this concept. Conceptually, it's difficult to see how patient safety culture could be bridged between two different organizations - or, are you creating patient safety culture to create a new team of individuals that help support transitional care. I think this concept needs to be discussed in greater length in the background for clarification.

Response: We have tried to reflect on this matter in the introduction on page 3 to support the need for an increased awareness of patient safety culture across organizations in the transitional care context.

- No research objective or questions are presented in the introduction, only the study hypothesis
Response: Thank you for this observation. We have added research objectives in the paragraph together with the study hypothesis in the introduction section on page 4.

Methods
- It appears that only a small number of staff were included in the study and, in fact, sample size targets were not met. Please include your full sample size calculation.

Response: Sample size estimates was conducted prior to the study and reported in the study protocol (Storm et al 2014). We have included these calculations in the manuscript on page 5.

- pg. 4, line 33 - the tense needs to be changed from "will need" to "was targeted" :

Response: Thank you. We have changed the sentence, which is now on page 5.

- The description of the educational intervention is not robust enough for others to replicate the study. If this is the only interventional component, it is essential that a full description of the intervention be provided (e.g., who attended the educational sessions? were the same facilitators present for all three workshop? what was the group activity?).

Response: We have also included information on participants at the Meeting Point seminars in table 1 and we have added a new table 2 outlining the elements, period, content and purpose of the 'Meeting Point' based on Storm et al. 2014b. We have inserted a sentence stating that the study protocol by Storm et al. (2014b) presents the full description of the educational intervention.

Also, were any fidelity or process measures captured to ensure that the intervention was delivered in the same manner?

Response: Unfortunately, we have not conducted any analyses of fidelity for this study. However, we did register the number of participants at the 'Meeting Point' and 'follow-up meetings' and whether the same participants came to the three 'Meeting Point' seminars. These numbers have been added in table 1. We also write in the text on page 6 that the same group of researcher facilitated the 'Meeting Point' seminars.

- The outcomes are clearly defined and statistical measures appropriate

Response: Thank you for your considerate comment.

- More information about the eight follow-up meetings is needed - please put in full descriptions of the participants for each session. Also, why were the sessions not audio recorded to ensure fidelity?

Response: We have expanded table 1 to include information about the number of participants at the eight follow-up meetings. In the section qualitative data collection we have also provided information on the participants (ward nurses, nurses, auxiliary nurses) and that the intervention group participants also took part at the Meeting Point seminars. The follow-up meetings were audio-recorded and transcribed verbatim.

The main outcomes of these sessions seems to be the presence of transitional care programs, but this is not the main outcome of the paper.
- It would be helpful to include a supplementary table outlining the two survey instruments

Response: To clarify, we have included the definitions of each of the HSOPSC and NHSOPSC patient safety culture factors in table 4.

Results
- Low response rates between data collection time points is also problematic and lessens the ability to interpret results
- Were the responses at the three time points matched?

Response: Thank you for this comment. The responses at the three measurement points were matched. We have included the following sentence on page 10: “The respondents had an identification number to ensure that they could be matched across the three measurements”.

- Some of the reliability scores for the measurement scales were in the low/unacceptable range (<0.50). Were these still considered overall analysis? Was any pilot testing to done previous that would indicate that these would be reliable measures prior to full implementation?

Response: We did not conduct any pilot testing of the NHSOPSC before use, but the instrument has been translated and validated in a recent Norwegian study (Cappelen et al, 2016). We have included the following sentence in the text on page 11 to address this issue: “Low Cronbach’s α values ca be explained by a low number of items in the factor, the respondents, or aspect relating to construct validity (Taber, 2016)”. As this is the first study applying the Norwegian version of the NHSOPSC in an intervention study to improve patient safety culture, we decided to include all the factors in the statistical analysis.

- Pg. 9, line 6. Mann-Whitney is spelled incorrectly

Response: Thank you for noticing the typo. We have corrected this in the manuscript text.

- The results from the follow-up meetings seem to suggest the presence of potentially significant confounders for the intervention groups. This is a major limitation for a quasi-experimental design and due to the small number of time points that were included for data collection. It is also unclear whether all of the activities described as being implemented during the follow-up discussions happened post-intervention or were some of them in place already (e.g., tv screens, posters)?

Response: Thank you for this comment. Some of the measures were implemented between T2 and T3 because of a simultaneous focus on patient flow, overcrowding of hospital wards and patient safety in the participating wards. We have rewritten this part of the results section (page 13) to clarify this. Some of the measures could also be directly related to the Meeting Point and we have tried to clarify this in the same section.

Discussion
- Overall, the results demonstrate minor changes and it is difficult to attribute these solely to the educational intervention given the number of potential confounders
- Discussion of strengths and limitations is thorough, but once again underscores the ability to make any connections between the intervention and the survey results. A more robust study design would have improved the ability to make causal inferences.
Conclusion
- Although I think it is fair to say that the intervention could have potential usefulness, greater description of the intervention is needed for others to replicate and generalize the findings.

Response: Thank you for these comments. We have addressed them in the revised discussion and conclusion.

VERSION 2 – REVIEW

REVIEWER	Colin Reid University of British Columbia, Canada
REVIEW RETURNED	24-Oct-2017

GENERAL COMMENTS	Congratulations to the authors for a thorough and detailed set of responses. I noted a few typos and other concerns. Examples: Page 1, line 39/40: "Qualitative date" rather than Qualitative data. Also, in the same sentence "Qualitative data" cannot "report the existence..." Table 2 on page 8, first box under "Elements": Delete the word "a". I have no other outstanding concerns about this paper.

REVIEWER	Gregory M. Bump, MD University of Pittsburgh Medical Center, USA
REVIEW RETURNED	30-Oct-2017

GENERAL COMMENTS	This is the second review of the manuscript by Storm et al. hence my comments are much shorter as I provided a more detailed critique on the first review. This version of the manuscript is much improved. I reviewed the manuscript entirely, including the comments from all three reviewers. The writing is clearer, the authors have added helpful details. The conclusions are much better supported and refined in this version. The work is an important contribution to the hand-off literature and patient safety culture literature. I am impressed with all the hard work done to improve the manuscript. While I believe some of the tables have too much data, as an author myself I am sensitive to the fact that different reviewers have different opinions and these are only style differences. The authors have done a great job of balancing input from each reviewer. The revision is very good. The only edit I suggest is in the abstract under the section results there is a typo-- "Qualitative date report the existence..." this should be data.

REVIEWER	Andrea Bishop IWK Health Centre, Canada
REVIEW RETURNED	20-Oct-2017

GENERAL COMMENTS	Thank you for your resubmission. The responses to the previous review are appropriately detailed and the authors have thoughtfully addressed concerns in the revised manuscript. A few minor comments to consider: - On page 3 you write "suggested intra-organizational staff meetings as one useful improvement." However, Meeting Point is inter-organizational. These statements seem to contradict one another? -The first sentence of the Conclusion needs to be reworded to improve clarity -Overall, the paper would benefit from further proofreading to improve readability

VERSION 2 – AUTHOR RESPONSE

Reviewer:3
Thank you for your resubmission. The responses to the previous review are appropriately detailed and the authors have thoughtfully addressed concerns in the revised manuscript.
Thank you.

A few minor comments to consider:
- On page 3 you write "suggested intra-organizational staff meetings as one useful improvement." However, Meeting Point is inter-organizational. These statements seem to contradict one another?

Response: Thank you for this comment. We have removed intra-organizational from sentence in line no. 25 on page 3 to improve clarity.

-The first sentence of the Conclusion needs to be reworded to improve clarity -Overall, the paper would benefit from further proofreading to improve readability

Response: Thank you for this comment. We have reworded the first sentence in the conclusion (marked with yellow) to improve clarity. The revised paper was edited before the first resubmission.

Reviewer: 1
Congratulations to the authors for a thorough and detailed set of responses. Thank you.

Response: I noted a few typos and other concerns.

Examples:
Page 1, line 39/40: "Qualitative date" rather than Qualitative data. Also, in the same sentence "Qualitative data" cannot "report the existence..."

Thank you for noticing this. We have corrected the typo and changed the wording to "Qualitative data shows.."

Table 2 on page 8, first box under "Elements": Delete the word "a".

Response: Thank you. We have corrected the typo.

I have no other outstanding concerns about this paper. Thank you.

Reviewer: 2

Comment: This is the second review of the manuscript by Storm et al. hence my comments are much shorter as I provided a more detailed critique on the first review. This version of the manuscript is much improved. I reviewed the manuscript entirely, including the comments from all three reviewers. The writing is clearer, the authors have added helpful details. The conclusions are much better supported and refined in this version. The work is an important contribution to the hand-off literature and patient safety culture literature. I am impressed with all the hard work done to improve the manuscript. While I believe some of the tables have too much data, as an author myself I am sensitive to the fact that different reviewers have different opinions and these are only style differences. The authors have done a great job of balancing input from each reviewer. The revision is very good.

Response: Thank you very much for thoughtful comments.

Comment: The only edit I suggest is in the abstract under the section results there is a typo-- "Qualitative date report the existence..." this should be data.

Response: Thank you for noticing. The typo has been corrected.