

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Protocol for an integrated evaluation framework to study training, curricular and contextual factors impacting the success of a Measurement for Improvement training programme for healthcare staff in Ireland.
AUTHORS	Khurshid, Zuneera; De Brún, Aoife; McAuliffe, Eilish

VERSION 1 – REVIEW

REVIEWER	Rostami, Paryaneh University of Manchester School of Health Sciences, Division of Pharmacy and Optometry
REVIEW RETURNED	05-Jun-2021

GENERAL COMMENTS	<p>I enjoyed reading this protocol paper regarding the evaluation of a Measurement for Improvement training programme. With the increase in quality improvement (QI) initiatives, it is very important that there are clear and transparent plans for evaluations, and I thank the authors for providing such a good framework-based example of how this should be done.</p> <p>I really liked how a blended approach is being used, combining a very well-known framework for evaluating training programmes with a framework for evaluating QI interventions. I found the topic very interesting. I will be following this work and look forwarding to hearing more about the results. I have a few minor suggestions for improvement.</p> <p>General</p> <ul style="list-style-type: none">• Some headings are capitalised and others not. <p>Title:</p> <p>I would find it useful if the title specified the setting of the Measurement Improvement programme. e.g. The type of settings the Organisations were and the country. I think this will help readers understand the relevance to their own work.</p> <p>Abstract:</p> <p>I felt the abstract was very well-written and summarised the main points very well.</p> <ul style="list-style-type: none">• Page 3 line 11 – I think it would be clearer to say: “To address this aim, this study will utilise the experiences of trainees, trainers, programme, and site coordinators”. As it seemed to jump topic the other way.• Page 3, line 17 – Is the MUSIQ abbreviation required as it is not referred to again within the abstract – However, I understand that
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	<p>many people recognise this framework through the abbreviation so perhaps useful to keep, especially for those searching for studies using this framework.</p> <p>Ethics and Dissemination: It would be useful to know how ethical standards will be adhered to despite the exemption from full ethical review. For example, the management of interview data and receiving consent from participants.</p> <p>Strengths and Limitations of study:</p> <ul style="list-style-type: none"> • Page 4, Line 6 – This sentence is slightly hard to follow, perhaps would be easier to say, “Study rigour will be ensured by triangulating multiple data sources....”. • Page 4, line 12 - As the strengths and limitations may stand alone to the abstract when published, perhaps need to expand quality improvement before abbreviating again. • Page 4, line 17 - I would like to see how the limitation regarding recall bias may be reduced, i.e. participants given the opportunity to bring notes or sufficient time to think about the programme before the interview? <p>Introduction:</p> <ul style="list-style-type: none"> • Page 4, line 20-22 – I appreciate that the definition of quality in healthcare is subjective, and that you have highlighted the common defining attributes, but it is unclear which definition you will be using. • Page 4, line 24 – I also feel it would be helpful to define quality improvement. • Page 5, lines 13, 16, 20 – although you have abbreviated QI previously, you have typed it out several times. May I suggest you use the “ctrl + f” function on word to search for all occurrences of “quality improvement” and change to QI where necessary. • Page 5, line 24 – unnecessary use of “a” – should just say “enable the success of measurement...” • Page 6 line 3-4 – would be useful to know when the research started and the duration of the work for those trying to do similar work. <p>Methods</p> <ul style="list-style-type: none"> • Page 6, Lines 7, 12 & 17 – Unclear what “the research” is referring to, do you mean this particular research study or research in general. • Page 16, line 19 – “does not initiate with a well-formed hypothesis” sounds slightly negative and I don’t think you need to justify this, I think it would sufficient to say that this is “an exploratory study”. It is well known that exploratory studies do not usually have a well-formed hypothesis, as that would introduce bias. • Page 7, line 7 – I find the use of “the” and “this” quite confusing and unsure when you are referring to this particular study or this type of research or research in general. I think some simple rewording within the methods section would help to address this. For example, I would find it easier to follow if this line said, “To address the research question of this study, a research design that can....” • Page 7, line 11 What is “it” referring to – individual behaviour, complexity or both? <p>Framework Development Process</p>
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	<ul style="list-style-type: none"> • Page 8, line 2-4 – This is a very important point – perhaps needs linking to the strengths and limitations more strongly? • Page 8, line 19 – Would be beneficial to add a line to help the reader navigate the next section i.e. “The following sections describe each evaluation model and provide justification for their use”? <p>The Kirkpatrick Evaluation Model</p> <ul style="list-style-type: none"> • No suggestions for improvement – well-written and I found this very interesting. <p>Model for Understanding Success in Quality (MUSIQ model)</p> <p>Once again, very well written and I know it can be hard to summarise the description of evaluation models. However, you have done this very well and address the strengths and limitations in an effective, yet succinct manner. Just a few suggestions for improving this section:</p> <ul style="list-style-type: none"> • Page 10, line 6 – should say “organization” rather than “organizational”. • Page 10, line 9 – This research study? Or the wider research project? • Page 10, line 14 – once again needs abbreviating to QI <p>Integrated evaluation framework</p> <p>I liked the table and themes and found this easy to follow.</p> <ul style="list-style-type: none"> • Page 12, Line 1 – Considering when this paper is published, supplemental files will not be necessarily “attached”, would it be better to say “A draft interview guide..... can be found in Supplemental File 1”? <p>Case Design</p> <ul style="list-style-type: none"> • Page 15, line 3 – I would suggest to add “Use of multiple case design...” as the language seems rather colloquial otherwise. <p>Case selection</p> <ul style="list-style-type: none"> • Page 16, line 16-17 – I would suggest including a reference to these collaboratives, I found related information on the Ireland National Quality Improvement Team’s website, that could be referenced? <p>Researcher reflexivity statement</p> <ul style="list-style-type: none"> • Page 16, line 22 – were these ethnographic observations? • Some references to strengthen the argument for the benefits of immersion and observation would be beneficial. <p>Patient and public involvement statement</p> <ul style="list-style-type: none"> • Why has there been no patient and public involvement and are there any plans to disseminate findings to relevant networks? <p>Data collection</p> <ul style="list-style-type: none"> • If available, would be good to see copies of consent form and recruitment letter as supplementary files. • Maybe better placed in a different section – however, will the interview schedule/framework for subsequent interviews be updated if new topics emerge in the first few interviews? <p>Data analysis</p> <ul style="list-style-type: none"> • As this study will be of interest to a wide audience, I think it is important to make it clear that NVivo does not do the coding for
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	<p>you but it “aids” the coding process, and the researcher does the coding and the analysis. I have come across colleagues who think NVivo is a magic software that does analysis for you. It is important to make clear that this is not the case and that researchers put a lot of effort into the coding and analysis process based on their experience and knowledge.</p> <p>Ensuring Rigour</p> <ul style="list-style-type: none"> • Page 19, line 2 – more concise to say “by triangulating” rather than “using triangulation”. • Page 19, line 6 – Rewording required - maybe add the word sample, e.g. “a randomly selected 10 percent sample”. Otherwise “a” doesn’t make sense. <p>Discussion</p> <ul style="list-style-type: none"> • Page 19, lines 18-19 - I am unsure how the second part of this sentence (after the reference), follows on from the first part. I think the first line of the discussion needs to very impactful, which is definitely possible considering the importance of the work that you are doing. • Page 19, lines 22-23 – I think this is either worded inaccurately or stretching. There are many programmes and studies evaluating QI relating to measuring for improvement, including interventions that focus on specific areas of healthcare such as medication safety. I would suggest qualifying this sentence by specifically mentioning “published studies” and the specific “measurement for improvement” programme that you are evaluating. • Following on from the above point – I think you could also mention that a lot of quality improvement programmes are not properly evaluated or even peer-reviewed and published, so it is unclear whether similar work has occurred. There are references available to support that quality improvement is not always published. • Page 20, line 21 – once again quality improvement needs abbreviating to QI. • Page 20 – lines 13-20 – some good valid points about the contribution of this work to the literature. • Page 21 – Good clear ending summarising the importance of this work. <p>Ethics and Dissemination</p> <ul style="list-style-type: none"> • This heading and references are fully capitalised unlike other headings. • Please see previous comments regarding outlining how ethical standards were adhered to despite the exemption from full ethics. (e.g. obtaining written consent). <p>References</p> <ul style="list-style-type: none"> • Reference 7 – The Health Foundation requires capitalisation.
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REVIEWER	Gjestsen, Martha Therese Helse Stavanger HF, Centre for Age-related Medicine
REVIEW RETURNED	09-Jul-2021

GENERAL COMMENTS	<p>General comments</p> <p>I read this manuscript with interest and would support its publication. The manuscript presents an integrated evaluation framework using experiences of trainees, trainers, programme and site coordinators of a training programme. Taking into account the</p>
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	<p>narrow focus of existing training programme evaluation, the topic is important and relevant. The theory section is strong, and I think using triangulation of data sources is a good choice, and will make the results “rich”.</p> <p>However, the protocol should be presented in a more stringent manner. There are some sections where I would suggest modifications. I have listed my comments below; I hope the authors find them useful.</p> <p>Abstract</p> <p>The abstract should benefit from being more accurate and clear. Is measurement the vital element here and how is this linked to the ability to understand and interpret qualitative and quantitative data, and moreover where is the connection to evaluation of the factors determining success of failure of teaching measurement of improvements to staff?</p> <p>The authors state that “... understand the functioning and relative importance of characteristics of the training programme...” p.3. What were characteristics, i.e., the components of the programme, who was it for, what was the duration, and what were the outputs? This should be detailed in the manuscript and main facts should be included in the abstract.</p> <p>The last sentence in the first section “This study will utilize...” should be moved to the Methods section.</p> <p>Introduction</p> <p>1) It is not clear how the evaluation framework described in the manuscript contribute to the knowledge base concerning the main issues addressed in the introduction. This section would benefit from a more to-the point description of the main issues, the knowledge needs, why and how the scientific work described in the study protocol is so important.</p> <p>2) I find a few points contradictory to each other; the authors state that a weakness in the existing models is a narrow focus when measuring outputs, but in the next section they state that learning how to measure quality is an important skill in QI-work. Can you please describe how an integrated approach should be, and how the work described in the study protocol can contribute to such an integrated approach, if that is the intent?</p> <p>3) I would recommend to end this section with a short description of the case and context, the overall aim and research questions that have guided the study. The info in the section Case selection on p.16 provides some clarity, but it would be beneficial to have this information more detailed and much earlier in the manuscript.</p> <p>Methods</p> <p>I find that the Theoretical underpinning, Framework Development, Kirkpatrick, MUSIQ and Integrated Framework sections are well written and comprehensive enough to provide an understanding of the study design and framework development.</p> <p>1) The authors refer to “This research question requires...” on p. 7. I cannot find that a clear research question has been stated. Stating one or several research questions would indeed improve the scientific work. What has guided the study, more specifically than the overall purpose? See comment above.</p> <p>2) In the Case selection section, it is unclear whether the trainees who came together for the training belonged to different levels in their organisations, thus it is unclear if and how they can inform the dimensions of the theoretical frameworks as described on p. 17.</p>
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	<p>3) The sentence “Phase 3 of the PUTZ collaborative... ” p. 16 makes one wonder what were phase 1 and 2, and had it any bearing on QI training?</p> <p>3) In the Researcher Reflexivity Statement, the authors state that the lead researcher worked on various other projects of the Evidence for Improvement team. It is not clear where the Evidence for Improvement team belong, and why this is an asset. In this section, a reflection concerning how the researcher’s own beliefs, judgments and practices during the research process and how these may influence the research is expected, but is lacking in its entirety in the manuscript.</p> <p>4) The authors state that they will do document analysis as part of the data collection. However, it is unclear which documents, thus it is unclear if and how the documents can inform dimensions pertaining to levels 1 and 2 of the Kirkpatrick Model. The authors could look to the PRISMA guidelines (equator network) to improve this section, e.g. use of standardized data collection, independent collection process, consensus meetings in case of disagreement.</p> <p>5) The authors describe using a purposeful sampling technique. However, it is unclear what criteria will be used to purposefully sample other than just those who attended the training. I believe the authors should clarify how the sample size was determined, e.g. was it a predetermined sample or did the authors seek saturation? Please carefully describe the sampling method. How will you balance homogeneity versus heterogeneity in the sample?</p> <p>Discussion</p> <p>1) The authors used a qualitative analysis with a purposive sample, which is by definition not generalizable. Although not a weakness, I believe it should be described what the expected findings stemming from this protocol could mean in an international context, while also recognizing that the findings pertain to their specific case study.</p> <p>2) The authors use the term “longitudinal” on p. 7 and p. 20. It is not evident why the study is described as longitudinal. Please clarify.</p> <p>References</p> <p>Please cite more scholarly references about the definition of quality in health care and how it can be measured, for example Bate, P., Mendel, P., & Robert, G. (2008). Organizing for quality: the improvement journeys of leading hospitals in Europe and the United States; Brook, R. H., McGlynn, E. A., & Cleary, P. D. (1996). Measuring Quality of Care. <i>New England Journal of Medicine</i>, 335(13), 966-970; Donabedian, A. (2005). Evaluating the Quality of Medical Care. <i>Milbank Quarterly</i>, 83(4), 691-729; Institute of Medicine (2001). <i>Crossing the quality chasm: a new health system for the 21st century</i>; Krein, S. L., Damschroder, L. J., Kowalski, C. P., Forman, J., Hofer, T. P., & Saint, S. (2010). The influence of organizational context on quality improvement and patient safety efforts in infection prevention: a multicenter qualitative study.</p> <p>There are some inconsistencies in the reference style, p. 5 and others.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Comments

1) “I enjoyed reading this protocol paper regarding the evaluation of a Measurement for Improvement training programme. With the increase in quality improvement (QI) initiatives, it is very important that there are clear and transparent plans for evaluations, and I thank the authors for providing such a good framework-based example of how this should be done. I really liked how a blended approach is being used, combining a very well-known framework for evaluating training programmes with a framework for evaluating QI interventions. I found the topic very interesting. I will be following this work and look forwarding to hearing more about the results. I have a few minor suggestions for improvement”

Response: The authors found the reviewer’s comments very encouraging. It was reassuring to see the importance of the topic being corroborated by an expert in this field.

2) “General: Some headings are capitalised and others not”

Response: Any inconsistencies have been corrected and headings have now been amended in line with the journal style guidance. The capitalised heading are the main section headings while the uncapitalised heading are sub sections or subheadings.

3) “Title: I would find it useful if the title specified the setting of the Measurement Improvement programme. e.g. The type of settings the Organisations were and the country. I think this will help readers understand the relevance to their own work”

Response: This has now been revised as suggested by the reviewer, the revised title is ‘Protocol for an integrated evaluation framework to study training, curricular and contextual factors impacting the success of a Measurement for Improvement training programme for healthcare staff in Ireland’.

4) Abstract: I felt the abstract was very well-written and summarised the main points very well.

- “Page 3 line 11 – I think it would be clearer to say: “To address this aim, this study will utilise the experiences of trainees, trainers, programme, and site coordinators”. As it seemed to jump topic the other way”

Response: Thank you for highlighting this. It has been revised now, the changes are reflected in the ‘introduction’ and ‘methods and analysis’ sections of the abstract (Page 3, lines 6-9).

- “Page 3, line 17 – Is the MUSIQ abbreviation required as it is not referred to again within the abstract – However, I understand that many people recognise this framework through the abbreviation so perhaps useful to keep, especially for those searching for studies using this framework”

Response: Thank you for bringing this to our attention, we have now replaced the full form with the abbreviation throughout the manuscript for consistency. Changes are reflected throughout the manuscript.

- Ethics and Dissemination: It would be useful to know how ethical standards will be adhered to despite the exemption from full ethical review. For example, the management of interview data and receiving consent from participants.

Response: This has been updated in the ‘ethics and dissemination’ section of the abstract in lines 23-24, page 3. Further details have been added in the methodology section as well.

5) Strengths and Limitations of study

- Page 4, Line 6 – This sentence is slightly hard to follow, perhaps would be easier to say, “Study rigour will be ensured by triangulating multiple data sources....”.

Response: Thank you for this comment. We have now revised this based on the reviewer’s suggestion (Page 4, line 2).

- Page 4, line 12 - As the strengths and limitations may stand alone to the abstract when published, perhaps need to expand quality improvement before abbreviating again.

Response: Thank you for bringing this to attention. The full form of Quality Improvement is now used in this section (Page 4, line 8).

- Page 4, line 17 - I would like to see how the limitation regarding recall bias may be reduced, i.e. participants given the opportunity to bring notes or sufficient time to think about the programme before the interview?

Response: Thank you for this observation. We have now introduced changes in the strengths and limitations section, methods, and limitations to further elaborate on this (Page 4, lines 13-16).

6) Introduction:

- “Page 4, line 20-22 – I appreciate that the definition of quality in healthcare is subjective, and that you have highlighted the common defining attributes, but it is unclear which definition you will be using”.

Response: This is a very helpful comment. The definition of Quality adopted to inform this work has now been added in ‘introduction’ section. (Page 4, lines 21-26).

- Page 4, line 24 – I also feel it would be helpful to define quality improvement.

Response: The definition of Quality Improvement has now been added in the introduction section on Page 5, lines 1-3.

- “Page 5, lines 13, 16, 20 – although you have abbreviated QI previously, you have typed it out several times. May I suggest you use the “ctrl + f” function on word to search for all occurrences of “quality improvement” and change to QI where necessary”

Response: This change is now reflected throughout the manuscript.

- “Page 5, line 24 – unnecessary use of “a” – should just say “enable the success of measurement...”

Response: This has now been rectified.

- “Page 6 line 3-4 – would be useful to know when the research started and the duration of the work for those trying to do similar work.”

Response: This has now been updated and reflected in lines 18-19 on page 6.

7) Methods

- “Page 6, Lines 7, 12 & 17 – Unclear what “the research” is referring to, do you mean this particular research study or research in general”

Response: Instead of “the research”, we have now used “this research” to make it clearer as per the reviewer’s suggestion. The changes are reflected throughout the manuscript.

- “Page 16, line 19 – “does not initiate with a well-formed hypothesis” sounds slightly negative and I don’t think you need to justify this, I think it would sufficient to say that this is “an exploratory study”. It is well known that exploratory studies do not usually have a well-formed hypothesis, as that would introduce bias”

Response: This has now been updated based on the reviewer’s recommendation, terming it as an ‘exploratory’ study (Page 7, line 7).

- Page 7, line 7 – I find the use of “the” and “this” quite confusing and unsure when you are referring to this particular study or this type of research or research in general. I think some simple rewording within the methods section would help to address this. For example, I would find it easier to follow if this line said, “To address the research question of this study, a research design that can...”

Response: This has now been reviewed and clarified. The changes are reflected throughout the manuscript.

- Page 7, line 11 What is “it” referring to – individual behaviour, complexity, or both?
This has been revised now (Page 7 line 1)

Response: It was referring to both behaviour and complexity and has been clarified in the manuscript (Page 7, line 18).

8) Framework Development Process

- “Page 8, line 2-4 – This is a very important point – perhaps needs linking to the strengths and limitations more strongly?”

Response: This has now been revised to link this with strengths and limitations (Page 8, lines 6-10).

- “Page 8, line 19 – Would be beneficial to add a line to help the reader navigate the next section i.e. “The following sections describe each evaluation model and provide justification for their use?”

Response: Thank you for raising this point. A transition sentence has now been added. (Page 8 lines 19-20)

9) The Kirkpatrick Evaluation Model

- No suggestions for improvement – well-written and I found this very interesting.

Response: The authors thank the reviewer for their appreciation of this section.

10) Model for Understanding Success in Quality (MUSIQ model)

- “Once again, very well written and I know it can be hard to summarise the description of evaluation models. However, you have done this very well and address the strengths and limitations in an effective, yet succinct manner. Just a few suggestions for improving this section, Page 10, line 6 – should say “organization” rather than “organizational””

Response: The authors thank the reviewer for their comments. This change has been integrated into the paper (Page 9, line 26).

- “Page 10, line 9 – This research study? Or the wider research project?”

Response: This change has already been addressed as part of a previous comment. The changes are reflected throughout the manuscript.

- “Page 10, line 14 – once again needs abbreviating to QI”

Response: All abbreviations have been replaced with QI as also highlighted in a previous comment and reflected throughout the manuscript.

11) Integrated evaluation framework

- “I liked the table and themes and found this easy to follow”

Response: The authors are grateful for this comment.

- “Page 12, Line 1 – Considering when this paper is published, supplemental files will not be necessarily “attached”, would it be better to say “A draft interview guide..... can be found in Supplemental File 1”?”

Response: This has now been revised for improved clarity based on the reviewer’s comment and ‘attached’ is replaced by ‘can be found’ (Page 11, line 10).

12) Case Design

- “Page 15, line 3 – I would suggest to add “Use of multiple case design...” as the language seems rather colloquial otherwise”

Response: These have been revised as advised by the reviewer (Page 14, line 2).

13) Case selection

- Page 16, line 16-17 – I would suggest including a reference to these collaboratives, I found related information on the Ireland National Quality Improvement Team’s website, that could be referenced?

Response: References have now been added for both cases (Page 14, line 21 and line 23)

14) Researcher reflexivity statement

- “Page 16, line 22 – were these ethnographic observations?”

Response: This has now been revised and the term ‘ethnographic’ for improved clarity (Page 15, line 5).

15) Patient and public involvement statement

- “Why has there been no patient and public involvement and are there any plans to disseminate findings to relevant networks?”

Response: Since the overall research aim is to investigate the training, contextual and curricular factors that impact measurement for improvement skill development and use in healthcare staff, it did

not directly involve patients. Although patients are ultimately impacted by the post-collaborative improved practices, they were not the target population of the study. All study results will be disseminated through peer-reviewed journals, conferences and webinars which may be accessible to the patient and public involvement groups.

16) Data collection

- “If available, would be good to see copies of consent form and recruitment letter as supplementary files”

Response: Recruitment letter is now available as Supplemental File 2, the study consent form is added as Supplemental File 3.

- “Maybe better placed in a different section – however, will the interview schedule/framework for subsequent interviews be updated if new topics emerge in the first few interviews?”

Response: The first few interviews will be used as pilot interviews. This has now been explicitly stated in data collection procedures (Page 16, lines 14-15).

17) Data analysis

- “As this study will be of interest to a wide audience, I think it is important to make it clear that NVivo does not do the coding for you but it “aids” the coding process, and the researcher does the coding and the analysis. I have come across colleagues who think NVivo is a magic software that does analysis for you. It is important to make clear that this is not the case and that researchers put a lot of effort into the coding and analysis process based on their experience and knowledge”

Response: That is an interesting observation and we have clarified this now as discussed by the reviewer (Page 17, lines 8-9).

18) Ensuring Rigour

- “Page 19, line 2 – more concise to say “by triangulating” rather than “using triangulation””

Response: The suggestion is noted, and updates have been made (Page 17, line 15).

- “Page 19, line 6 – Rewording required - maybe add the word sample, e.g. “a randomly selected 10 percent sample”. Otherwise “a” doesn’t make sense. This has been revised”

Response: The suggestion is noted, and the suggested replacements have been made (Page 17, lines 19-20).

19) Discussion

- “Page 19, lines 18-19 - I am unsure how the second part of this sentence (after the reference), follows on from the first part. I think the first line of the discussion needs to very impactful, which is definitely possible considering the importance of the work that you are doing”

Response: This is an important suggestion. Various changes have been made in the discussion section to make it more impactful.

- “Page 19, lines 22-23 – I think this is either worded inaccurately or stretching. There are many programmes and studies evaluating QI relating to measuring for improvement, including interventions that focus on specific areas of healthcare such as medication safety. I would suggest qualifying this sentence by specifically mentioning “published studies” and the specific “measurement for improvement” programme that you are evaluating”

Response: This has now been reworded for improved clarity and references have been added in the discussion section

- Following on from the above point – I think you could also mention that a lot of quality improvement programmes are not properly evaluated or even peer-reviewed and published, so it is unclear whether similar work has occurred. There are references available to support that quality improvement is not always published.

Response: This area has now been highlighted and appropriate references have been added to support the argument but in the introduction section to build a stronger case (Page 5, line 25-Page 6, line11).

- “Page 20, line 21 – once again quality improvement needs abbreviating to QI”

Response: All abbreviations have been updated

- “Page 20 – lines 13-20 – some good valid points about the contribution of this work to the literature”

Response: The authors are thankful for this comment.

- “Page 21 – Good clear ending summarising the importance of this work”

Response: Thank you for recognising the importance of the work.

20) Ethics and Dissemination

- “This heading and references are fully capitalised unlike other headings”

Response: This has been addressed in a previous comment.

- “Please see previous comments regarding outlining how ethical standards were adhered to despite the exemption from full ethics. (e.g. obtaining written consent). This has now been further explained in the methodology section”

Response: As described in a previous comment, ethics procedures along with the relevant forms have been added in the manuscript and as supplemental files.

21) References

- “Reference 7 – The Health Foundation requires capitalisation”

Response: Thank you for bringing this to attention. This has now been updated (Page 20, line 9).

Reviewer 2 comments:

1) General comments

- “I read this manuscript with interest and would support its publication. The manuscript presents an integrated evaluation framework using experiences of trainees, trainers, programme, and site coordinators of a training programme. Taking into account the narrow focus of existing training programme evaluation, the topic is important and relevant. The theory section is strong, and I think using triangulation of data sources is a good choice and will make the results “rich”. However, the protocol should be presented in a more stringent manner. There are some sections where I would suggest modifications. I have listed my comments below; I hope the authors find them useful.”

Response: The authors are pleased to know that the reviewer acknowledged the importance of measurement for improvement as an area that needs urgent research. The comments provided by the reviewer have been helpful in improving this paper.

2) Abstract

- “The abstract should benefit from being more accurate and clearer. Is measurement the vital element here and how is this linked to the ability to understand and interpret qualitative and quantitative data, and moreover where is the connection to evaluation of the factors determining success of failure of teaching measurement of improvements to staff?”

Response: This comment has been addressed now and several changes have been introduced in the abstract to increase clarity and to address your question. Changes are reflected throughout the abstract.

- The authors state that “... understand the functioning and relative importance of characteristics of the training programme...” p.3. What were characteristics, i.e., the components of the programme, who was it for, what was the duration, and what were the outputs? This should be detailed in the manuscript and main facts should be included in the abstract.

Response: This has now been updated and this sentence has been amended for clarity. The sentence stating “understand the functioning and relative importance of characteristics of the training programme” has been removed now. These changes are now reflected in the abstract as well as methods section (Page 3, lines 2-10, lines 12-15).

- The last sentence in the first section “This study will utilize...” should be moved to the Methods section.

Response: This has now been updated and all information pertaining to methods has been moved into the methods section.

3) Introduction

- It is not clear how the evaluation framework described in the manuscript contribute to the knowledge base concerning the main issues addressed in the introduction. This section would benefit from a more to-the point description of the main issues, the knowledge needs, why and how the scientific work described in the study protocol is so important.

Response: This has now been updated and gaps and research needs have been explained in more detail in the introduction section. More references have also been added (Page 4, line 21 – Page 6, line 20)

- “I find a few points contradictory to each other; the authors state that a weakness in the existing models is a narrow focus when measuring outputs, but in the next section they state that learning how to measure quality is an important skill in QI-work. Can you please describe how an integrated approach should be, and how the work described in the study protocol can contribute to such an integrated approach, if that is the intent?”

Response: The statement ‘narrow focus on measuring outputs’ is discussed from the perspective of evaluation, highlighting that evaluation models often only emphasise certain outcomes as proof of programme success but do not discuss the process behind it, nor the factors that influenced achievement of these outcomes. The current framework attempts to address this gap.

‘Learning how to measure quality is an important skill in QI-work’ is discussed from the perspective of healthcare staff, who implement QI and often struggle with measurement for improvement (collecting data, making SPC charts etc). This inability of staff to implement measurement for improvement hinders the usefulness of QI efforts.

These points therefore are not contradictory, rather they complement each other in highlighting the gaps in measurement for improvement research, not just from the perspective of evaluation models but also from the level of knowledge and understanding of healthcare staff about measurement for improvement. To make this clearer, these statements are now worded slightly differently. (Page 9, line 14-17).

- I would recommend to end this section with a short description of the case and context, the overall aim and research questions that have guided the study. The info in the section Case selection on p.16 provides some clarity, but it would be beneficial to have this information more detailed and much earlier in the manuscript.

Response: Brief information about the cases has been added in the introduction section while more details have been added in the methods section (Page 6 lines 14-17 and Page 15, lines 3-9).

4) Methods

- I find that the Theoretical underpinning, Framework Development, Kirkpatrick, MUSIQ and Integrated Framework sections are well written and comprehensive enough to provide an understanding of the study design and framework development.

Response: The authors appreciate the positive feedback on this section.

- The authors refer to “This research question requires....” on p. 7. I cannot find that a clear research question has been stated. Stating one or several research questions would indeed improve the scientific work. What has guided the study, more specifically than the overall purpose? See comment above.

Response: This has now been clarified and the aim of the overall research has been clearly stated in the abstract, introduction, methods, and discussion sections (Page 3, lines 6-9, Page 6 lines 12-14, Page 18 lines 7-9).

- In the Case selection section, it is unclear whether the trainees who came together for the training belonged to different levels in their organisations, thus it is unclear if and how they can inform the dimensions of the theoretical frameworks as described on p. 17.

Response: This has been revised and a brief description about the trainees has been added (Page 15, lines 25-26).

- The sentence “Phase 3 of the PUTZ collaborative... ” p. 16 makes one wonder what were phase 1 and 2, and had it any bearing on QI training?

Response: This has now been changed and 'phase 3' has been removed from the manuscript to keep the focus on the included collaborative and to overcome confusion.

- "In the Researcher Reflexivity Statement, the authors state that the lead researcher worked on various other projects of the Evidence for Improvement team. It is not clear where the Evidence for Improvement team belong, and why this is an asset. In this section, a reflection concerning how the researcher's own beliefs, judgments and practices during the research process and how these may influence the research is expected but is lacking in its entirety in the manuscript"

Response: The use of 'evidence for improvement team' which is a sub-team within the National QI team may lead to confusion as highlighted by the reviewer. This has now been replaced by the National QI team instead. A brief reflection of the researcher's own beliefs, judgments and practices that may influence the research has now been added to this section. (Page 15, lines 7-14).

- The authors state that they will do document analysis as part of the data collection. However, it is unclear which documents, thus it is unclear if and how the documents can inform dimensions pertaining to levels 1 and 2 of the Kirkpatrick Model. The authors could look to the PRISMA guidelines (equator network) to improve this section, e.g. use of standardized data collection, independent collection process, consensus meetings in case of disagreement.

Response: The types of documents expected to be collected include feedback forms from training days and any reports published at the end of the collaboratives. These documents will inform the participant reaction and learning from the collaborative. Details have now been added throughout the methodology section. As suggested by the reviewer, the authors consulted the PRISMA-P checklist for the methodology section however we found many of the sections were not applicable for our study. This study complies with the SRQR guidelines, and the checklist was submitted in the manuscript submission system.

- The authors describe using a purposeful sampling technique. However, it is unclear what criteria will be used to purposefully sample other than just those who attended the training. I believe the authors should clarify how the sample size was determined, e.g. was it a predetermined sample or did the authors seek saturation? Please carefully describe the sampling method. How will you balance homogeneity versus heterogeneity in the sample?

Response: The population of interest is defined as those who participated in the collaboratives 2 years ago. Within this, we will seek to balance representation from the various organisations, team roles, and levels of experience in teams to ensure different perspectives are represented, where possible. These collaboratives were diverse in terms of the participants and included job roles such as Assistant Directors of Nursing, Clinical Nurse Managers, clinical practice facilitators, nurses, healthcare assistants, catering and portering staff. Thus, the chance of a homogenous sample is inherently low. This has now also been clarified in the manuscript (Page 15, lines 25-26).

5) Discussion

- "The authors used a qualitative analysis with a purposive sample, which is by definition not generalizable. Although not a weakness, I believe it should be described what the expected findings stemming from this protocol could mean in an international context, while also recognizing that the findings pertain to their specific case study"

Response: This has now been emphasised in the Discussion section (Page 19, lines 8-11).

- "The authors use the term "longitudinal" on p. 7 and p. 20. It is not evident why the study is described as longitudinal. Please clarify"

Response: This has now been updated and the term 'longitudinal' has been removed to avoid any confusion.

6) References

Please cite more scholarly references about the definition of quality in health care and how it can be measured, for example:

- Bate, P., Mendel, P., & Robert, G. (2008). Organizing for quality: the improvement journeys of leading hospitals in Europe and the United States; Brook, R. H., McGlynn, E. A., & Cleary, P. D. (1996).

- Measuring Quality of Care. New England Journal of Medicine, 335(13), 966-970; Donabedian, A. (2005).
- Evaluating the Quality of Medical Care. Milbank Quarterly, 83(4), 691-729; Institute of Medicine (2001).
- Crossing the quality chasm: a new health system for the 21st century; Krein, S. L., Damschroder, L. J., Kowalski, C. P., Forman, J., Hofer, T. P., & Saint, S. (2010).
- The influence of organizational context on quality improvement and patient safety efforts in infection prevention: a multi-center qualitative study. There are some inconsistencies in the reference style, p. 5 and others.

Response: References have been revised and more scholarly references have been added, including the ones suggested by the reviewer. The reference styles have also been reviewed and updated.

VERSION 2 – REVIEW

REVIEWER	Rostami, Paryaneh University of Manchester School of Health Sciences, Division of Pharmacy and Optometry
REVIEW RETURNED	21-Sep-2021

GENERAL COMMENTS	Review of Protocol for an integrated evaluation framework to study training, curricular and contextual factors impacting the success of a Measurement for Improvement training programme for healthcare staff in Ireland.	
	REVIEW	
	Thank you for allowing me to provide a second review for this paper. I feel that it has been greatly improved. As the authors have highlighted, evaluation is not given as much consideration as other areas of QI projects, such as design and implementation. Therefore, I am sure that the great work the authors are doing will improve this and greatly benefit others evaluating QI. Models used to evaluate QI do have flaws and using a hybrid model is plausible to help overcome some of these shortcomings. Furthermore, the justification for combining the Kirkpatrick and MUSIQ models has been well explained by the authors.	
	ABSTRACT	
	Page 3, Lines 2-4	Introduction -Need to make clear that unlike audits and typical research studies – measurement for improvement focusses on continuous measurement – to see if changes are leading to sustainable improvements.
	STRENGTHS & LIMITATIONS	
		Good points especially around adapting to COVID.
	Page 4 Lines 6-12	The final bullet point needs some punctuation to make more sense.
	INTRODUCTION	
	Page 4, Line 18	I would suggest comma after “concept”.
Page 6, Line 16	I would suggest comma after “Microsystems)”	

	Page 6, Line 23	Something is missing from this sentence to explain the underlying assumption, should it say “the view of stakeholders about the training programme and the context are required”
	Page 7, Lines 7-8	Unclear, perhaps should say “research problem regarding”
	Page 7, lines 9-12	Difficult to follow sentence.
	Page 7, Line 12	“aligns most closely with this research”
	Page 7, line 15	“a design”, suggest omit research as already said research aim.
	Pages 8-10	Sections re evaluation models are much clearer.
	Page 15	Good section on research reflexivity
	Page 15.	Patient and public involvement – I think a line needs to be added as to why there was no patient and public involvement.
	Page 18 lines 5-6.	This line does not read well and it is the most important bit of the discussion in my opinion. I would suggest something along the lines of “making being able to measure for improvement an essential skill for healthcare staff”, also (omit “the”).
	Page 17, line 25	I would say dissemination through pee-reviewed articles would strengthen “awareness/ learning from” the study – rather than strengthen in altogether.
	References	Need a bit of a tidy up, a few commas etc. missing. Some references have full stops others do not.
	Participant consent form	Forms all look good. Might be too late to change but participant consent form needs a full stop after “University College Dublin” in box 4 and would be good to know all researcher affiliations if possible.

REVIEWER	Gjestsen, Martha Therese Helse Stavanger HF, Centre for Age-related Medicine
REVIEW RETURNED	03-Dec-2021

GENERAL COMMENTS	Many thanks to the authors for addressing the comments and suggested changes. I recommend that the article be accepted as is.
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VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

1. Comment: ABSTRACT: Page 3, Lines 2-4, abstract. Need to make clear that unlike audits and typical research studies – measurement for improvement focusses on continuous measurement – to see if changes are leading to sustainable improvements.

Response: This has now been revised and the change can be seen on Page 3, line 48-49.

2. Comment: STRENGTHS AND LIMITATIONS: Good points especially around adapting to COVID. Page 4 Lines 6-12. The final bullet point needs some punctuation to make more sense.

Response: The authors thank the review for this comment. The final bullet point has now been revised based on the suggestion. This can be seen on Page 4, line 85.

3. Comment: Page 4, Line 18, I would suggest comma after “concept”.

Response: This has been revised on Page 4, line 96.

4. Comment: Page 6, Line 16, I would suggest comma after Microsystems

Response: A comma has been added as suggested (Page 10, line 252)

5. Comment: Page 6, Line 23, Something is missing from this sentence to explain the underlying assumption, should it say “the view of stakeholders about the training programme and the context are required”

Response: Thank you for highlighting this. This has now been revised and the change can be seen on Page 6, line 149.

6. Comment: Page 7, Lines 7-8, Unclear, perhaps should say “research problem regarding”

Response: This has now been revised and the change can be seen on Page 7, line 160.

7. Comment: Page 7, lines 9-1, Difficult to follow sentence.

Response: The sentence has been revised. The change can be seen on Page 7, lines 160-166.

8. Comment: Page 7, Line 12. “aligns most closely with this research”

Response: This has been revised (Page 7, line 166)

9. Comment: Page 7, line 15 a design”, suggest omit research as already said research aim

Response: The word research has now been omitted and the change can be seen on Page 7, line 168.

10. Comment: Pages 8-10 Sections re evaluation models are much clearer

Response: The authors are please to know that the sections about evaluation models have been strengthened now.

11. Comment: Page 15 Good section on research reflexivity

Response: The authors thank the review for their appreciation.

12. Comment: Page 15. Patient and public involvement – I think a line needs to be added as to why there was no patient and public involvement.

Response: This has been clarified on Page 15, line 324.

13. Comment: Page 18 lines 5-6. This line does not read well, and it is the most important bit of the discussion in my opinion. I would suggest something along the lines of “making being able to measure for improvement an essential skill for healthcare staff”, also (omit “the”)

Response: This has been revised on Page 18, line 393.

14. Comment: Page 17, line 25 I would say dissemination through pee-reviewed articles would strengthen “awareness/ learning from” the study – rather than strengthen in altogether.

Response: This has been clarified on Page 17, line 387.

15. Comment: References Need a bit of a tidy up, a few commas etc. missing. Some references have full stops others do not.

Response: Thank you for sharing this observation. The authors have now revised the formatting of the references (Page 20).

16. Comment: Participant consent form Forms all look good. Might be too late to change but participant consent form needs a full stop after “University College Dublin” in box 4 and would be good to know all researcher affiliations if possible

Response: The suggested changes have now been made in the consent form which is available as Supplementary File 3.

Reviewer: 2

1. Comments: Many thanks to the authors for addressing the comments and suggested changes. I recommend that the article be accepted as is.

Response: The authors are grateful to the review for the valuable suggestions for our paper.

We hope that the editor and reviewer's concerns have not been addressed adequately.