Author's response to reviews

Title: What is preventable harm in healthcare? A Systematic Review of definitions

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Author's response to reviews: see over
Reply to Reviewers and Editor:

We thank the reviewers and the editors for their valuable comments and suggestions. This is a point-by-point response to these comments.

Reviewer: Hisham Aljadhey

1. The importance of the study and knowing the definition for preventable harm needs to be emphasized in the introduction and the abstract.

We agree and we have emphasized the importance of defining preventable harm the abstract and the introduction section.

2. The review focused on one definition. However, it will be nice if you can mention definitions that are related like: harm, seriousness….etc.

Our literature search strategy has in fact included many terms and concepts other than harm (such as safety, errors, complications, and many other terms). Therefore, we believe that we have casted a wide net and captured the other concepts suggested by the reviewer. The review also has focused on the “preventability” aspect of harm. The reviewer brings up a very good point about the seriousness or severity of harm. We have a revised paragraph (page 11) that addresses the relevant available data.

3. Do you think that a qualitative design by asking experts in the field will yield better outcome on defining preventable harm?

We think that a qualitative study (survey or interviews of experts) will likely yield similar results to this review because we have reviewed the published literature written by these experts. What we think would advance the field is primary research (Randomized or quasi randomized trials (e.g., pre-post design, comparative controlled cohort studies)) in which investigators would test interventions to reduce harm and establish a “ceiling” for how much we can prevent and how much is not preventable. We thank reviewer for this excellent point. We have revised the end of the discussion section to reflect these research recommendations.

4. I agree that defining “preventable harm” is important. But I think more important is how to operation a definition.

We agree with the reviewer. Unfortunately, we did not find data to determine whether any of these definitions can be operationalized. In the manuscript, we had stated: … Data on the validity or operational characteristic (e.g., accuracy, reproducibility) of definitions were limited.
Nevertheless, we had extracted these data when available (supplemental table 1) and describe some of the operationability aspects (agreement) in Figure 2.

5. Page 7, second paragraph: “We estimated the agreement between ….” Need more explanation.

We appreciate the reviewer’s comment. We have edited the paragraph to make it clearer and it now reads (page 8):

“The level of agreement between the reviewers on the assignment of a definition for preventable harm was estimated using the kappa statistic – a measure of inter-rater agreement.”

6. Page 10: “interventions used to prevent harm” I think this is outside the focus of the study. Also, interventions will be a subject for another systematic review. And need to be specific if interventions in hospitals or primary care setting. I recommend not including this paragraph.

We agree. This section is deleted.

7. The last sentence in Page 10 “Historical comparison”. This is not clear to the reader how this will be definition for preventable harm!

We appreciate the reviewer’s comment. We have added the explanation on page 10 and it now reads:

“….historical comparison (2%) – events with declining incidence over time are considered to be preventable in current practice”

8. Figure 2: What is the scale for the Y axis?

We appreciate the reviewer’s comment about figure 2. The y axis represents the percentage each definition makes out of the seven definitions we report. We have edited the figure to make this clear to BMC HSR readers.

We thank reviewer Hisham Aljadhey for the time and thoughtful remarks that has made this manuscript markedly better.
Reviewer: Ian D Maidment

Major Compulsory Revisions

1. The authors have used the term “medication adverse effect” throughout the article, but this is not defined. Moreover, it is not clear if a medication adverse effect is a side-effect, which may not be preventable, or an error, which is usually preventable.

We appreciate the reviewer’s comment. In order to prevent any confusion between medication adverse effects and side effects we have added text to clarify the term on page 9. It now reads:

“where medication adverse events are defined as errors in prescribing, delivering or monitoring the effects of the drug, which is different from regular side effects”

2. For an international journal the authors need to adopt a more international approach. For example guidance on “never events” has also been issued by the UK NPSA.

We thank the reviewer for bringing this very important point to our attention. We have added a statement in the introduction to highlight the international perspective and cited the NPSA framework.

3. Figure 1 needs more work; the authors need to give details why 116 studies were excluded. Also the maths is incorrect.

We appreciate the reviewer’s comment. We have updated figure 1 and it now shows the reasons behind exclusion. The data have been revisited and corrected.

4. The 2nd paragraph on page 5 needs referencing.

Reference added. Thank you.

5. Methods – why did the authors exclude both any study published prior to Jan 2001 and non-English language studies? My opinion is that studies published prior to Jan 2001 may well be relevant and should be included.

We appreciate the reviewer’s comment. Our rationale for looking at the last decade is that we were interested in a modern definition of preventable harm most relevant to developing guidelines for current and future practice. In addition, we did some exploratory searches (scoping) and asked experts in the field and determined that minimal data about the issue of preventability will be available prior to that (since the topic has gained more emphasis in the last
decade). Limiting to the English language was done because of feasibility (because there are no indexing terms or MESH terms for preventability; thus, our search was based on text-words which are very hard to establish in other languages). Despite this rationale however, we appreciate the reviewer concern about these limitations and we do acknowledge them in the revised manuscript (discussion section, page 20)

6. On page 9 the authors mention 3 articles, which were most frequently cited – did these articles define preventable harm and if so how did the definition compare to the authors’ definition?

We acknowledge the reviewer’s comment. The three most cited studies, actually, used “the presence of an identifiable modifiable cause”. We have now made that clear in our text (page 10)

7. The paragraph beginning on page 12 is too long and should be broken up – in particular the last 2 sentences don’t flow well – indeed this issue of “near misses” should be a separate paragraph.

We appreciate the reviewer’s comment. We have broken the paragraph on page 13 into three to make it clearer to BMC HSR readers.

8. Last line page 13 – I wasn’t clear where 7/22 comes from. Also the 17 other studies – again I’m not sure if the maths is correct.

We appreciate the reviewer’s remark. We have checked the data and rephrased the sentence so it makes sense to the readers.

9. Paragraph structure on page 14 needs reviewing e.g. I’m not sure that “Using this definition ....” is a separate paragraph.

We acknowledge the reviewer’s comment and We have edited the paragraph accordingly.

10. I found some of the numbers confusing in particular data is quoted in the discussion, which is not in the results section. I wondered if it would be useful, in the results section, to have a table cross-tabulating the definitions of harm with the type of harm and listing numbers of studies in each box.

We appreciate the suggestion by the reviewer. We have created a table cross-tabulating the definitions of preventability along with the types of harm. We have added this table as “supplemental table 2”

11. I found the last sentence of the conclusion confusing – too many words
beginning – definit........

We appreciate the reviewer’s comment. We have edited the text to remove any confusion.

Minor Essential Revisions

1. If the word count permits it would be interesting to discuss the apparent contradiction between a “Never Event” that is not always preventable.

We added a brief comment in the discussion section. We thank the reviewer.

2. Mis-spelling – the authors have spelt fait (when I think they mean fair) – page 10.

Corrected; thank you!

3. Why have the authors quoted a median rather than a mean Kappa?

It is common to report kappa this way in systematic reviews (although we don’t see a reason not to use the mean). In this case, the median and mean are very similar and the agreement distribution is not skewed.

We thank reviewer Ian Maidment for the time and thoughtful remarks that has made this manuscript markedly better.
Editor's Comments:

1. Please adhere to PRISMA guidelines.

We have reviewed the manuscript and followed the PRISMA guidelines throughout the different sections.

Associate Editor's comments:

This is a potentially interesting paper but there are several key issues that need to be addressed.

*There are other important papers in this area which should be acknowledged, with a clearer explanation of how the present paper is new / different / adds to the field, together with a comparison of the findings / conclusions as appropriate:
  o Hayward RA and Hofer TP. Estimating Hospital Deaths Due to Medical Errors - preventability Is in the Eye of the Reviewer. JAMA. 2001;286(4):415-420

We thank the Associate Editor for the suggestion. We cited both of these important references in the introduction, described their results and how this review is different.

As required by the PRISMA checklist, a limitations section is required in the discussion.

A section about limitations is added. We thank the Associate Editor. Furthermore, we have addressed the limitations of the three most common definitions one by one.

*There is no differentiation given between preventable and ameliorable harm, a distinction that several research groups have found useful.
This review is focused on preventability. The studies we accrued were specifically included if they contained key words or text words about preventability. Therefore, we cannot comment on a definition for ameliorability. Since the Associate Editor brought this up, we explicitly highlight this distinction in the limitation section:

“Lastly, this review is focused on preventability and not ameliorability. Others have distinguished between preventable adverse drug reactions (caused by an error in management) and ameliorable (their severity could have been significantly reduced if health care delivery had been optimal). The ameliorability concept is not applicable to all harms (e.g., mortality) and the current systematic review does not address its definitions.”

*As raised by one of the reviewers, the paper is rather US-centric. For an international readership, greater acknowledgment of key references and practices from other countries would be appropriate.

**We have made relevant revisions (see response to reviewer one) and cited the National Patient Safety Agency framework.**

*As also raised by one of the reviewers, better justification is needed for limiting the review to the previous ten years of literature.

**We thank the Associate Editor for bringing up this point. We have addressed the issue in response to the reviewers’ comments.**

*The writing is rather hard to follow in places, with various grammatical and typographical errors. Specifically:
  o Whenever percentages are given, ?n? should be stated as well as the percentage. In many places, clarity is also needed as to what the percentage is of (studies? Definitions?)
  o Use of ?it?s? versus ?its? incorrect in parts
  o Criterion is plural ? the singular is criterion
  o There is considerable use of statements such as ?this definition? where is not clear from the surrounding text which definition this relates to
We appreciate the Associate Editor’s remarks. We have reviewed the entire manuscript and made corrections where necessary to improve readability.

Other specific comments:

ABSTRACT

*The three most common harms cited..? ? does this refer to all harm, or preventable harm? The two are likely to differ.

All harms mentioned in our paper are what the included references dubbed as preventable. We have reviewed the abstract to make this clear.

METHODS

*It would be helpful to make explicit that studies of all kinds of harm were included, including those of only a specific kind (eg harm due to medication). This becomes implicit later in the paper but it would be helpful to make this explicit in the methods section.

We thank the associate editor for bringing this to our attention. We have revised the methods section and it now reads:

“We included all kinds of harm: specific harm such as drug related adverse events, as well as more general type of harm.”

*It is not clear what was being compared using kappa. Was this the presence or absence of a definition? Or the classification of the definition? Or something else? Please be more specific. Please also specify which Kappa was used? Cohen’s Kappa? Fleiss Kappa? Weighted Kappa?
The measure used is Cohen’s kappa and it measures the reviewer’s agreement on assigning the definition theme to each study included in the review. We clarified this issue in the revised manuscript.

*Please specify who extracted and synthesised the data? was this the same as the two who screened the abstracts and full papers for inclusion?

MN and MHM collected and synthesized the data. We have made that clear in the methods section.

*It is stated that data on population and setting were extracted? is this relevant for editorials and commentaries?

Yes. When the editorial or commentary paper specified a particular setting to which the paper applies this was extracted.

*It is stated that a taxonomy was created. I think a more appropriate term would be classification?

We agree and this change is made.

*Methods relating to extracting data on severity of harm should also be included, since these data are presented in the results section

We acknowledge the associate editor’s comment. We have reviewed the methods section and it now reads:

“The severity of harm was extracted as reported in the included studies. No classification of the severity of harm was feasible.”

RESULTS

*Figure 1? please specify the reasons for which the first 116 papers were excluded

We appreciate the Associate Editor’s comment. We have addressed this point in response to the reviewers’ comments.
*Figure 2 ? I am not convinced that prevalence is the right term here ? frequency? may be more appropriate. The key also needs some explanation, and contains a typographical error (?available?). The shades used in the figure are hard to distinguish.

We appreciate the Associate Editor’s comments on figure 2. We agree that the term frequency is probably more accurate. We have reviewed the figure and made the necessary changes to make it more comprehensible.

*Supplemental table: in relation to the definition of preventable, please specify whether the text in this column is verbatim from the source paper, or the present authors? category chosen to best represent the definition used. For the Bartlett paper ? inconsistent as to whether you mean ?adverse drug events? or ?adverse drug effects? ? the two are not necessarily the same

The data shown in the definition of preventability column includes the designation given by the reviewers according to the themes developed for preventable harm. We make that clear in our methods section page 9.

To be consistent, we have reviewed the table as well as the manuscript and we used the term “adverse drug events” to describe the type of harm related to prescription, transcription, distribution, and administration of drugs.

*Page 9 ? ?adherence to guidelines? ? not clear what this means until later in the paper. Need to specify that you mean cases of harm where adherence to guidelines would have prevented the error

*Page 9 ? ?morbidity adjusted risk estimate? ? please be more specific as to what this means in relation to a definition of preventability

This section is now revised to include a description of each of the 7 themes.

*Page 9 ? the increase in the number of papers in the second half of the decade is unlikely to be ?...driven by the increased use of mainly two definitions...?. I think what you mean is that there was an increase in the number of papers, and this increase was largely accounted for by papers using these two definitions...

We appreciate the Associate Editor’s comment. We have rephrased the sentence to reflect our thoughts more accurately and it now reads:
“There was an increase in the number of publications in the second half of the last decade. This was accounted for by the increased use of mainly two definitions: presence of an identifiable modifiable cause and adherence to guidelines (Figure 3).”

*The section on interventions does not seem relevant to the rest of the paper. Identifying interventions to prevent harm would necessitate a separate literature review!

We agree. This section is deleted.

*Results in relation to kappa are confusing? mean kappa statistics are reported for each definition? should this be for each category of definitions?

We re-worded this section to clarify that here we are reporting the kappa reported in the studies (agreement of the authors of each study about the assignment of preventability in that study). These data are reported as a mean and range kappa. Please note that this is different from our own kappa (i.e., the kappa between the investigators who did the systematic review MN and MHM). The revised manuscript is hopefully clearer. We thank you for pointing this out.

DISCUSSION

*I found the discussion hard to follow. It seems to focus on each type of definition in turn, without making this explicit. I wonder if greater use of subheadings would be helpful.

We added subheadings and transitional sentences to the discussion section. We believe it reads better. We thank you for this suggestions.

*A section on limitations of the literature review and methods is needed.

A section on limitation is added. We thank you for this important recommendation.

*References should state the relevant country? eg ?the Department of Health and Human Services? ? of which country?

We have edited the text on page 13 to address this point.
*Page 14 ? what is dispersal in this context? Would any of these terms be more appropriate: Distribution? Dispensing? Supply?

We appreciate the Associate Editor’s comment. We have now used the term “distribution” as it may be clearer to the readers.