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) | Methodologic approaches for medication error analyses in patient safety- and pharmacovigilance reporting systems:a scoping review protocol |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------|
| AUTHORS             | Tchijevitch, Olga; Hansen, Sebrina Maj-Britt; Bogh, Søren; Hallas, Jesper; Birkeland, Søren |

VERSION 1 – REVIEW

| REVIEWER           | Dhippayom, Teerapon  
Center of Pharmaceutical Outcomes Research, Department of Pharmacy Practice, Department of pharmacy practice |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|
| REVIEW RETURNED    | 30-Nov-2021 |

| GENERAL COMMENTS   | Thank you for giving the opportunity to review this study. Please see below my comments.  
Major comments  
#1 Since the scope of this scoping review is MEs analysis in reporting systems, I wonder if the methods used to analyze MEs for research purposes in healthcare institutions are eligible to be included in this scoping review.  
#2 Do the authors consider setting additional limitations for Google Scholar search as it might provide huge search yields, which may not be feasible to screen.  
#3 Should the authors consider extracting data regarding the definition of medication error used among included studies.  
#4 Please elaborate more on the scope of ME analysis, for example, if it includes a process to verify if the reported ME is accurate.  
#5 I think it would be interesting to conduct a data summary by tabulating or stratifying findings based on relevant aspects such as the level of organization (i.e. institution, regional, or national) or timely manner/historical trend such as pre-post AI era.  
Minor comments  
#6 I think the purpose of collecting and reporting medication errors in the majority of authorities and organizations does not limited to learning purpose as stated in the abstract, but also serve as a governance process to improve a quality use of medicine.  
#7 Please state if there is a language limitation for studies to be included in this scoping review. |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|
| REVIEWER           | Meyer-Massetti, Carla  
University of Basel |
| REVIEW RETURNED    | 07-Dec-2021 |
Dear colleagues

Thank you very much for the opportunity to review this interesting study protocol.

It was unfortunate for many years, that legal authorities had very little interest in medication safety aside from adverse drug reactions and it is a big step forward that the safety of the medication use process surrounding the use of a medication is now also tracked more systematically. Therefore, I’m looking forward to the results of this study with great interest.

GRAMMAR
Throughout the manuscript MEs is sometimes used instead of ME – as an example: it’s medication error analysis, not medication errorS analysis.

INTRODUCTION
The medication use process you are using consists of only four steps – I would prefer a more detailed view, also comprising transcription (not all systems are yet fully electronic), preparation and documentation. This might be important in distinguishing medication error categories later on.

METHODS
You describe that your scoping review is based on five stages. This seems information pertinent for the reader. Can I suggest to briefly describe those five stages?

Table 1: This table provides a very nice overview – however, what I miss is the connection between the different terms. I suggest adding some information to the table to clarify this. The distinction between an SRS and PSRS is not evident. This seems also important because the literature does not follow a single definition and the reader should know about your use at least.

APPENDIX
The format used for the search string is very difficult to understand and duplicate. Can I suggest reproducing the final search string as it will be used?

Thank you for considering these comments and I’m looking forward to the results being published at a later stage.

Kind regards, Carla Meyer

Reviewer: 1
Prof. Teerapon Dhippayom, Center of Pharmaceutical Outcomes Research, Department of Pharmacy Practice

Comments to the Author:
Thank you for giving the opportunity to review this study. Please see below my comments.

Major comments
#1 Since the scope of this scoping review is MEs analysis in reporting systems, I wonder if the methods used to analyze MEs for research purposes in healthcare institutions are eligible to be included in this scoping review.
All studies on MEs from all healthcare institutions will be eligible for inclusion in this scoping review, as long as they are using reporting systems as a source. This has now been specified in the manuscript (please see under “Study selection”).

#2 Do the authors consider setting additional limitations for Google Scholar search as it might provide huge search yields, which may not be feasible to screen.

Thanks for this comment. Yes, Google Scholar often provide huge search yields, and you’re right we cannot screen > 300,000 titles. Google Scholar has some advanced settings that make it possible to search in the title field and limit the search to 2005 (as the search in the electronic databases). Our preliminary searches have resulted in a number of hits that will be feasible to screen. We have clarified our limits to 2005 in “Identifying relevant studies”.

#3 Should the authors consider extracting data regarding the definition of medication error used among included studies.

Thank you for this suggestion. We have chosen NCC MERP’s definition of medication error, but it can be expected, that some studies will use other definitions or will not define ME. Therefore, we decided to label studies with other/missing definitions during the extraction (please see Table 1).

#4 Please elaborate more on the scope of ME analysis, for example, if it includes a process to verify if the reported ME is accurate.

We will base our ME analysis on the data extracted from chosen publications with the purpose to map the existing evidence, but we will also provide notifications on bias/limitations of the studies, including the quality of data, if such information is available in the publications (please see “Data extraction” section).

#5 I think it would be interesting to conduct a data summary by tabulating or stratifying findings based on relevant aspects such as the level of organization (i.e. institution, regional, or national) or timely manner/historical trend such as pre-post AI era.

Thanks for very important points. We are planning to include information about the reporting organizations and the year of publication of studies to provide a better overview of these areas too (please, see the “Data extraction” section). The collected data will be summarized in tables.

Minor comments
#6 I think the purpose of collecting and reporting medication errors in the majority of authorities and organizations does not limited to learning purpose as stated in the abstract, but also serve as a governance process to improve a quality use of medicine.

Thanks for this point that has now been added to the abstract.

#7 Please state if there is a language limitation for studies to be included in this scoping review.

This has now been further clarified in the revised manuscript. We are planning to map all publications as long as their titles and abstracts are available in English or Scandinavian languages. However, the data extraction will be based on publications in English or Scandinavian languages (please see under “Study selection”).
Reviewer: 2
Dr. Carla Meyer-Massetti, University of Basel

Comments to the Author:
Dear colleagues
Thank you very much for the opportunity to review this interesting study protocol.
It was unfortunate for many years, that legal authorities had very little interest in medication safety aside from adverse drug reactions and it is a big step forward that the safety of the medication use process surrounding the use of a medication is now also tracked more systematically. Therefore, I’m looking forward to the results of this study with great interest.

GRAMMAR
Throughout the manuscript MEs is sometimes used instead of ME – as an example: it's medication erroR analysis, not medication errorS anaylsis.

Thanks for pointing to this. We have now conducted additional proof-reading to improve the grammar.

INTRODUCTION
The medication use process you are using consists of only four steps – I would prefer a more detailed view, also comprising transcription (not all systems are yet fully electronic), preparation and documentation. This might be important in distinguishing medication error categories later on.

Thank you for this comment. Our point was that medication errors can happen at any point in the medication use process. In the introduction, we have described only the main stages, covering several sub-processes. We have now specified and provided an additional overview of stages of medication use process, including their definitions and error types in the supplementary material, (please see appendix 2 and changes under “Data extraction”).

METHODS
You describe that your scoping review is based on five stages. This seems information pertinent for the reader. Can I suggest to briefly describe those five stages?

Thanks for this comment. A brief description of the stages has been added to the methods section.

Table 1: This table provides a very nice overview – however, what I miss is the connection between the different terms. I suggest adding some information to the table to clarify this. The distinction between an SRS and PSRS is not evident. This seems also important because the literature does not follow a single definition and the reader should know about your use at least.

We have provided some additional explanations and detail in the Table 1 to make the connection between the definitions clearer.

APPENDIX
The format used for the search string is very difficult to understand and duplicate. Can I suggest reproducing the final search string as it will be used?

We value your comment, but our searches were developed using a single line method, described by Bramer et al. (please see reference 28). This method is different from traditionally used multi line search, but allows to create complex search strategies for different databases, that have their own subject headings, different truncation, proximity operators and search fields.
We therefore hope you can accept a search string customized for each database.
*Comment from the Editor: We ask that you please include, as a supplementary file, the precise, full search strategy (or strategies) for all databases, registers and websites, including any filters and limits used.

We want to thank you for giving us the opportunity to evaluate our searches. Following the PRISMA-S checklist, we have listed all databases, their platforms, search strings, and online resources and have described our methods for citation searches. We have also added that we will contact authors if additional information is needed in the method section under “Identifying relevant studies”. Please find our search strategy with the improved layout in appendix 1. Every strategy is limited to the year 2005 and onwards, as stated in the final search line for each database.

Thank you for considering these comments and I’m looking forward to the results being published at a later stage.
Kind regards, Carla Meyer

Reviewer: 1
Competing interests of Reviewer: None

Reviewer: 2
Competing interests of Reviewer: No competing interests

VERSION 2 – REVIEW

| REVIEWER          | Dhippayom, Teerapon  
| Spear Center of Pharmaceutical Outcomes Research, Department of Pharmacy Practice, Department of pharmacy practice |
| REVIEW RETURNED   | 05-Mar-2022 |
| GENERAL COMMENTS  | Thank you very much for your response that helped improve the clarity of the protocol. |

| REVIEWER          | Meyer-Massetti, Carla |
| University of Basel |
| REVIEW RETURNED   | 25-Mar-2022 |
| GENERAL COMMENTS  | Dear authors  
| Thank you very much for the revised version of this manuscript. I appreciate that you have addressed all my concerns fully and I support the publication of this manuscript. I only have some minor requests:  
| Please make sure that a native speaker goes over the manuscript once more. There are still several grammatical errors and word choices that are odd.  
| In addition, please provide a definition in your table of “pharmacovigilance”. I'm a bit concerned about the mixture of CIRS and pharmacovigilance reporting, that is not clearly distinguished: MEs are mainly reported in incident reporting systems, pharmacovigilance is mainly a tool to register ADRs. In addition, where pharmacovigilance is mainly organized by authorities, this is NOT the case for CIRS. This should be amended and clarified in the table.  
| Kind regards, Carla Meyer |
Reviewer: 1
Prof. Teerapon Dhippayom, Center of Pharmaceutical Outcomes Research, Department of Pharmacy Practice

Comments to the Author:
Thank you very much for your response that helped improve the clarity of the protocol.

Reviewer: 2
Dr. Carla Meyer-Massetti, University of Basel

Comments to the Author:
Dear authors
Thank you very much for the revised version of this manuscript. I appreciate that you have addressed all my concerns fully and I support the publication of this manuscript. I only have some minor requests:
Please make sure that a native speaker goes over the manuscript once more. There are still several grammatical errors and word choices that are odd.
In addition, please provide a definition in your table of “pharmacovigilance”. I’m a bit concerned about the mixture of CIRS and pharmacovigilance reporting, that is not clearly distinguished: MEs are mainly reported in incident reporting systems, pharmacovigilance is mainly a tool to register ADRs. In addition, where pharmacovigilance is mainly organized by authorities, this is NOT the case for CIRS. This should be amended and clarified in the table.
Kind regards, Carla Meyer

Thanks for your comments.
We have conducted additional proof-reading of the manuscript to improve English grammar, and provided a definition of “pharmacovigilance” in our table for further clarification of the differences between these two types of reporting systems.

Reviewer: 1
Competing interests of Reviewer: None

Reviewer: 2
Competing interests of Reviewer: none