Author’s response to reviews

Title: Are big data analytics helpful in caring for multimorbid patients in general practice? - A scoping review

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Author's response to reviews:

Dear Antonis A Kousoulis,

please find enclosed our revised manuscript: “Are big data analytics helpful in caring for multimorbid patients in general practice? - A scoping review” (FAMP-D-18-00404). We highly appreciate the opportunity to revise our manuscript; the insightful comments of the reviewers were very helpful in order to improve the clarity of the paper. Our point-per-point responses to the comments are given below. We hope that this revised version can contribute to the contents of BMC Family Practice.

Kind Regards,

Alexander Waschkau on behalf of all authors
Reviewer reports:

Tim Holt (Reviewer 1): This is an interesting and evolving area of health science, but I'm afraid I found the study to be too limited in its design to be useful. The authors make the case that big data analytics is a poorly defined concept in the literature, but their own definition is similarly limited, and this definition is pivotal to the searches they have employed to identify their papers.

[Response]

We named the inclusion criteria and how they were developed in more detail in the method section of the manuscript (Lines 128-134).

Joseph Lee (Reviewer 2): Thank you for this interesting read. I think these are important results. As this is a review with a 'negative' result the search and exclusion criteria are important. A little more detail would allow the reader to judge if it is negative because of these factors.

[Response]

We named the inclusion criteria and how they were developed in more detail in the method section of the manuscript (Lines 128-134).

Specific comments: These are mostly optional language tweaks, offered in the spirit of trying to be helpful, but is not an exhaustive list of English corrections…

Line 26: 'in high velocity' should be changed, perhaps to 'generated at high velocity'
Background:

Line 59: 'population is accountable for' to 'population accounts for'
Line 62: delete 'most' or even the whole line
Line 82: delete 'yet'
Line 198: 'proof' isn't quite right, ? 'apply'

[Response]
We incorporated your suggestions into the manuscript.

Line 76: this is very useful - could you define the 3 Vs in the abstract?

[Response]
We defined the term “Big Data” via the 3 V’s in the abstract. (Lines 26-27)

Methods: Search strategy - looks reasonable to me, I wonder if more terms for co-morbidity would have increased the numbers of included studies.

[Response]
The term co-morbidity usually describes diseases or disorders that usually co-occur with a primary disease. We explicitly wanted to investigate multi-morbidity, e.g. the occurrence of two or more diseases that are not directly related. That is the reason why we did not include the term co-morbidity into the search. We discussed within the authors if we should include this point in the manuscript but eventually decided that the definition of multi-morbidity is quite strong and the differentiation to co-morbidities would be probably a bit confusing for the reader.

Could you give exact dates for the searches? (was there a limit)

[Response]
There was no limit. The dates will be made available in the additional materials according to the PRISMA-ScR checklist.
Was there a registered protocol?

[Response]

No, we did not register a research protocol. We included this point to the methods section (Line 119)

Could you provide a PRISMA scr checklist?

[Response]

Yes. The checklist will be available in the additional materials section.

How did you define big data analytics for inclusion? (given this is a difficult definition and important for your decisions)

[Response]

We named the inclusion criteria and how they were developed in more detail in the method section of the manuscript (Lines 128-134).

Line 131: Arguably, the flowchart is a result?

[Response]

We moved the flowchart into the results section
Results:

Lines 146 to 148: Could you clarify if this means none of the grey literature was included in the final six? or did all six come from the grey literature, but only after further discussion?

It would be nice to have a supplementary table with reasons for exclusion for full texts - covidence can generate this.

[Response]

None of articles found in grey literature were included. We clarified this in the text (Lines 153-154). We will include a table of the exclusion criteria in the additional materials.

Strengths and limitations:

Are there lots of studies using electronic health records that don't self-identify as 'big data' and therefore were missed, or were these excluded for not meeting your criteria? E.g. is a cohort study of lots of electronic records included for being big or excluded for a lack of 'velocity'? Or perhaps for using classical statistics?

Either way there is a limitation that I think should be identified.

[Response]

As mentioned before we clarified this aspect through additional statements in the method section. (Lines 128-134)

Table 1: Col 5 is headed 'No. of used datasets' but some of the lines have large numbers that are presumably the number of records or participants?

[Response]

After a discussion in our research group, we changed the term to “observations”.
Supplementary material:

Could be slightly more complete, could you provide the rest of the strategy here as well? i.e. the dates and databases searched, just to make it self contained.

[Response]

We will include more information to the additional materials.

Konstantinos Georgios Kyriakoulis, M.D. (Reviewer 3): A rather interesting study and critical review. Provides useful information and addresses to all medical specialists. Well written, conveying clear points. I only have a few comments concerning the content of the manuscript.

1. You state that "most guidelines do not address multimorbidity". Can you give some examples of guidelines trying to incorporate an approach where multimorbidity plays a role in clinical decisions? This could show that although in primitive stages, this way of thinking tends to be adopted in modern medicine. An example that comes to my mind is Hypertension guidelines. The clinical decisions for hypertensives are based on the Total Cardiovascular Risk and not on the absolute values of systolic or diastolic blood pressure. This could be an attempt to assess multimorbidity in these patients (diabetes, CKD etc).

[Response]

Our statement that "most guidelines do not address multimorbidity", was linguistically imprecise. What we meant was, that “there are but a few guidelines that focus primarily on multimorbidity”. Therefore, we changed the manuscript in lines 25-26 and 71.
2. Is there any role of big data analytics in the construction of mobile medical apps for smartphones? Or could that be a future perspective? These apps seem to become more and more popular among healthcare providers.

[Response]

Our review did not focus on the possible use of big data analytics in the development of medical apps, therefore we cannot answer your very interesting question. As it seems reasonable that big data analytics will play a greater role in the development of these apps, we included a statement pertaining these apps in the discussion. (Lines 207-209)