Reviewer’s report

Title: Multimorbidity as a predictor of health service utilization in Primary Care: a registry-based study of the Catalan population

Version: 1 Date: 13 Sep 2019

Reviewer: Reviewer 3

Reviewer's report:

PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses one or several testable research questions? (Brief or other article types: is there a clear objective?)
Yes - there is a clear objective

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?
Yes - the approach is appropriate

EXECUTION - Are the experiments and analyses performed with sufficient technical rigor to allow confidence in the results?
Yes - experiments and analyses were performed appropriately

STATISTICS - Is the use of statistics in the manuscript appropriate?
Yes - appropriate statistical analyses have been used in the study

INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?
Yes - the author's interpretation is reasonable

OVERALL MANUSCRIPT POTENTIAL - Has the author addressed your concerns sufficiently for you to now recommend the work as a technically sound contribution? If not, can further revisions be made to make the work technically sound?
Yes - current version is technically sound

PEER REVIEWER COMMENTS:

GENERAL COMMENTS: This manuscript examines the predictive value of different operationalizations of multi-morbidity for several indicators of use of healthcare resources. This is one aspect of the broader area of risk assessment in the context of healthcare provider payments, but it is also relevant for health services research generally as multi-morbidity is often included in studies.

I am not requested to review this manuscript as usual, but my one comment is that I would like to know a little more about the development of the GMA (for which now references 18 and 19 are provided, p.8, l.133-135). In particular, I would like know how this algorithm was optimized and whether prediction of resource use was included in this optimization process.
The responses to the reviewers are not clearly marked (e.g. by numbers) and therefore difficult to disentangle from the comments. In addition, it is not always indicated where exactly changes in the manuscript have been made, which makes it too time consuming to check everything (particularly as I have not assessed the manuscript before). Therefore, I read the revision note and revised manuscript separately.

None of the initial reviews mentioned major problems; the reviewers felt that the manuscript is overall sound. Overall, it seems that the authors have seriously responded to the author comments and worked substantially to improve the manuscript. Particularly relevant is that they followed the first reviewers' suggestion to report AUC instead of R2 in the abstract. Also, they added the number of chronic diseases in table 3, if I understand it well.

REQUESTED REVISIONS:
The manuscript includes several comments (references to publications) which need to be formatted according to journal style, if the manuscript would be accepted for publication.

The flow of writing could be improved. This seems not so much an issue with the English words, but a matter of how sentences are phrased. The manuscript is partly written as a technical report.

With respect to ethics approval (p.15 under Declarations), I would expect that a specific ethics committee is named, ideally also the number of the file/dossier on the study. The fundamental idea is that an external committee assesses whether ethics approval is required; I am not convinced that this requirement has been met.

ADDITIONAL REQUESTS/SUGGESTIONS:
See my earlier review. I think that the issue of ethics approval needs to be addressed by the journal editor.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics
**Quality of written English**
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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