Reviewer's report

Title: Social Health Insurance Routine Data Analysis: The Incidence of Shortened Lifetime regarding Endoprosthetic Implants

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Reviewer: Alexander Katalinic

Reviewer's report:

(see attachment for better formatted text)

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The authors present an analysis of routine data of a German health insurance concerning the lifetime of endoprosthetic implants. They use a huge dataset of 5 million insured persons in which they identified new endoprosthetic operations in the time period from 2005 to 2007. Replacement rates within a follow up time of two years were identified and analyzed.

For Germany there is only few data on individual follow up of patients with endoprostheses. So this article can add important data on replacement frequencies in Germany.

Unfortunately, the article is not very focused on the virtual research question. Long parts of the article deal with the rather political question why there is no endoprosthesis registry in Germany and how important it would be to have one. The scientific question should be worked out more precisely. Some more data on results should be added.

Before publication the article should be revised carefully taking the following points into account:

- Major Compulsory Revisions

1. Title: The title implies that the article is about the lifetime of endoprosthetic implants, but in fact it is more on short term events (replacement) within a two years follow up period. The title should be adapted. I also suggest to present first the title, then the rest (Title, then: A Social Health …)

2. Background: The background section has to be shortened and focused on the research question. Especially the part on the non-existing endoprosthesis registry takes almost two pages and is much too long. This point affects the research question only marginally. Maybe some parts could be moved to the discussion section.

3. Methods/Results: The authors present scatterplots where the points define a hospital by replacement rate and number of initial operations. The statistical analysis is done by dividing this data into hospitals with less or more than 100 cases per year. First: when presenting a scatterplot then corresponding statistics is usually a linear (or log linear) regression analysis. The authors should consider
this. When the authors want to keep the presented comparison then they should tabulate the data including usual parameters (number of hospitals in each group, descriptive statistics etc.). Second: give an idea why the threshold was set to 100.

4. Results: Basic data (sex, age, more?) and results should be tabulated for the four replacement locations. This would enable other researchers to use and cite the results.

5. Discussion: The comparison of the national and international results is quite narrative. In the method section you cite the Swedish short term indicators. Could the Swedish results be used to compare your results?

6. A native speaker should improve the wording of the paper.

- Minor Essential Revisions

1. Background:
   a. Page 3: BQS. Clarify that this is a German institution and which role it plays.
   b. Page 3: Interpretation of numbers given by BQS is unclear. Please show absolute numbers or the rations (like 1 in X) also for 2004 and 2008. I cannot reproduce the 27.9% and 43.6% increase. Citation or self-calculated data. Please clarify.
   c. Page 4: Where is the information about 5,000 defective hip prostheses based on?
   d. Page 4: It is not important to give all the institutions that are addressing the necessity of a joint registry (I assume there are a lot more).
   e. When using German institutions it might be easier for international readers to give first the English name, then in brackets the German name.
   f. On page 5 you state that an endoprosthesis registry would make some prostheses disappear. First this is more a point to be moved in the discussion section, second why were the long running registries in Scandinavia not able to do this.
   g. On page 6 you state that it “seems” to be useful to evaluate the data with a big health insurance fund. This is much too weak in my eyes. You should stress more that it is possible to do this, that the covered population is huge and that it is the only feasible way right now to evaluate the specific scientific questions in Germany.

2. Methods
   a. Please add that the health insurance data is collected initially for payment purposes (this might be a limitation of the data).
   b. For an international reader it is not reasonable to understand or to look up data flows defined by SGB V. Maybe you can describe this a little bit more precisely.
   c. ICD10, add ICD10-GM
d. Page 7 - last line: I would omit “(in retrospect)”. If you want to stress this point you should add the study design you used (retrospective cohort study).
e. Page 8 – last paragraph: omit “as usual”
f. Page 8 – last sentence: Is this a limitation? Then move it to the limitation section. What is the implication?
g. Please omit in the article p=0.000 and replace it by p<0.001.

3. Results:
a. Page 9: For hip about 50% of the revision causes are given, for the other locations about 23%. I think there should be information on the other causes of revision, at least some discussion.
b. Page 10 – second paragraph: The result is not significant, where do you see the tendency (maybe a correlation coefficient could support you). You imply that a low rate of short-term reoperations is an indicator for high quality. This has to be discussed more precisely because it is unclear whether you mean “better” operation or usage of “better” implants. Both could play a role for lower replacement rates.
c. Page 10 – last paragraph of results: You report on age distribution without giving data on age. You should not present results of statistical tests without showing the data. Last sentence is a conclusion not a result.

4. Discussion:
a. Page 12: Maybe better “limitations and strengths” (I would also stress the strengths).
b. Page 13 - first paragraph: For this article it is not important that you will present further analysis, please omit.
c. Page 13 - Arthoplasty registry - First sentence: “Nobody”. I think this is too apodictic and reality shows that there is at least somebody who has doubts on the necessity of a registry. It cannot be ruled out that an intensive reporting of failures of prosthesis to the Bpharm (like in pharmaceutics) would be effective.

5. Conclusion:
a. For international readers the German paragraphs of the SGB V could be omitted.
b. Replace “could help” instead of “will help”.

Level of interest: An article of importance in its field
Quality of written English: Needs some language corrections before being published
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

I declare that I have no competing interests