Reviewer’s report

Title: Validating a transnational fracture treatment registry using a standardized method

Version: 0 Date: 01 Sep 2019

Reviewer: Jürgen Stausberg

Reviewer's report:

The authors describe the assessment of data quality for a pilot period of a fracture registry. They applied a systematic approach that derives the amount of SDV from a scoring of data quality integrating several quality indicators. The authors claim that their work is the first application of the method in a real world setting. Initially, the data quality appeared to be moderate. An SDV with a sample of the registry population revealed some weaknesses especially regarding missing values that were also present in the source data. The authors illustrate the deviations between the registry data and the source data for some of the investigated items in figures created with the R-package ggplot2.

The manuscript is good understandable and systematically structured. The line of action is in congruence with the underlying method. The graphical presentation of the results with the R-package ggplot2 is very interesting and could be further influence the feedback of data quality information to study sites. Herewith, the presented work advances the methodological tools and the methods in the field of data quality. However, the reviewer recommends a very few major and some minor changes to further improve the manuscript.


2. The flow of presentation is not always clear. The first two paragraphs of the result section should be moved to the method section. It should be clearly and unambiguously defined, what procedures were derived from the standardized method and what procedures were independently applied (SDV of complications?). It would be helpful for the readers to introduce some subheadings.

3. From the reviewer's point of view, the change of the registries' data quality from moderate to good seems to be questionable. Missing values in the registry remain a problem, even if the values are missing in the source data. This point should be explicitly discussed in the conclusions.

4. Height and weight are used as a single item. It should be described, how the authors proceed if only one of the two variables were missing.

5. The validation of complications remains unclear and should be described in more detail. Following the explanation in lines 134 to 137, only complications in the registry are validated giving a positive
predictive value. However, figure 4 implies a search for complications in the source data that were not recorded in the registry (for example to calculate sensitivity).

6. The parts related to the score on the one hand and to the assessment of complications on the other hand should be separated using subheadings.

7. As far as the reviewer understands the authors correctly, the SDV leads to changes in the documentation protocol for some items, e.g. the enabling of the recording of a combination of succession of methods. This consequence of an SDV is an important methodological finding about the power of SDV that should be highlighted in the conclusions.

8. Again, the retrospective change of a threshold (line 242) is not sound from the reviewer's point of view.

9. Table 2 could be renamed to „Delta value in relation to score result and data quality”.

10. Figure 1 should be renamed to make clear that this figure provides an arbitrary example.

11. Table 1 and table 3: The specific weights and the thresholds were defined by the authors. They differ from the values that were recommended in the standardized method. This is acceptable. However, it should be mentioned that the presented values are local ones.

12. The authors included two items in the calculation of one quality indicator („compliance with procedural rules”). Herewith, the authors suggest a way to handle a gap in the standardized method. The reviewer suggests highlighting this extension in the conclusions.

13. The image of figure 7 includes the legend „SDV Reduction”. But, this figure does not describe a reduction of SDV, it describes a result concerning the „method of fracture reduction”. The legend should be corrected.

14. In the PDF-file, tables and figures are not in the correct order.

15. It would be worthwhile to add a paragraph describing the plans for the future with regard to data quality.

16. Conclusions could be split up in a longer part "discussion" and a shorter part "conclusions"
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.

No

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

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Please indicate the quality of language in the manuscript:

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I was co-author of the method applied by the authors.

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