Reviewer's report

Title: Classification of patients based on their evaluation of hospital outcomes: cluster analysis following a national survey in Norway

Version: 1 Date: 15 November 2012

Reviewer: Angèle Gayet-Ageron

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DECISION
Major compulsory revisions

GENERAL COMMENTS
Bjertnaes et al used the data from a cross-sectional study to assess the presence of clusters in patients' assessment of hospital outcomes and then compared these clusters according to various patient characteristics. They conducted a large cross-sectional study among more than 10,000 patients hospitalized from 61 hospitals in the four Norwegian health regions. Cluster analysis was used to investigate the presence of homogeneous patient groups. In a second step, they compared all clusters regarding specific items and patient characteristics. Although well written, some important points are lacking and these need to be clarified in a new version of the manuscript.

SPECIFIC COMMENTS
1. Introduction:
The authors should refer to more recent papers to illustrate the fact that patient satisfaction is generally skewed towards a positive evaluation.

2. Methods
• Data collection:
It is regrettable that the reasons for non-participation were not collected as it is known that non-participants differ systematically from participants.

• Variables tested:
It would have been interesting to obtain data on the reasons for hospitalization, e.g. by the use of a summary variable that captures the severity of the underlying disease, or by asking some questions on specific diseases (hypertension, diabetes, etc.), or regarding hospital stay (sector of hospitalization, length of hospital stay, surgery or not, hospitalization for an urgent reason, etc.) with the aim to assess if the underlying general conditions could explain the responses provided to the three outcomes. Even if not available due to the use of pre-existing data, this point could be discussed in the limitations’ section.

• Questionnaire:
It would be interesting to have an idea of the internal consistency of grouped items and not just a sentence stating that the reliability and validity of aggregated items were good and referring to a report that is not easily available to readers.

Page 7, last paragraph, end of sentence “The content of the patient-safety item related to patient-perceived malpractice, and…”: “and” should be deleted.

• Statistical analysis:
  - The authors should explain how they have estimated the sample size. What were their a priori hypotheses? Why were 400 patients per hospital selected?
  - It would help the reader to give the precise range of the data described, similar to the results section (Table 3). Here, only the mean is given without any idea of the extreme values attempted, depending on the grouped items studied. Were the highest values described 100 or …? It is described in a footnote, but would be better placed in the Methods section.
  - The authors should detail in more depth what kind of “qualitative analysis” was performed. How did they objectively assess that more outliers were different from the other clusters as they did not include them in the analytical part? This cluster is probably one of the most interesting and as the authors say in the discussion, this group is “highly relevant for quality improvement work in hospitals”.

3. Results
  - It would be informative to provide a study flowchart and to detail the reasons for exclusion or non-eligibility.
  - In the first part of results, the description of patients’ characteristics should ideally appear first in the text and not in Table 1. Moreover, it would be interesting to provide the standard deviation (SD) and median age for self-perceived health and education. The authors need to explain that they present mean scores. In my opinion, the range of values for each score would be better placed in the Methods’ section. In Table 1, the SD and median score should be presented for patient-reported experiences.
  - Table 2 and Figures 1-3 do not provide exclusive results and they are just the same results presented in two different ways! The authors need to choose the most informative presentation of the data without duplication elsewhere. The specificity of each of the five clusters needs to be better outlined in the text, e.g., the first cluster groups all patients who attributed the highest scores for general satisfaction, absence of malpractice, and treatment benefit. The second cluster gave high scores to treatment benefit and absence of malpractice, but those patients were less satisfied overall than those in the first cluster. By contrast, the third cluster grouped those who were satisfied and did not describe malpractice, even if they gave a lower score to treatment benefit. The fourth cluster gave relatively balanced scores to each of the three indicators. The fifth cluster included patients not highly satisfied overall or not satisfied with treatment benefit, but who declared less malpractice. Finally the last cluster represents outliers who were not satisfied overall, declared malpractice, and no treatment
benefit.

- Table 3 needs some clarification. The title should be more explicit. It is not clear what kind of results are presented. In the Methods’ section, “waiting time” is assessed in one item and scored from 0 to 5. What does “68.9” represent for cluster 1? It is not clear at all. The important message from Table 3 needs to be clearly stated in the text. We observe that all 5 clusters differ regarding each factor assessed, but it may be interesting to complete this by post hoc comparisons in order to test not only the overall difference across the five clusters, but to test two-by-two differences. The overall difference is probably explained by the large difference between each of the first 4 clusters with cluster 5, which showed lower scores for the three outcomes. It is strange that the mean education was significantly different across the 5 clusters with such values? Please check/verify.

- Why have the authors excluded the outliers in Table 3? It would have been very informative to understand on which variables they differ from the other patients grouped in clusters. It is not logical to exclude them as the authors explain in the discussion that they should be included “in the interpretation of patient clusters” (page 13).

- Regarding the different proportion of open comments provided in cluster 5, a summary description (if possible) of the comments provided would be helpful to judge if these patients provided informative factors to explain the low scores of the three outcomes.

4. Discussion

- The authors had some difficulties to start the discussion. In the part traditionally used to compare findings to previously published studies, the authors still presented their results without providing an overview referring to the existing literature on the subject. I would suggest deleting the part starting at the end of page 11 “This study identified five…” and ending at paragraph 1, page 13. Perhaps they should consider rewriting this part to enlarge their vision by referring to some previous studies.

- The authors do not provide any interpretation of their results. Perhaps they need to provide a potential explanation of their findings.

- The section on study limitations is too short. It would have been interesting to complete the survey in order to better explain patient differences observed between clusters. Even it was not possible to do so, it could be mentioned. As mentioned in Methods, it would have been interesting to test some other variables to compare clusters, and the reasons why there were not collected could also be mentioned.

- It is a regrettable to finish the discussion by negative points and I would suggest adding a paragraph developing the potential usefulness of the study results and their generalizability. A paragraph describing some avenues for future research would also be useful.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests