Reviewer’s report

Title: Multidimensional analysis to assess the relations between treatment choices by physicians and patients’ characteristics: the example of COPD

Version: 1 Date: 1 June 2012

Reviewer: Thys van der Molen

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Multidimensional analysis to assess the relations between treatment choices by physicians and patients’ characteristics: the example of COPD

General comments,
This is a well written article, however difficult to understand. The authors selected a group of patients characteristics and measured those characteristics in a group of patients that visited a French Pulmonologist. Than they calculated clusters of patients and tried to relate that to treatment choices.
As a clinician and researcher I understand the curiosity of the researchers, however for me it is not clear why they made the choices. I have some methodological questions:

1
The patient characteristics contain Patient reported outcomes MRC and two questions about cough and sputum. Were these questions validated? What were the outcomes and how was this weighted in the calculations?

2
The authors talk about COPD, however if I understand it well a large part of the patients had no obstruction and were defined as chronic bronchitis?? (table 1 23%) Is there any sign of Chronic bronchitis in patients with COPD? Can you add this to the table?

3
Current GOLD guidelines talk about category ABCD I would like to see these expressed in the article.

4
Could the authors reflect about guideline adherence?

Specific comments:

5
Abstract:
I do not agree with the first sentence:
In several situations such as symptomatic COPD, practice guidelines remain quite vague on treatments hierarchy, especially when large trials have failed to identify subgroups of particularly good or poor responders to available medications. GOLD guidelines give very precise treatment hierarchy see GOLDwebsite.

Reference 1 is outdated please change and also change the sentence about clinical characteristics since these also include symptoms.

Discussion:
I would like to see a clinical part in the discussion. There is a large literature about how clinicians make choices, secondly there is a lot of evidence that the patients preferences are also involved in these choices. However in the discussion there is no word about this!

Conclusion,
Indeed there seem to be no relation between these clusters of patients based on these characteristics and treatment choices. It might therefore be that either guidelines or clinicians or both currently have other patient groups in their decision choices or that they incorporate patient choices. My conclusion would be that the cluster analysis did not lead to clinically meaningful clusters which was reflected by the fact that the > 500 French clinicians did not adapt their treatment choices to these clusters.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I have no competing interests