**Reviewer’s report**

**Title:** Application of latent class analysis in assessing the competency of physicians in China.

**Version:** 0  **Date:** 11 Oct 2016

**Reviewer:** Dario Cecilio Fernandes

**Reviewer’s report:**

The theme of research is relevant, especially when we consider the assessment of competency in large scale. Examining the latent class may be an interesting way of looking at how we classified medical doctors as competent. However, the authors do not establish a clear rationale explaining why this research is important. Furthermore, I am not sure whether using a self-assessment scale is the most appropriate for high-stakes decisions. The English language used in the article needs major revision.

The introduction does not lead towards the aim of the study. The study lacks research question and hypotheses. The authors only described different examples for the competency system and extensively described the LCA. The latter should only be described in the Methods section, specifically in the Data analysis. Additionally, if the aim of this study is to provide a scientific basis for a qualitative study, I strongly suggest to the authors that they should consider publishing only one article with both studies.

The Methods section needs major revision. Besides that, the methods section is very extensive. The authors should add subheadings to better structure the Methods section. It is not clear what the subheading Study subjects and methods means. Additionally, I'm not sure how trustworthy the answers of a self-assessment questionnaire can be. It should at least be a limitation. Further, it is not clear the reason the authors decided to select only 15 items as well what is the rationally behind being the most important items. If 15 items are enough to decide whether a medical doctor is competent why do they administer a questionnaire with 105 items.

The subheading Quality control does not reflect any control. The authors are only describing the Procedure. The authors extensively described the LCA. I would like to suggest the authors summarize this part. Many of the BMC medical education readers will not be interested in this part. The authors may only refer to an overarching paper.

The results section needs major revision. I would like to suggest to the authors that the first paragraph would be moved to the Methods section. The results section is to extensive based on their findings. The tables are very difficult to read and understand. For example, in Table 2, how is possible a p-value be equal to 1.00. The authors should revise the results section. It should be an alignment between research question, methods and results. Since the research question is missing such an alignment does not exist. More importantly, I cannot understand the use of LCA when you are no revealing anything new. Their competency classification is based on a Likert scale as the self-assessment scale. In my opinion, the authors are underusing the LCA. They could have more interest research questions and topics to address.
Given all the above, I would recommend not to accept the paper for publication. If the authors can reorganize the structure, explain why their study is important, formulate research questions and re-analyze the data in congruence with the research questions, the article will have a value within the scientific community.

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

No

**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.

No

**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

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?
4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

None

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal