Reviewer's report

Title: The relationship between health literacy and multimorbidity in a primary care setting

Version: 3 Date: 5 January 2012

Reviewer: Radhika Devraj

Reviewer's report:

Major Compulsory Revisions

This paper aims to identify if there is a relationship between multimorbidity (defined as existence of two or more chronic diseases in a patient) and health literacy. While the purpose of the study is clear, it is not well written and there is not enough explanation of the key variables as well as the results in the various sections. Unless word limits are the reason for this, it does not seem that the paper is written in the typical peer reviewed style found in most journals. Below are some specific suggestions:

Introduction:
1) There is not much description of why health literacy matters except for a listing of literature about health literacy and patient outcomes. While I understand the significance of health literacy being in the field, it may not be clear to others. A lot more details about the significance of health literacy needs to be included.
2) Again, while the definition of multimorbidity was provided and a listing of studies linking multimorbidity to poor outcomes, there needs to be additional description about multimorbidity as an issue. Just two sentences about multimorbidity does not seem to suffice as an introduction.
3) The authors indicate in the third paragraph that “the possible association between health literacy and multimorbidity has not yet been explored”. There is no reference to literature that has looked at various aspects of multimorbidity, or to other topics related to multimorbidity prior to making this statement. See point 2 of Discussion for additional information.

Methods
In the section:
1) Participants and sampling—
One criterion is for patients to be able to read. If patients are able to read, then automatically, they have some level of health literacy (although it is fully understood that reading is just one aspect of health literacy) better than those who cannot read. This may potentially create a biased sample. It would have been best if all data collection were performed by interview rather than requiring them to read as a criteria.
2) More details describing the family medicine clinic site where data was
collected is needed.

3) Why was the original DBMA instrument with 21 diseases not used? What is the rationale for using DBMA 6?

4) Data collection:
More details about data collection need to be provided. How long did the data collection process take? Was any remuneration provided to participants? How and when was informed consent obtained? When patients did not meet eligibility criteria how was it handled?

Data Analysis
1) What was the rationale for using two operational definitions of multimorbidity?

2) Why was marginal and adequate literacy combined together? According to NVS criteria, a score less than 4 suggests low to marginal literacy. A score equal to or greater than 4 implies adequate literacy. The authors criteria for low/adequate/marginal health literacy are however different from this. They indicate that a score greater than 4 was marginal to adequate literacy. This is not what the NVS publication implies. So it is unclear what marginal literacy is and what adequate literacy is.

3) What specific multivariate analyses were performed? This needs to be specified as the reader is left guessing.

4) Why was impact of duration and severity of disease not considered in the assessing multimorbidity? These would have a profound impact on multimorbidity.

Results
The results section needs to be further elaborated. The results section needs to elaborate more about DBMA scores, what was the distribution, what was the median score etc. Additional analyses and details must be considered to enhance this section. Currently, it reports on three specific analyses in three specific paragraphs. This does not seem sufficient enough.

Discussion
1) Once again, the discussion does not contain enough evaluation of the results. The first paragraph of the Discussion section states the most significant result. The reader is then left hanging with respect to what this result means. In other words, there is no discussion/elaboration of that key result. The so what question about the key result is not answered.

2) The second paragraph starting with “To our knowledge” talks about the literature. This should be moved to the Introduction to make a case for the significance of conducting the current study.

Level of interest: An article of limited interest

Quality of written English: Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.