Reviewer's report

Title: Determinants of maternal health services utilization in Uganda

Version: 6 Date: 10 March 2015

Reviewer: Natalie McGlynn

Reviewer's report:

The paper has been improved somewhat. However, some of my prior comments need attention, in addition to some new ones.

1) The abstract is confusing. Please:

a. Explain the maternal health services package variable better in the abstract. This was done at one point, but the info has now been deleted. At the very least state the 3 levels of the MHC package after it is mentioned in the methods section of the abstract i.e. ".. Predictors of MHC utilization (characterized as undesirable use, moderate, or ideal use) were analyzed..",

b. More clearly state, in the abstract, what the reference category is. At the beginning of the results section, you could say "Compared to women who received the undesirable MHC package, women with high education were more likely to utilize the desirable MHC package" OR "Women with high education were more likely to utilize the desirable MHC package (reference=undesirable MHC package...)

c. You need to include, in the abstract, that Andersen's Behavioural Model guided your selection of covariates into the model. It is very important to mention the scientific rationale undertaken to build your model.

d. "Residence in all Uganda"? This phrase doesn't make sense. Perhaps you mean "people who live in regions outside of Kampala are less likely to utilize desirable MHC."

2) Andersen's Behavioural Model. In the introduction, it is not necessary to describe Andersen's Behavioural Model to the extent that you have, or list all the theoretical frameworks that you could have used to build a model of utilization of healthcare. In the Introduction, you could just put, and no more: "Andersen's Behavioural model was used to guide selection of covariates that could affect utilization of MHC. Andersen's behavioural model has been widely applied on survey data and various health services and populations (CITE examples).

In the Methods section is where you need to describe how you applied Andersen's Behavioural Model. You could do this in the 'explanatory variables' section. All you have to do is copy what you have in the introduction, that "according to Andersen's Behavioural mode, health utilization is a function of three groups of factors", then list how each of your co-variates falls into one of those 3 group factors i.e. 'enabling factors – wealth, ... etc."
In your response to my prior comments, it was stated 'the purpose of this paper is not to critique the Andersen framework, [let] alone other models that have been cited. The authors feel that delving into such a critique will expand the introduction". I agree, this is not a critique of Andersen's Model. However, I do believe you have space to expand slightly on Andersen's Model in the methods section, but only by moving what you already wrote in the introduction to the methods. It is important to include Andersen's behavioural model in your methods section because it is the backbone of your entire analysis. All model-building in statistics requires a rationale of co-variate inclusion, instead of simply "throwing in" any variable into a model, or ones commonly used. Some researchers only include variables that are identified as confounders in their models, but this paper uses Andersen's Model. Properly outlining how it was applied will greatly improve the credibility of your analysis to other researchers.

3) In the Abstract and Introduction, you mention that the objective is "to investigate the predictors of low utilization'. Since low utilization is your referent group, technically you are looking at predictors of moderate and desirable MHC utilization.

4) Please state what the level of alpha is for significance in the Methods section. I.e. Significance was determined at #=0.05

5) Discussion – Do not put relative risk ratios in the discussion. Saying X is more or less likely to utilize MHC is sufficient.

6) Discussion is good. Could cut down prior literature that also states that high education is a predictor of MHC – that part is a bit long.

7) Limitations. You also need to discuss other factors that could have influenced your results, which you were unable to include in your analysis. In your other areas of your discussion, you mention other variables that could impact MHC utilization (i.e. attitudes that a woman can handle birth by herself and other cultural norms), yet you do not mention that you did not account for these variables.

8) Multiple grammatical errors and missing words throughout.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests