Reviewer’s report

Title: "Love me, parents!": impact evaluation of a national social and behavioral change communication campaign on maternal health outcomes in Tanzania

Version: 3 Date: 17 Mar 2017

Reviewer: Sonia Lewycka

Reviewer’s report:

Thanks for making further revisions to the draft. There are still some changes I would suggest to make your results easier to interpret:

General

1. The presentation of your results is much better, but still needs some adjustment to make it more readable. In your methods you need to explain more clearly the strategy for inclusion of covariates in your models. If you are looking for confounding factors, these should be independently associated with both the outcome and main exposure (campaign messages). You have presented some information about association with outcomes in Table 2, but you haven't commented anywhere about which were also associated with campaign exposure. You could do this in Table 1 (see comment below). You also need to state clearly which variables were included in the adjusted models. Was this the same for each outcome investigated? Table 3 suggests that different covariates were associated with each outcome. Did you use the same covariates in all models, or specific covariates depending on what was associated with the outcome in univariate analysis? This should be included as a footnote to Table 4.

2. I suggest that you conduct your primary analysis on exposure as a binary, categorical variable, then go on to explore dose-response effects. If there are small numbers in the higher end of the continuum of number of sources this may create data sparsity. You should first explore whether there are associations between outcomes and any exposure to the campaign (i.e. 0 vs 1 or more sources). If you want to look at dose-response you can create a categorical variable with levels something like 0,1,2+. Do you have any justification for thinking there should be a dose-response effect here? Perhaps it is not so much about the number of different sources, but the exposure frequency. You mentioned that 16.5% reported daily exposure. This might be a more useful way to explore the dose-response effect. What measures of frequency do you have that might allow this analysis?

3. Likewise, as I said before, it would simplify your analysis, presentation and interpretation to recode birth planning and number of antenatal visits as categorical variables and present odds ratios. You can include linear models as well if you think it adds something extra to your findings.
Specific

4. Abstract, lines 44-46: You can't say that the association between the exposure to the interventions and delivering in a health facility or HIV testing with partner in unadjusted models were promising. The fact that these associations disappeared after adjustment means that they were largely explained by confounding.

5. Methods: You need to state somewhere what the timing of the survey was in relation to the campaign.

6. Methods, lines 232-233: This statement isn't clear.

7. Results, lines 265-272: It would be better to tabulate these exposure measures.

8. Results, lines 361-362: This should be interpreted as weak evidence for an association since the confidence interval is close to but actually crosses 1.

9. Results, line 380: Health facility delivery was not significantly associated with campaign exposure.

10. Discussion, lines 405-410: This study design doesn't really allow evaluation of the programme impact on uptake of services, because it doesn't include women who didn't use services. As well as this important bias in the sample, women attending prenatal or postnatal care may have been exposed to campaign materials at the health facility. We cannot determine the causal sequence of events.

11. Table 1: This table also needs to have columns showing N (%) of demographic characteristics among women exposed to the campaign messages (any source), and unexposed (no source). Did you collect gestational age information for the prenatal women? This could be another important confounding factor, particularly related to having the opportunity for a higher number of ANC visits, HIV testing, and birth planning. You could include another column in this table to show p-value for test of association between covariates and the main exposure.

12. Table 2: You need to show N (%) in each category of exposure. I suggest you also add a column for any exposure (i.e. one or more). There don't appear to be obvious dose-response trends here, and perhaps these figures lack precision because there are small numbers in each group.

13. Table 3: You should not only include statistically significant relationships in this table. It would be better to include relationships between all outcomes and all covariates here, and use this evidence to justify your choice of covariates for inclusion in adjusted models in Table 4.

14. Table 4: The inclusion of prenatal women in models with prenatal outcomes, such as birth planning, first ANC visit, number of HIV visits and HIV testing is not ideal, unless information about gestational age is available. From Table 2, the differences between those exposed to the campaign and not exposed to the campaign seem to be larger for the postnatal
women. I think you may be diluting your results by including prenatal women who have not had the full duration of their pregnancy to participate in these health care activities.

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

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**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

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