Reviewer’s report

Title: Adoption and sustained use of cleaner cooking fuels in rural India: A case control study protocol to understand household, network, and organizational drivers

Version: 1 Date: 10 Oct 2017

Reviewer: Kumaran Kalyanaraman

Reviewer’s report:

Thank you to the authors for addressing all the earlier comments.

It is commendable that the authors have thoroughly looked into the ICMR/HMSC regulations and can confirm that they do not need approval.

I appreciate the extent to which they have thought of ethical issues in relation to the study. However, in my experience, approval from a local ethics body is always advisable for research projects involving human participants. I would consider it appropriate to seek local ethics approval and perhaps the Indian field/data collection partner could facilitate that.

The sample size clarification paragraph (copied and pasted below) appears to indicate that the calculations were based on an estimated mean difference in income between the two groups. If so, this could be made clearer and the paragraph rewritten to avoid repeating information (for example, the mean difference in income and std deviation appears twice in the paragraph). I am also not sure that the graphs add value and the authors could consider removing them.

"We will select an equal number of case and control households for this proposed study (control to case ratio will be 1:1). We will select a sample size of 255 households each for case (LPG adopter households) and control (LPG non-adopter households). A total sample size of 510 households at a 95% confidence level (alpha=.05) will provide a power of 80% to this study at a control to case ratio of 1. This computation assumed that the populations mean difference in monthly income was 545.35 India National Rupee (INR), and the common within-group standard deviation was 2199.26 INR per month. In the absence of previously published studies on rural income in this region, where the study is to be undertaken, the power computation was conducted using a baseline income data from another recently concluded NIH funded R21 (WUSTL IRB ID# 201207016) randomized controlled trial (RCT) on cookstoves. This study will be conducted in the same region where the RCT was undertaken. To calculate the sample size, we used the Power and Precision 4 software. The criterion for significance (alpha) was set at 0.05. The test was 2-tailed, and so an effect in either direction will be interpreted. With the proposed sample size of 255 each for case and control group, the study will have power of 80% to yield a statistically significant result. This computation assumes that the mean difference in income between the two groups is 545.35 INR (corresponding to means of 2190.6 INR versus 1645.0 INR) and the common within-group standard deviation is 2199.26 INR. It is also assumed that this effect size is reasonable; an effect of this magnitude could be anticipated in this field of research. On average, a study of this design would enable us to report the mean
income difference with a precision of 95% confidence level. Figure 3 shows the power curve for this study with the total sample size for this case-control study design with a control to case ratio of 1. Figure 4 shows the power curve with the sample size per group for this study."

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