Author's response to reviews

Title: Impact of duration of structured observations on measurement of handwashing behavior at critical times

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Author's response to reviews: see over
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To: The Editor
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From: Amal K Halder,
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Sub: Revision submission:1484121168858017 - Impact of duration of structured observations on measurement of handwashing behavior at critical times

Thank you so much for the wonderful review of our manuscript. We are also thankful for the helpful comments and suggestions. We have attempted to address point-by-point response against comments and suggestions as follows:

Reviewer 1: Eric Lau

Major Essential Revisions

1. In the methods section, please clarify in the short observation group, the morning observations were started between 8:00am – 1:00pm or 8:00am – 11:30am. In case of the former case, was the second observation delayed if the first observation started near 1:00pm?

Response: We have revised this as –
“In the long observation group, we planned for 5-hour structured observations to start between 9:00 am and 11:00 am. We sought to have fieldworkers complete two 90-minute observations per day as a test of the efficiency of carrying out short observations. For this reason, in the short observation group, we conducted two 90-minute structured observations, with a planned start time of 9:00 am for the first set of observations, and a planned start time of 12:00 pm for the second set of observations. The observers had at least one hour break before starting the second observation of the day.”

2. Please clarify if it’s common to have very short break (e.g. within 15 minutes) between the two short observation sessions or if it happened to have a consecutive 180-min observation period.

Response: Yes, the observers had a break of at least one hour before starting the second observation of the day, since they had to move to the second household and get situated. We have inserted this, as shown in response to the Comment 1 by Reviewer 1.

3. In the discussion, the authors noted that the timing of short observation may affect the results. Please report the distribution of the start time in the first short observation.

Response: We have mentioned the distribution of start times for the first round and second round of short observations in the results section.
4. Table 3 reported significant differences at different timing of observations. So the main conclusion of the paper that short observations had unexpectedly low mean number of observed opportunities may have been confounded by the timing of the short observations. Adjusting for the timing effect is important to separate these different effects.

Response: We are very thankful to the reviewer. We have adjusted for the effect of timing in the analyses shown in tables 1 and 2.

5. Table 3, for better understanding, please report 2 significant figures for the mean opportunities observed. For example, mean number of defecation opportunities in the first 90 minutes of long observation is 0.0. It is not sure if it’s an absolute zero (which actually indicates a strong timing effect).

Response: We did this editing in table 3.

Minor Essential Revisions

1. page 4, under “data analysis” line 5, “in the long observation group” should be “in the short observation group”

Response: Actually, it is the long observation group. To state in detail, we estimated the expected number of events in the first 90 minutes but this is how we figured out what the expected number should be and then we compared observed number in short observation household to expected number (figure 1b).

2. For comparison between first 90 minutes and next 210 minutes under long observation in the same households, paired t-tests should be used.

Response: Yes, we used paired t-test statistics to assess the significance of the difference between the number of events expected and observed during the subsequent 210 minutes.

Discretionary Revisions

The main concern of the conclusion is the confounding effect of the start time of the first short observations. A time-matched comparison between short versus long observations or additional comparison between the second short observation versus long observations may provide stronger evidence. If timing is crucial of observations of different activities, a presentation of observed opportunities across different timing will be very informative for future design of similar studies.

Response: We agree with this comment and have taken into account the start time in the analyses in Tables 1 and 2 presented in this version of the manuscript. Thanks.

Reviewer 2: Katie Greenland

Reviewer’s report:
General Comment: Overall, I find this manuscript very well written. Points that I was hoping for further explanation on were almost all addressed at some stage in the manuscript (e.g. discussion of why observation of faecal contact may have been reduced by short observation sessions). The rationale for each decision made (methods, choice of analysis, etc.) was clearly reasoned.

Response: Thank you so much.
Major Compulsory Revisions:

1. Timing of short and long observations
   The discussion (P4) mentions that: “It is possible that restricting both long and short observations to
   particular times of day may have generated results that were more similar between 5-hour and 90 minute
   observations”. I was looking for some mention of this, but this statement does not give me enough
   explanation of why this wasn’t done – I would have thought it is quite important to look at the same time
   period if you wish to draw conclusions about whether 5 hour sessions can be replaced by 90 minute
   sessions. For my work it would have been useful to know whether 90 minute observations between say
   6:00 and 7:30 are significantly worse than a 5 hour observation session beginning at 6am. I would like the
   discussion to make more of this.

   Response: The reviewer makes an important point. To do such analysis, we would have required much
   larger samples, with similar number of households in each group at different starting times throughout the
day. The analysis covered in this manuscript was secondary to various analyses of prime interest to the
larger study and our budget would not have accommodated the necessary sample sizes. We have
mentioned this limitation in the discussion.

2. Results final paragraph and Discussion P1/2.
   Results: “Within long observation households, handwashing with soap at all critical times and overall was
   higher in the initial 90 minutes than the remaining 210 minutes of observation except the opportunities of
   serving food (Figure 1b and Table 3). Notably, handwashing without soap was less frequent in the initial
   90 minutes than in the remaining 210 minutes for all opportunities, except for feeding a child.”
   Discussion: “We found handwashing with soap at critical times during the first 90 minutes were
   comparatively higher than the soap use during the remainder of the observation, although statistical
   significance was not demonstrated likely due to the small sample size. However, during the latter 210
   minutes of observation, we observed more frequent handwashing with water alone than expected before
   food preparation and food serving opportunities.”
   After reading these results I was looking for some more explanation / speculation in the discussion, but the
discussion of these findings comes much later (P3 beginning “Even with the limited...”). If it would work,
consider reordering the discussion and giving more detail in P3.

   Response: The finding that handwashing with soap was more common in the first 90 minutes, compared
to the remaining 210 minutes, is informative and, thus, we have covered it in the discussion (Paragraph
3). However, we have chosen to devote paragraph 1 of the discussion to synthesis of the overall findings
of the study and paragraph 2 to addressing the key findings relevant to the primary objective of estimating
the effects of reduced duration of structured observation.

Minor Essential Revisions:

1. Discussion P3, Phrasing. “In the short observation households, caregivers may not have needed to
   defecate during the short duration between their morning toileting and the completion of the observation.”
   To me this sentence doesn’t quite make sense. Please read over the wording and edit if you agree.

   Response: We edited the wording to increase the comprehensibility.

2. Methods P1 and Results P1.
The start times for the short and long observations quoted in the methods and results do not match, which
is understandable if planned start times were not realised, but the wording used here leaves room for
speculation.
Methods: “In the long observation group, we started 5-hour structured observations between 9:00 am and
11:00 am”; Results: “The field team started long observations between 9:00 am and 12:00 noon”
Please check wording for all timings reported and phrase slightly differently in the methods and/or results.

Response: We have corrected this and made it uniform in the report by inserting the exact starting time range. Thanks.

3. Methods P1 and Results P1. I would like to see more explanation in the discussion of why there is such large variation between start times for observation when the study was conducted in six villages. The discussion (P2) mentions logistical difficulties meant that observation had to start later in the day than one might have liked, but I don’t see why a set start time couldn’t be agreed even if it was later in the day (or was it not desired)?

Response: We have addressed this in the limitation section in discussions.

Discretionary Revisions:

1. Discussion P3, omitting early observations from analysis. Is it possible to speculate on how much observation time should be omitted? How could this affect the likelihood of capturing defecation events that may have only been observed during the earliest part of an observation session?

Response: We appreciate the reviewer’s suggestion. However, given the very small sample that we have to work with, we propose that such analysis would be better done in larger datasets of structured observations.

2. The discussion rightfully notes that some events may have been missed by not observing early in the morning (P4). I would like to see brief mention of i) how someone planning structured observation might determine the optimum timing for observation (i.e. they need to first have a good idea of when they expect the events of interest to take place) and ii) how you could have got around the logistical difficulties that prevented early morning observation (e.g. if it was culturally acceptable, observers could have stayed in the household the night before observation).

Response: The optimum timing of structured observations depends on the objective(s) of the study. For the rural Bangladeshi context, if the investigator’s objective is to capture defecation events, it would be prudent to initiate observation early in the morning, for example 5:00 am. Alternatively, if the intent is to observe handwashing at times of food preparation, mid-morning and mid-day might be the best times to be present in the home. We have added this information to the discussion section last paragraph, P11.

The reviewer suggests the possibility of the observer spending the previous night at the home of the observed household. In our opinion, in Bangladesh, this would not be deemed culturally acceptable, and might even lead to substantial reactivity.

Editorial comments/suggestions

1. Copyediting:

After reading through your manuscript, we feel that the quality of written English needs to be improved before the manuscript can be considered further.

We advise you to seek the assistance of a fluent English speaking colleague, or to have a professional editing service correct your language. Please ensure that particular attention is paid to the abstract.
Response: We have worked on the readability of the paper and hope that the editors find the quality of the language to be adequate now.

2. Title page:
- It should contain, at minimum, the names, institutions, countries and email addresses of all authors, and the full postal address of the submitting author.
- Please include email addresses for all the authors on the title page, using the following format:
  AB: abcd@institution.ac.uk
  EF: efgh@generic.co.uk
  IJ: IJKL@corporation.com
Response: We have corrected the format.

3. Please place the Abstract on the page next to the Title page.
Response: We have placed accordingly.

4. Please change the title 'Introduction' to 'Background'.
Response: We have changed this.

5. Please provide a Conclusion section heading before the Competing Interest.
Response: We have inserted this heading.

6. Competing interests:

Manuscripts should include a Competing interests section. This should be placed after the Conclusions/Abbreviations. Please consider the following questions and include a declaration of competing interests in your manuscript:

Financial competing interests
In the past five years have you received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? Is such an organization financing this manuscript (including the article-processing charge)? If so, please specify.
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Do you hold or are you currently applying for any patents relating to the content of the manuscript? 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? If so, please specify.
Do you have any other financial competing interests? If so, please specify.

Non-financial competing interests
Are there any non-financial competing interests (political, personal, religious, ideological, academic, intellectual, commercial or any other) to declare in relation to this manuscript? If so, please specify.

Response: We have inserted a competing interests section.
7. Authors' information: Please place the Authors' Contributions section after Competing interests. Please check the instructions for authors on the journal website for the correct format to use for Authors' Contributions.

Response: We have placed the author’s contribution section.

8. Figure titles: All figures must have a figure title listed after the references in the manuscript file. The figure file should not include the title or number (e.g. Figure 1... etc.). The figures are numbered automatically in the order in which they are uploaded. For more information, see the instructions for authors: http://www.biomedcentral.com/info/ifora/figures.

Response: We have formatted figures according to the instructions.

8. Tables as additional files: We notice that you have included tables as additional files. If you want the tables to be visible within the final published manuscript please include them in the manuscript in a tables section following the references. Alternatively, please cite the files as Additional file 1 etc., and include an additional files section in the manuscript.

Response: We have addressed the suggestion.

9. Figure cropping: It is important for the final layout of the manuscript that the figures are cropped as closely as possible to minimise white space around the image. For more information, see the instructions for authors: http://www.biomedcentral.com/info/ifora/figures.

Response: We have worked on this.