Reviewer's report

Title: Comparison of the burden of diarrhoeal illness among individuals with and without household cisterns in northeast Brazil: a cross-sectional study

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Reviewer: Theresa J Ochoa

Reviewer's report:

This is a very interesting and well written paper that compares diarrhea burden among individuals with and without cisterns (that collect rainwater from rooftops) in Brazil, based on a cross-sectional survey to determine the 30-day diarrhea prevalence.

Mayor Comments:

1. Probably the most important limitation that the authors should mention is the possible recall bias. Since the diarrhea prevalence calculation was based on a survey of the number of loose stools in the prior 30 days for all family members. How accurate could this information be? A better study design probably would be to have the diarrhea prevalence in the previous week for children less than 5 year of age. After all is most likely for mothers or other caregivers to remember this information more precisely in comparison to all family members and in such a long period of time. In addition, children have a higher diarrhea burden overall. Nevertheless, the study is important, but the authors should comment on the possible recall bias.

2. Before presenting the individual burden of illness (page 14) it will be good to present some of the households characteristics per group (number of family members, number of children <5y, socioeconomic characteristics, education, etc.). How comparable are these two groups of households? Is it possible that the differences in diarrhea burden are due to other diarrhea risk factors?

3. In the first paragraph of the discussion, the authors mention “there was an approx. 40% reduction in disease associated with having a cistern, among populations with comparable risk factors” (page 17). This can’t be concluded, since the authors have not presented these “comparable risk factors” and there has not been presented a multivariable analysis with other factors associated with diarrhea, in addition to the presence or absence of the cistern.

Minor comments

4. The survey was conducted during one month (August-September). Is this a high or low diarrhea prevalence season in the region? This information could influence the type of diarrhea episodes (viral vs. bacterial and food vs. waterborne), and possible influence the overall diarrhea burden too.

5. The authors mentioned that “households were excluded if they had at least
one person in the house who did not respond to the questioner” (page 12). How many households were excluded in the cistern and non-cistern groups?

6. Table 1, data in duration of diarrhea should have mean plus standard deviations (SD), and the median duration with the interquartile range or range.

7. Table 2, probably would be better to present the median number of people with diarrhea instead of the median “percentage”. The same for the “range of percentage of people with diarrhea per household”

**Level of interest:** An article of importance in its field

**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