Reviewer’s report

Title: The link between mental health and safe drinking water behaviors in a vulnerable population in rural Malawi

Version: 0 Date: 31 Aug 2018

Reviewer: Reviewer 2

Reviewer's report:

PEER REVIEWER COMMENTS: To view the full report from the academic peer reviewer, please see the attached file.

REVIEWER COMMENTS FROM REPORT: This seems like a study that was undertaken well - all the usual expectations of rigour seem to have been applied. The writing style is appropriate and the statistical analysis is good. So on first read, all the usual expectations are met. However, after reading the paper a couple of times, I found myself thinking 'so what?'. I did not really 'get' the point of the paper - the authors have undertaken a very thorough piece of research, but they did not articulate the possible mechanisms linking mental illness to water/sanitation behaviour (WASH). So whilst I could read the various statistical associations, I was left wondering what 'caused' what - in what ways are WASH and mental illness related - does one cause the other, is there some kind of negative feedback loop etc? Without having some ideas articulated by the authors, it's very hard to think of the public health implications - i.e. what would policy makers and practitioners do with the information in this paper? So whilst I thought the nuts and bolts of the research are good, the authors need to more fully explain the links between WASH and mental illness, to allow the reader to make sense of the findings and implications.

REQUESTED REVISIONS:

I have outlined above the needs for the authors to explain the links between mental illness and WASH in the early sections of the paper (possibly on page 3) - both the direction of association and evidence for 'causation'. Based on this, there needs to be a clear set of public health implications in the Discussion section - will improvements in mental health services and mental illness prevention lead to better WASH outcomes, or should policy focus on WASH in order to improve mental health? These are the implications that policy makers need to think about. When the authors first describe RANAS (page 4), it's quite difficult to grasp, so maybe a diagram to show how the 5 blocks of factors link with the 3 context factors? In Study Design (page 5), it is stated that the study had "sample statistical power" but there's no evidence provided for this - was a power calculation undertaken a priori to determine the required sample size (and was it...
achieved) - this requires explanation. The second sentence in Study Design does not seem relevant to that section (beginning with "Differences in health...."). There are multiple references made to "rapid spot-check observations" although these are never described - what are they and why are they important for this paper? The actual sample size differs throughout the paper - 641 in some places and 638 in others - this needs to be made consistent.

**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.

Yes

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

No

**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.

Not relevant to this manuscript

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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