Reviewer's report

Title: Exploring Changes in Open Defecation Prevalence in sub-Saharan Africa Based on National Level Indices

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Reviewer: Wolf-Peter Schmidt

Reviewer's report:

General:
This article examines the relationship between national level governmental/policy/economic factors on changes in open defecation prevalence in sub-Saharan countries.

I found this an interesting paper presenting a simple analysis that highlights important points in relation to sanitation policy. Some aspects in the statistical methodology may need to be addressed in a revised version. In general, however, this paper should be of interest to people working in the sector and PH practitioners with a more passing interest in sanitation. The summary table of the selected countries is a nice overview.

Major point:
While it seems ok to use the correlation coefficient for the continuous outcomes (although in PH we usually prefer effect estimation over hypothesis testing/p-values), I am less confident that the wilcoxon signed rank test is ideal for the categorical/binary exposure variables. I hope this has been checked with a statisticians and potential alternatives have been discussed. Personally I may have first tried to use simple linear regression or even a t-test to explore differences in OD changes depending on for example, presence of a national policy/budget etc. One might also use linear regression of the actual OD prevalences at T2 and adjust for baseline levels at T1. If you haven’t done so, I recommend checking this with an experienced statistician. In case the assumptions of linear regression are not met there may be useful alternatives.

Minor points
Abstract
“diarrheal diseases – the leading cause of mortality in children under 5 in sub-Saharan Africa.” Can you check whether this statement is true? Isn’t pneumonia a more common cause of death?

Background
“diarrheal diseases – the leading cause of mortality in children under 5 in sub-Saharan Africa.” Again, please check this. Does the figure apply to children? To adults also? Is this mortality or DALYs?

“The most promising approaches, referred to in this paper as total sanitation
approaches, aim to empower communities as a whole to become #OD free.’.”
Worth mentioning sanitation marketing as well. There are limitations to CLTS, especially in urban settings and where community cohesion is not strong.
“To the best of our knowledge, this is the first exploratory analysis of what national factors may contribute to reducing OD in sub-Saharan Africa.” Note that some journals discourage the use of such statements although I am not aware of BMC PH policy on this. I find it unnecessary, and we don’t know what papers are under review elsewhere. The same applies to the first para of the discussion and the weaknesses/strengths section. I personally leave these sort of statements to our friends the economists.

Methods

“Ordinal least squares estimation was applied to build regression equations to estimate OD prevalence in 2005, 2010, and 2015 based on the available data points.” To make it more clear to readers without stats background you could add saying that you assume a linear trend to estimate 2015 OD prev. Just to make it more clear.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

’I declare that I have no competing interests’