Reviewer's report

Title: Country Characteristics and Acute Diarrhea in Children from Developing Nations: A Multilevel Study

Version: 4 Date: 6 March 2015

Reviewer: Rachel Burke

Reviewer's report:

Review #3 comments

Overall, most comments appear to have been addressed. A few minor issues remain, and a couple major issues as well. It is in fact rather troubling that this major issue of odds ratios calculations remains.

Major Essential Revisions:

1. Table 3: The interactions still appear off. Note that there should not be one odds ratio for terms involved in interactions, because the contrast will depend also on the values of GDP, GINI, and Health Expenditure. Therefore, there will be multiple odds ratios associated with each of No maternal education and Wealth Index. You will need a table to display these. E.g., for No maternal education, \# = \#80 + \#81GDP + \#82Inequality + \#83HealthExpenditure + u8j. OR formula for No maternal education becomes exp(\#81GDP + \#82Inequality + \#83HealthExpenditure). Therefore, we have multiple ORs – one for each potential combination of GDP, Inequality, and Health Expenditure. You may display all or a selection, but you must make it explicit. Similarly, the effects of GDP, Inequality, and Health Expenditure will also need to take into account these interactions.

Minor Essential Revisions:

2. Table 4: Perhaps consider reformatting? Also, given the above, you may want to report IOR for all of the cluster-level variables. Is the MOR calculated for the cluster = country? If so, just specify this.

3. From your model, it seems like you have deleted a second level / interaction for immunizations, but this still appears in your appendix of the model? Please make these consistent.

Minor Discretionary Revisions:

4. The paper could benefit from another read-through and copy-edit. It looks like “track changes” may have messed up some edits as decimals are not always consistent, and some spacing is off.

5. Generally, suggest using more indents in formatting tables, to make them easier to read (to make it easier to understand which variables are dummy variables / go together)
6. Table 1: suggest use of mean GINI vs. “Inequality” since “inequality” has been defined as the top 25% of GINI

7. Table 2: suggest adding confidence intervals. Also formatting seems messed up – bottom part is showing up on next page under “Table 3”

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

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests