Reviewer's report

Title: High body mass index is not associated with atopy in schoolchildren living in rural and urban areas of Ghana

Version: 1 Date: 28 January 2011

Reviewer: Cynthia Visness

Reviewer's report:

Major Compulsory Revisions

1. Please include the percents in each category with atopy in Table II. To save room, it is not necessary to include the p-value when the confidence interval is stated.

2. There are a lot of results presented in the "association of other study parameters with atopy" section that are stratified by sex, but no data or tables for this stratification are shown. If the authors feel that stratification by sex is important, that information should be included in a table. Additionally, it is not appropriate to assume that there is effect modification by sex (or anything else) simply because the effect is statistically significant in one group, but not in another. Appropriate interaction tests should be done and reported.

3. It would also be of significant interest to see interaction tests between the rural and urban groups.

4. The authors state in the methods section that ANOVA was used to test the difference in high BMI between rural and urban sites, adjusting for age. Thus, the difference in age distribution between the two groups should not be the explanation for the higher BMI in the rural group.

Minor Essential Revisions

1. Please include some description or a reference for how "dummy" variables were generated for missing confounders.

2. I really don't think it is wise to examine the effect of BMI on individual sensitizations, particularly when the prevalence is low, and especially in stratified groups such as the OR of 6.97 reported for cockroach sensitization in rural males in the youngest age category. With the OR going up to 27.3, it is clear that this is based on a very small number of children.

3. On Table 1, the chi-square tests should be done without including the missing category. It is not clear how this was done.

4. There should be a footnote on Table II explaining why some of the variables are not included in the multivariate analyses.
Discretionary Revisions

I find it questionable to use United States growth reference standards for an African population, although I am not sure in what direction that is likely to bias the findings. Some mention of this issue could be made in the discussion.

**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