Reviewer's report

Title: Prevalence and associated factors of goiter among rural children age 6-12 years old, Northwest Ethiopia, Community Based Cross Sectional Study

Version: 1 Date: 23 September 2013

Reviewer: Afework Mulugeta

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Overall comments

This study presents data on the prevalence of goiter and its associated factors in 6 – 12 years old children from Lay Armachiho district, Northwest Ethiopia. Although the data set is a reasonable size and the study contains useful information on the severity of chronic iodine deficiency, it falls short of providing evidence of current iodine deficiency in the study communities. The authors need to provide strong justification of their deviation from using all the recommended quantifiable indicators for assessment of IDD, as recommended by the joint WHO/UNICEF/ICCIDD consultation.

Major compulsory revision

1. Sample size: Given the wide variation in the sample size between this study and other similar IDD studies, I would favor of including strong justification if the results will guarantee a good precision around the estimate of chronic iodine deficiency prevalence in the study communities.

2. Systematic random sampling: The authors indicated that they have used systematic random sampling to select the households. But, they failed to mention or calculate the sampling interval and indicate the sampling frame used. At the same time, they mentioned that they have used the EPI method to select the households. The EPI method is used when random or systematic random sampling is not possible to select the households (e.g. if there is no list of households). This confusion needs to be addressed in their paper.

3. EPI Method: Though not clearly mentioned in their paper, the authors have used EPI Method to select the households. Although, this method is simple and rapid (the time taken to select the sample and move from house to house is far less), it results in a somewhat biased sample, as households closer to the center of the village (in this case, the kebelle administration office) are most likely to be selected. The way the households were selected is not clearly articulated even in the EPI method. For example, after spinning the pencil on a book, the data collectors will decide on the direction to proceed towards the households. But, how the first household and subsequent households were selected is not clearly articulated in the paper.

4. Originality: How does this study differ from other studies - i.e. what were its strengths and limitations compared to other studies from similar setting? What
are their recommendations regarding the high prevalence of chronic iodine deficiency in the study communities?

Minor essential revisions

1. Background in the Abstract: I don’t think that chronic iodine deficiency is a major public health problem of populations throughout the world. May be, it is good to qualify this statement.

2. Objective in the Abstract: Separate the background and objective sections of the abstract. There must be a standalone section for objective in the abstract.

3. Conclusion in the Abstract: The last statement can be rewritten as it is a mere duplication of the result section and would be good to include recommendation of the study as well.

4. Background: The stated objective of the study is to assess the prevalence and associated factors of goiter among rural 6-12 years children. So, it would be better if the background focused on goiter, its predictors and public health implications.

5. Abbreviations: These should be given in full when first mentioned in the text and the list of Abbreviations should be omitted.

6. Sampling technique: Multistage sampling involves a number of stages. For example, two stage sampling starts with the first stage where a number of clusters (collections of individuals or households) are randomly selected. The second stage is when individuals or households are randomly selected within each cluster. But, the authors failed to mention the actual number of staging that they have used in their study.

7. Study subjects: The authors failed to mention how children were selected when more than one 6 – 12 years old child was found in a given household.

8. Pages 3, 6: Make sure that reference ranges are used for the same information. Better to report as “it was 22.3% in southern Blue Nile area of Sudan (12), 11.4 % in Jodhpur district of Rajasthan (13) and 20.5% in India (14)” than “it was 22.3% in Southern Blue Nile area of Sudan, 11.4 % in Jodhpur district of Rajasthan and 20.5% in India (12-14)”.

9. Page 6: It was not clear how the authors know that their results were similar with studies from Ethiopia 39.9% (95%CI: 38.6%, 41.2%) and Sudan(38.8%), higher than those from South Africa (25.5%), Southern Blue Nile area of Sudan (22.3%), India (20.5%), Rajasthan (11.4%), Amhara region (29.1%) but lower than study reports from Islamabad (71.6%) and Ethiopia (53.3%)? Only point estimates but not confidence intervals were given for each of the papers cited.

10. Page 7: The first justification for the higher prevalence of goiter in females than males needs a serious scrutiny. The justification given by the authors implies that female children from the study communities are differentially treated towards iodized salt.

11. Page 7: The second justification for the higher prevalence of goiter in females is the pubertal age. First and foremost, the children were 6 – 12 years of age. Secondly, no data was collected on age of puberty. Third, the authors cited no
reference to support their claims.

12. Reference number 15: YB is Yemane Berhane.

13. References: The authors are advised to use up-to-date references in the field.

14. References: A consistent style is required.

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

**Quality of written English:** Not suitable for publication unless extensively edited

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