Author’s response to reviews

Title: Prevalence and intensity of Ascaris lumbricoides infections in relation to undernutrition among children in a tea plantation community, Sri Lanka: a cross-sectional study

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Editor Comments:

Reviewer #1: The manuscript entitled 'Prevalence and intensity of Ascaris lumbricoides infections in relation to undernutrition among children in a tea plantation community, Sri Lanka: a cross-sectional study' by Galgamuwa et al contain findings that might be important to those interested to understand the nature of relationship of Ascaris infection with undernutrition in human. However, it is not clear what the current studies adds to existing body of literature. Existing literature showed uncertainties in the nature of relationship of undernutrition and Ascaris infection. The authors of the current study also conclude lack of association between Ascaris infection and undernutrition. The authors may provide cases in the background section why the study is important and discuss aloo their finding that heavy intensity Ascaris infection was associated with low WHZ value. In the current study. Most importantly, the manuscript lacks details in the methodology and result section. The discussion seems shallow and needs to be tight. Moreover, the manuscript need major revisions for language, punctuation and
typographical errors to make the concepts clear. The manuscript could be improved further based on the specific comments provided below.

Author

I did all corrections and highlighted it.

Major Revisions

Abstract

1. Please provide information about the prevalence of undernutrition among the study participants in the result section

   Added the prevalence of undernutrition among the study participants

   ‘Prevalence of undernutrition among children was 61.7%’.

2. The statement which read as 'Children with de-worming period exceeding six months were more infected (p = 0.019)' is not clear. Please revise it. Include information about the comparison group.

   Changed that statement as follows

   De-worming periods greater than six months were significantly associated with Ascaris infections.

Background

1. Please revise the statement which read as 'The prevalence of Acaris infection ………sanitary facilities consist' to avoid repetition of words with similar meaning and for clarity.

   Changed that statement as follows

   Ascaris lumbricoides is an intestinal nematode common in low socio economic communities where limited access to clean water, poor personal hygiene and sanitary facilities consist
2. The statement which read as 'A survey that covered the entire plantation sector in Sri Lanka in 1992 found that 90% of children prevalence of soil transmitted helminthes (STH) in children.' In line 45 to 48 is incomplete and needs revision.

Delete this sentence and cited this information in the following sentence

In Sri Lanka, many studies reported that Ascaris lumbricoides was the commonest intestinal helminth infections among plantation sector school children.17-19

3. Please replace the word 'severity' with 'intensity' in the objective of the statement 'Hence, this study was designed to determine the prevalence and the severity of Ascaris infection and the association with undernutrition in children in a tea plantation area, Sri Lanka.'

Done it

4. Literature review on previous findings about the nature of relationship between Ascaris infection and undernutrition could be important to include in the background section.

I added two sentences as follows

In addition, undernutrition increase the risk of infections among children and hence, are major causes of death especially among children.11 The occurrence of parasitic infections and undernutrition negatively effect on growth and development of the affected person.12

Methods

1. More detail information about how stool samples collected and examined could be important. For example, information about the size of stool sample collected and the amount used for direct smear, concentration and the Kato Katz method. In addition, the number of Kato Katz slides examined per sample. Moreover, information about the time gap between when the Kato Katz slide prepared and sample examined is important as this will affect clarity of the parasite eggs examined. This will particularly important if children were also infected with other parasites such as hookworm which may clear after an hour of the smear preparation. In addition, information about time gap when children brought samples after defecating might be important. Sample were not collected on spot. Eggs of parasites might be missed if children brought samples after long hours of defecation.

Done all corrections as follows
Height of the selected children was measured with a stadiometer. Children stood on the floor without shoes and made sure that their shoulders, buttocks and the back of the head contacted with the vertical backboard. Weight was measured for children wearing light weight cloths and made sure that their trunk is vertical above the waist and the arms and shoulders were relaxed.

Clean and dry wide mouthed container (with the identification number) was given to all the participants for the collection of stool samples. Parents and guardians were thoroughly instructed that small proportions of stool were collected and the samples were not contaminated with water or urine. Stool samples were collected on the following morning from their homes and transported to the Parasitology laboratory, University of Peradeniya within two hours after collection.

Three slides made from each sample and read every slides within 30–60 minutes.

2. It is not clear why authors did not check/(provide information) if children were infected with other helminths which could be causes of undernutrition in children

We considered ascaris infections because they are the most common infections among children in Sri Lanka. I mentioned this in background section as follows

“In Sri Lanka, many studies reported that Ascaris lumbricoides was the commonest intestinal helminth infections among plantation sector school children.17-19”

3. Not clear why the authors did we mount examination if they did concentration and Kato Katz.

I changed that statement

Each stool samples were concentrated by formalin-ethyl acetate sedimentation technique. 21 Direct wet mounts were then prepared using Lugol's iodine as well as in normal saline and examined microscopically under high power (x40).

4. More details about how the nutrition status was determined in necessary. For example did the children were shoes and/or clothes when measured their heights and weights.

Height of the selected children was measured with a stadiometer. Children stood on the floor without shoes and made sure that their shoulders, buttocks and the back of the head contacted with the vertical backboard. Weight was measured for children wearing light weight cloths and made sure that their trunk is vertical above the waist and the arms and shoulders were relaxed.
5. Replace the word 'multivariate' with 'multiple' throughout the text.

Done it

6. The categories upon which differences in proportions (e.g., gender, age group, etc.) and mean values (e.g., HAZ, WAZ and WHZ) were compared is not clear in the statement 'Differences in proportions ........using Chi square test (X2) and the student t-test respectively'.

I changed the statement as follows

The association between the positivity of Ascaris infectivity with categorical variables (e.g., gender, age group, number of rooms, number of family members, deworming period, stunting, underweight and wasting) and continuous variables (e.g., HAZ, WAZ and WHZ) were calculated using the Chi square test (X2) and student t-test respectively.

7. Test the effect of Ascaris infection on the nutritional status after dichotomizing the variable as presence/absence of infection and considering it as a single continuous variable (number of egg counts/per gram).

Done it

8. Estimate the prevalence of undernutrition (i.e. underweight and/or wasted and/or stunted) in the study participants and evaluate the effect of infection on this estimate.

9. Information whether you get assent from children who participated in the study is required.

We got assent from their parents and mentioned it as follows

“Before the commencement of the study, the objectives of the study were explained to all parents/guardians whose children were selected for the study.”

Result

1. Table 1: the values in brackets in table 1 should be calculated considering the number examined (for percent positive=prevalence of infection) or number positive (for percent of
light, moderate or heavy infection) as denominators and the p-values should be estimated accordingly. That way the table will give information (test hypothesis that) whether the prevalence of Ascaris infection and intensity of infection was associated the different sociodemographic characteristic of the study participants. In its current form the values in brackets were calculated based on total positives (not based on examined in each category) or number negative, light, moderate or heavy (rather than number positive in each category). Hence you can also remove the total N values provided under the heading in each columns as they are repetitions.

Removed the total N values provided under the heading in each columns

Done all corrections in table no. 1

2. Table 2: Consider similar revision as suggested for table 1: change the values in bracket. Calculate values considering number of children under each undernutrition category as denominator remove the column 'non-infected'. Also provide additional row for mean Z for BAZ and the total number undernourished along with percent values in each column as done for underweight, wasted and stunted.

Done all corrections in table no.2

Provided additional row for mean Z for BAZ

3. I think it would be better if the variables describing nutrition status should be on the column and variables describing infection status should be in the row side of the table. That way it gives row data information for the regression coefficients in table 3.

Done all corrections in table no. 3

4. Does the Anthro-plus software you used estimate Z values for weight for height (wasted) when age of children greater than 9? Please provide the information if it does not.

“Nutritional indicators were classified and standardized into sex-specific Z-scores for height-for-age (HAZ), weight-for-age (WAZ) and weight-for-height (WHZ) by WHO AnthroPlus 1.0.4. In addition, Z values for weight for height of children greater than 9 years old were determined using Epi Info 3.5.1.”
5. Table 3: All the information provided in table based on model 2 (infection status) is superfluous i.e. a repetition of data presented in model 1 except data on presences/absence of infection. Remove all the five variables. Keep only the last variable and merge it with data based one model 1

Done it in table 3.

6. Please avoid stating the titles for the table and figures in the text and make sure to cite all figures and tables in the text.

Done it

7. The information provided in figure can be included in table 2. Just add one column with heading 'infected with Ascaris'. Then copy the values under each infection category.

Done it

8. Remove the citation figure 3 'under the section 'Associations between STH infections and nutritional status'

Done it

9. Data on other parasite/helminth infections observed should be reported. Perhaps, information on how these parasites were associated with undernutrition. At least the effect of co-infection with other helminth species on undernutrition should be considered in the regression models.

I added other parasite/helminth infections observed as follows

A total of five parasites were identified with Ascaris lumbricoides 38.4% (188/489) followed by Entamoeba coli (16.6%), Enterobius vermiularis (2.0%), Endolimax nana (1.8%) and Giardia lamblia (0.2%).

10. Data on undernutrition (underweight and/or wasting and/or stunting) and its association with Ascaris infection.
Discussion

1. The discussion needs some work a to avoid redundancy of the result. Please rephrase for clarity. You may not need to discuss all the significant results. Discuss the major findings Please be very concise and crisp.

Done it

2. Please briefly summarize the major findings of the study in the first paragraph of the study.

Done it

3. In the result section the authors showed that heavy intensity infections were associated with decreased values of WHZ (p = 0.020). This contradicts with the authors conclusion stated as 'the present study, we could not find the significant association between Ascaris infections and the children's nutritional status (stunting, underweight and wasting)'

Done it

4. The references' 35, 36 & 37' cited in line 35 in the discussion section are not correct. Its should be revised as 36, 37 and 38.

I removed these references and add new references related to stunting and parasitic infections.

5. in the statement 'This is in agreement with a study of Ethiopia 40 reported that children living with more than 4 members were more likely to be stunted.' I think the Reference '40' provided n the reference section is not appropriate. Please check.

I removed this reference.

Minor essential revisions

1. Remove the word 'roundworm' in parenthesis after the phrase 'Ascaris lumbricoides' in line 14.

2. Replace the phrase 'whose have' with 'who had' in the statement 'Before the commencement of …… regional health officers' in line 45.
3. Replace the phrases 'A structured interviewer administrated questionnaire was addressed ' with 'An interviewer administered a structured questionnaire……'.

4. Once you stated the full name for Ascaris lumbricoides you may not need to state the full names of the genius name.

Done all corrections