Author’s response to reviews

Title: Current Status of Intestinal Parasitic Infections and Associated Factors among primary school children in Birbir Town, Southern Ethiopia. A Cross Sectional Study

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Responses to Reviewers’ Comments and Questions

Dear reviewers, thank you for your constructive comments which all are important inputs for the betterment of the manuscript. Below we tried to respond to all the comments/questions one by one; we also have incorporated all the corrections in the revised manuscript (shown as highlighted). We included and responded only to comments and questions which need response (deleting all positive/constructive comments) in this document. Please be informed that some similar comments and questions were raised by more than one reviewer; in this case we responded only once.

Hassanain Al-Talib, Ph.D (Reviewer 1):

This Manuscript was written well but many similar studies have published before. Better to be published in other local journal. Methodology should include acid-fast staining to cover Cryptosporidium as well in addition to other protozoa and helminths.

Since 2015, Ethiopia is implementing nationwide biannual mass Drug administration for the control of soil transmitted helminths and schistosomiasis primarily targeting SAC. Efforts have also been made in order to improve water, hygiene and sanitation which, in turn, is expected to decrease the burden of intestinal parasitosis. Hence studies at different geographical settings and different data collection periods are important to monitor the effectiveness of those prevention and control activities. Despite this, we do not believe that adequate studies are being conducted every year in the country. Hence we honestly believe that this manuscript will benefit if published in international journal rather than local ones. We didn’t do acid-fast staining considering that it will be readily detected (common) among diarrheal patients (later considered as a limitation and already explained in the ‘discussion’ section).
Sepiso Kenias Masenga, M.Sc (Reviewer 2)

General comments

* English grammar needs to be attended to throughout the manuscript

we have revised the whole manuscript and corrected all perceived grammar and tense problems (all highlighted)

Methods

- The inclusion criteria are not clear. The authors may need to state clearly what their inclusion and exclusion criteria were.

Corrected (highlighted)

The inclusion criteria were being: with in the age group of 5-14 years old; permanent resident in the study area at least for the previous one month before data collection; volunteer (both children and parents) to participate in the study. Children who took anti helminthic or anti protozoa drugs within the last three months and those who are unable to respond to research questions due to any disability were excluded.

- How did they deal with consents/assents?

Assent letter with detail explanation about the study was sent via children to parents/care givers to be signed. In addition, verbal consent was obtained from all participating children.

- They state that they used a structured questionnaire to collect data from children on socio-demographic, environmental, and sanitary facilities. I am keen to know exactly what environmental and sanitary data they were getting from children. How credible was the data? Did they do some QC checks to ensure that the responses were not affected or biased by the age of participants i.e age groups of 5-9 and 10-14 years?

We have attached the questionnaire as a supplementary document. Data collectors were well trained how they should approach the children so that they can respond freely. In order to check the credibility, we administered the same questionnaire to 25 children of 5-9 years old and 12 children of 10-14 years old. The responses were consistent among all children.

- Was the questionnaire validated? Did the authors do a pilot of this questionnaire prior to the actual study or they used an already validated tool? This is very important as it directly affects reliability and validity of data.

We prepare the questionnaire and evaluated it by pre-test (pilot study). In the revised manuscript, we have added the following paragraph in the ‘data collection’ section.
‘Pre-test was conducted in Sikela primary school (located in Arba Minch town) by recruiting 18 students (5% of the total sample size) to assess problems related to questionnaires and sample collection and processing. Problems identified during pre-test were corrected before the start of actual data collection’.

- On Data analysis, The authors state that they used "Multivariate regression model then followed for variables with p ≤ 0.25 in the bivariate analysis". I am not sure what they mean. In terms of the number of variables factored into the multivariate analysis, I am not sure, wasn't the model outfitted?

We mean that first we analyze association between variables via bivariate logistic regression. Then we selected all independent variables having p ≤ 0.25 in the bivariate logistic regression analysis to be candidates for multivariate logistic regression. In this way among 17 variables analyzed in the bivariate logistic regression, 9 were candidates for multivariate logistic regression (Table 3)

- What was the outcome variable used, IPI binary (yes or no)?

Yes it was status of IPI (yes/no).

Results

The authors also report a p value of 0.000. To my knowledge, there is no p value of 0. I see that its the issue of decimal places, The authors can edit that p value to <0.001. See Line 55-56 under results on page 8. The same can be done for the results table

We accept the comment and corrected it accordingly.

Discussion

Page 9 line 56,57. The authors say "According to the present study, age group of 10-14 year old and not having habit of hand washing after toilet were strongly associated with intestinal parasitosis" I am not sure if it is appropriate to use 'strong' as a grade for the association.

We accept the comment and replaced the term ‘strongly’ by ‘significantly’.

References 8-12, 14, 15 seem rather redundant to the text. Are the authors able to use recent literature if available?

We have recent literature for ref 8 (ref 9 in this modified version. For the rest , we can’t get original recent reference unless we apply cross referencing.

Tran-Anh Le, PhD (Reviewer 3):

Please reconsider the word "parasitosis" in the name of MS: "Current Status of Intestinal Parasitosis and Associated Factors among Students at Birbir Primary School, Southern Ethiopia."
A Cross Sectional Study. The research focuses on infection, not on diseases. Beside, E. dispar rarely causes the disease.

We accept the comment and rephrased ‘parasitosis’ as ‘parasitic infections’ and modifyied the title as "Current Status of Intestinal Parasitic Infections and Associated Factors among Students at Birbir Primary School, Southern Ethiopia. A Cross Sectional Study".

Line 12 to 14 (page 5) "Only 11% of the total population has access to sustainable sanitation, and less than 42% have access to safe water": reference?.

Comment accepted and the information is replaced by more recent data with reference

“According to the Ethiopian Demography and Health Survey report of the year 2016, 97% and 57% of urban and rural households have access to an improved source of drinking water respectively. Only 60% of households had hand washing facility at home. One in three households has no toilet facility (39% in rural areas and 7% in urban areas)”. The reference is “Federal Democratic Republic Of Ethiopia. Demographic And Health Survey 2016”

Results:

Line 14 (page 8): "333 (94.9%) children had a habit of hand washing after toilet"; In table 3 only 318 children have a habit of hand washing after the toilet?

We are sorry this was an editorial error that 318 (90.6%) children had a habit of hand washing after toilet. We have corrected it in the revised manuscript.

The association between factors and the rate of intestinal infection may be analyzed differently according to different rout of infection (faecal - oral rout and through the skin).

We have analyzed factors separately; but we didn’t get significant associations that we didn’t include the details in the manuscript. Example: habit of swimming with schistosoma (p=0.240)

, shoe wearing habit with hookworms (p=0.596), source of drinking water with Giardia (p=0.249)

Discussion:

line 31: "because of poor performance in the prevention activities which aids re-infection to occur in dewormed children, the burden of helminths is not acceptably decreasing": the comment should be reconsidered. Deworming usually decrease the intensity of intestinal helminth infection and do not have much impact on the prevalence of intestinal helminth infection (the authors also pointed out in reference 25). The absence of impact of control measures (deworming and WASH) may result from the fact that the study could not identify the intensity of infection.
We believe that deworming decreases both the intensity and prevalence of intestinal parasites. For example a single dose of Mebendazole/Albendazole is administered for STH. This dose is enough to treat infected children as confirmed by drug efficacy studies in Ethiopia. It has been confirmed that memory immune cells are not able to prevent from re-infection. Hence we concluded that re-infection might be a factor for absence of significant decrease in prevalence. There is still poor performance in the prevention activities like WASH in Ethiopia which is an important factor for the re-infection. In reference 25 (ref 26 in the modified version) we pointed the effect of re-infection on the prevalence (not the intensity) of IPI.

Also, the authors should clarify the meaning of "magnitude": "prevalence" or "intensity" of STH infection or both. In this study, only the prevalence of IPI was addressed.

Comment accepted and we use the term “prevalence” throughout the manuscript in the revised version.

Line 14 - 16: "while higher infection rate of 11.4% and 12.65% were reported from Bahir dar and Homesha [22, 23]": Bahir dar and Homesha were in Ethiopia?

Yes

What factors are the difference between SAC of 10 - 14 year and 5 - 9 year old? Which factor makes 5 - 9 year old SAC more sensitive to intestinal parasite infection?

SAC with age group of 10-14 years old are said to have increased frequency of environmental exposure (soil, water) compared to younger children. Moreover, children (10-14 years old) are more engaged in agricultural activities which are important factors for IPI. Relatively children of age 5-9 stay at home after school.

Line 24 - 36: "Recent studies at different geographical settings of Ethiopia indicated that shoe wearing habit [16, 22-24], consumption of raw/unwashed fruits and vegetables [22, 26], habit of swimming [26], family size [23], cleanliness of finger nail and trimming [22, 23] and waste disposal habit [22] were significantly associated with intestinal parasitosis. However, these factors were not associated with intestinal parasitosis": Please give the reason why these factors were not associated with intestinal parasitosis in this study. The following paragraph is included in the revised version

“Hook worms are associated with shoe wearing habit as the transmission is via skin penetration. However, it is not associated in the present study with possible reason of frequent contact with soil regardless of shoe wearing habit. Contamination rate of fruits and vegetables themselves matters whether consumption of raw/unwashed fruits and vegetables is associated with IPI. Hence, it may be due to low level of contamination of fruits and vegetables in the study area which brings non-significant association. Frequent water contact regardless of swimming habit might be responsible for the absence of significant association with schistosomiasis. Because
students have frequent contact with their class children in addition to their family, family size alone might not have significant role for the transmission of intestinal parasites. Cleanness of finger nail and trimming, and waste disposal habit were not assessed in the present study.”

Maryam Kamali (Reviewer 4):

The manuscript is clearly written, however, it could be submitted to BMC Public Health. Here are some detailed comments:

First we had submitted the manuscript to “BMC infectious diseases of poverty “and the editors recommended us to transfer either to “BMC journal of infectious diseases” or to “BMC journal of parasite & vectors”. Hence we submitted it to “BMC journal of infectious diseases”.

Page 5, line 34: Abbreviation for WASH is Water, Sanitation and Hygiene; please make the correction in the text.

Corrected as “Water, Sanitation and Hygiene (WASH)”

Page 6, line 12: Formula is missing. Formula included

\[ n = Z \left( \alpha/2 \right)^2 P (1-P) = (1.96)^2(0.277) (1-0.277) = 308 + 47 (15\% \text{ for non-response rate}) = 355 \]

d\[Z\] \(0.05\)

Page 10, line 9: Period is missing in G.lamblia.

Corrected

Page 10, line 21: Start the beginning of sentence (Similarly) with capital letter.

Corrected