Author’s response to reviews

Title: Prevalence of intestinal parasites and associated risk factors among inmates of Mekelle prison, Northern Ethiopia, in 2017

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Dear editor

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Thank you so much for your helpful assessment and comments on our manuscript entitled “Prevalence of Intestinal Parasites and Associated Risk Factors among Inmates of Mekelle Prison, Tigray Region, Northern Ethiopia, 2017
We thankful for your great effort, commitments and spend your time to review the manuscript. We also appreciated the reviewers for their interest in our manuscript, and for all of their helpful assessments and comments. In addition, we believe that all of your advice and comments is mandatory for our manuscript scientific quality. We are attempted to understand your requested comments and general instructions for the manuscript. So we have revised the paper based on your comments and advice.

Please find below the point by point responses and the general corrections for the manuscript.

Sincerely,
Fitsum Mardu Landu (MSc.)

Point by point response for reviewers’ comments

Reviewer #1:

Requested comment 1: Are the inmates of Mekelle prison asymptomatic carriers of intestinal parasites?

Response: yes, majority of the inmates of Mekelle prison were asymptomatic carriers of intestinal parasites during the study time. But we have no actual data on the number of inmates who were asymptomatic carriers of intestinal parasites.

Requested comment 2: With regard to Material and Methods, and concerning the paragraph on Study setting and population, the authors should provide more information about Mekelle city: population; administration of the area; how do the inhabitants make a living; temperature range and precipitation; is there a hospital or health center?; altitude of the city, etc.

Response: we have provided additional information about the study setting in the manuscript.

Requested comment 3: The authors refer to the macroscopical examination of the fecal samples with regard to their consistency, composition, and color. Was anything special found in the macroscopical examination of the samples analyzed?

Response: stool of some participants, especially those presented with clinical symptoms, were diarrheic. In some cases, there were dysenteric specimens. But we have used this information for only treatment purposes of the diseased individuals.

Requested comment 4: Who carried out the collection of the fecal samples and of the questionnaires? And, who carried out the opportune parasitological analysis?
Response: regarding the questionnaire, trained BSc nurses collected the data. The specimen collection and laboratory analysis were performed by medical laboratory technologists with close supervision of the researchers.

Requested comment 5: Which criteria were used to establish the age groups (years)?

Response: we have applied Sturges’ formula for age grouping, \( k = 1 + 3.322 \log_{10} n \)

Requested comment 6: The paragraph on "Socio-demographics of study participants" should be moved from the Results section to Material and Methods. In fact, it is not clear which role the ethnic groups play, when later on, there is no reference to intestinal parasites according to ethnic groups.

Response: The “socio-demographics of study participants” is one part of the results section that we later used to associate intestinal parasites distribution according to these demographics. In many of research articles this section is written under the results section. With regard to the ethnic groups, we have omitted from the results section.

Requested comment 7: The presence of E. histolytica/E. dispar/E. moshkovskii should be put into context along the entire Ms, always replacing E. histolytica

Response: we replaced E. histolytica with E. histolytica/E. dispar/E. moshkovskii in the entire manuscript.

Requested comment 8: Figure 1 should be changed. It is a lot more relevant to know the total number of individuals who presented each parasite species. In this sense, the 55 subjects who carried E. histolytica/E. dispar/E. moshkovskii + the 9 subjects who carried E. histolytica/E. dispar/E. moshkovskii with G. lamblia + the only subject with E. histolytica/E. dispar/E. moshkovskii with E. vermicularis + the subject with E. histolytica/E. dispar/E. moshkovskii and S. mansoni + the subject with E. histolytica/E. dispar/E. moshkovskii and Taenia, and + the subject with E. histolytica/E. dispar/E. moshkovskii with Hookworm and T. trichiura. However, there is a total of 68 individuals who presented E. histolytica/E. dispar/E. moshkovskii, and the total should be given for each one of the intestinal parasite species detected. Thus, it will be possible to demonstrate that the parasite spectrum of the inmates of Mekelle prison consists of eight intestinal species. Another very different aspect is the analysis concerning multiparasitism, which the authors present in Figure 1. Thus, this aspect should be re-described.

Response: the total number of individuals infected with each parasite species is modified both in the manuscript and tables. Figure 1 is now replaced with Table 3 which shows the single and mixed infections of intestinal parasites detected among the subjects.

Requested comment 9: It is rather surprising that only three protozoan species were detected. And, particularly surprising is the fact that species such as E. hartmanni, Endolimax nana, Iodamoeba butschli, and, especially, Blastocystis spp. which were not detected. In this sense, it
seems convenient to remember that other protozoan species are considered non-pathogenic or if they are, from an epidemiological point of view, all these species share the same transmission mechanism, always linked to the ingestion of infective cysts and trophozoites through the faecal-oral route. In fact all of these are indicators of the hygienic state of the environment as well as the health and hygiene measures taken by the subjects.

Response: The absence of these species of protozoa may be an epidemiological reason. The parasites are not common in Ethiopia. We detected a non-pathogenic species of amoeba, E. coli and we reported because of its transmission mechanism and it is indicator of poor hygienic status. So the above mentioned protozoan parasites were not detected among the inmates.

Requested comment 10: There are also differences in the prevalences of intestinal parasites detected among the different prisoners. The authors reflect, in a very general manner, on such differences in prisoners from Nigeria, Sudan, Kenya and Ethiopia. Nevertheless, it would be interesting to know which are the conditioning factors that allow to establish the significant differences between the prisoners from Ethiopia, such as Shewa Robit prison or even Bedele prison when compared to Mekelle prison.

Response: The variation in the prevalence of intestinal parasites between the different prisons may be attributable to the difference in the number of participants, laboratory techniques applied, climatic as well as environmental conditions, and study designs employed to carry out the studies. This is discussed in page 9, last paragraph of the revised manuscript.

Request comment 11: The explanation given with regard to the different prevalences of protozoans and of helminths does not seem very adequate. The authors comment that "intestinal protozoa can directly be transmitted while intestinal helminthes require a period of maturation in the environment". The ingestion of meat (Taenia), walking barefoot (Hookworm) and using fresh water (Schistosoma) have nothing to do with the comments made. Perhaps the only subject is the one who harbored Trichuris, whose eggs require a maturation period. Thus, the absence of Ascaris lumbricoides is particularly surprising in this context.

Response: the explanations regarding in the differences of intestinal protozoa and intestinal helminthes was not adequate. So we have tried to elaborate the reason in the discussion section (page 10, paragraph 1) of the revised manuscript.

Request comment 12: Finally, with regard to the explanation of the prevalences of protozoans, it would be crucial to mention the quality of the drinking water, making a reference to the latrines in the prison, and also the possibility of transmission through sexual activities should be considered.

Response: In fact the researchers observed shortage of drinking water supply in the prison. Prisoners were provided water from Mekelle city with tankers. It was impossible for the prisoners to wash their hands after using toilet. As a result, the sanitation of the toilets was
extremely poor. With regard to sexual transmission, female and male prisoners have separate blocks and homosexual activities have not yet been reported in the prison.

We have now tried to explain these observations as possible reasons for the high prevalence of intestinal protozoa among the inmates in the discussion part.

Reviewer # 2:

Requested comment 1: The introduction is very long. The introduction should contain the content that is fully relevant to the subject matter

Response: we have made the introduction section short by deleting unnecessary ideas that were less relevant for the subject matter. As a result of this, the references section has been modified to re-arrange the references.

Requested comment 2: Some variables in Table 1 and 2 are the same. It is better to remove duplicates or merge two tables

Request: The categorical variables of Table 1 and Table 2 are the same. But Table 1 shows simple frequency distributions of the variables and the distribution of intestinal parasites among the categories. But Table 2 shows the association of intestinal parasites prevalence to the different categories. So we thought it is better to show the tables separately.

Requested comment 3: In Figure 1, E. histolytica should be replaced with E. histolytica / dispar. In the meantime, it is better the table is used instead of the chart

Response: E. histolytica is replaced with E. histolytica/E. dispar/E. moshkovskii throughout the whole document. Figure 1 is also replaced with Table 3 which shows single and mixed infections of intestinal infections.

Requested comment 4: In the conclusion it is mentioned that the prevalence of E.histolytica was high, although the detection of this parasite from E. dispar has been mentioned in the limitations section

Response: it is corrected as E. histolytica/E. dispar/E. moshkovskii

Requested comment 5: Some words have been misspelled, such as Fasciola on line 19.

Response: spellings are re-checkked
General correction for editor comments

1. Regarding the difference in the list of authors in the manuscript and the system, we have send a change in authorship form via email.

2. We have inserted the heading ‘declaration’ after the ‘list of abbreviations’ section.

3. The ‘acknowledgements’ sub-section has been moved under ‘declaration’ section

4. For the ‘Missing figure legend header’- the figure is now replaced with a table (Table 3)

5. ‘introduction’ is renamed as ‘background’ and ‘Materials and methods’ in to ‘Methods’

6. Availability of data and materials: the questionnaire we used is available upon request to the corresponding author.

- In general, there are many insertions and deletions in the Manuscript, Tables, and Figures as a response to the reviewers and editors comments. The figure is totally replaced with additional table. All these changes are indicated as ‘track changes’ in the respective manuscript, figures, and tables. Due to this, the reference section is also re-arranged.