Reviewer’s report

Title: Factors associated with tungiasis among primary school children: a cross-sectional study in a rural District in Rwanda

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Reviewer: Marlene Thielecke

Reviewer's report:

Tungiasis is one of the most neglected tropical diseases that mainly affects children and elderly people. Only few studies exist so far analysing risk factors associated with tungiasis. This study is the first of this type conducted in rural Rwanda. It analyses factors associated with tungiasis in school children both looking for factors probably leading to have tungiasis and factors probably caused by tungiasis (e.g. performance in school).

My comments:

Abstract:
Results: Illiteracy of the mother was the factor associated with tungiasis. -> This implicates there were no more factors?

Introduction:
There should be a more detailed introduction into the disease of tungiasis. Some key information is missing: cause by penetration of female sand flea into the skin of its host; on-host and off-host cycle; zoonosis; acute and chronic pathology. This information is important for reader not knowing tungiasis. If the know that also animals are infested by sand fleas, they can better understand why it can be a risk factor to possess animals at home.

Page 4, passage 1: should read: … infestation with Tunga penetrans, also known as a jigger flea or sand flea.
P4, passage 2: should read: … elderly people (1-4). -> Always before a citation there should be a space character between last word and brackets.
P4, passage 2, listing of factors underlying tungiasis: the factors should be summed up. (The study does not really generate new aspects as all factors that are found out to be associated with tungiasis are already known to be such.)
P4, passage 3: should read: … was associated in severe itching, intense pain, difficulty in walking and social stigma, which made it hard for school children to reach school and attend class, concentrate in class, or remain in school (3,11,12). As a result of tungiasis pupils may have a poor performance and fail to proceed to the next classes (13).
P4, passage 4: citation is missing after the sentence: Programs aiming at preventing and treating tungiasis at community level have been strengthened.
Methods:
Design: Why did you choose to conduct a cross-sectional study? Why not a case-control study to find out risk factors getting tungiasis? In a case-control study the groups are better comparable. As only few pupils of the 384 participants had tungiasis, the sample size of participants, which are interesting for the study, gets very small… Why is the data prospectively collected? There is only one point in time where the situation is observed and factors are inquired, right? Or did you check the variables multiple times? I think it would be helpful to get the opinion of an epidemiologist at this point.
Setting: Please give also information about the schools. E.g. they are built from which materials? How big are the classes?
Setting, passage 1: How is the poverty rate in Rwanda assessed? Please indicate the measurement category.
Setting, passage 2: should read: … Tunga penetrans removal …
Population and sample size calculation: What is d = 0.05? Do you mean e = 0.05?
Sampling technique: Why did you adapt the skip interval technique depending on the size of the school, so that at the end of the sampling 128 pupils came from each school? Like this the smallest school is proportionally overrepresented, which could have an impact on the results, especially as the living environment is part of the observation (I guess pupils from primary school visit their closest school). I think it would be helpful to get the opinion of an epidemiologist at this point.
Sampling technique, passage 2: Should read: … starting from primary school one to primary school three (not six)…
Data collection: How was tungiasis infestation assessed? Did you use the rapid method (Ariza, L., et al. "A simple method for rapid community assessment of tungiasis." Tropical Medicine & International Health 15.7 (2010): 856-864)? How was the setting of examination? Did you use any tool like dermatoscopy? Or did you only asked the children if they had tungiasis or not? Did you verify that?
Please explain why you asked only for maternal (not paternal) education and only for paternal (not maternal) occupation.
Please define the variables: wearing shoes regularly and irregularly.
How was the reason for absenteeism for children affected by tungiasis assessed? Was this by an open question? Was it a question with multiple answers? Were only one answer possible? Was this question regarding absenteeism only for children with tungiasis or could it be answered also by children without tungiasis?

Results:
Demographic characteristics of participants, Table: 4.1 A column with the total number regarding gender and age is missing.
Analysis of factors of tungiasis infestation, Table 4.2. Did you also collect information/data about the situation in school, e.g. plastering of the school room floor? -> Schools are a possible place of transmission of tungiasis!

Discussion:
Strengths and limitations: Which bias do you mean (.. to minimize the bias the parents of the children were interviewed shortly after their respective works..)? Please indicate.
Comparison with other studies: (The study does not really generate new aspects as all factors that are found out to be associated with tungiasis are already known to be such. New is that the study was conducted in Rwanda and that many aspects are similar to other countries. Maybe you should conclude it in this way.)

P13, passage 2: Do not generalize that people are not aware of tungiasis infestation among domestic animals.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Unable to assess

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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