Reviewer's report

Title: The Contribution of Water Contact Behavior to the High Schistosoma mansoni Infection Rates Observed in the Senegal River Basin

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Reviewer: James Rudge

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This is an interesting manuscript, and the authors are especially congratulated on producing such a comprehensive dataset on water contact patterns – collection of which through direct observation was undoubtedly a huge undertaking, requiring considerable time and effort by research team.

However, given the richness of the dataset, I feel the authors could have gone a little further in the analyses. In particular, I am not totally convinced that the data show, or have been analysed rigorously enough, to fully justify their conclusion that “other factors than exposure have principal importance in determining the intensity of infection”. And p11 - “there is no evidence that exposure has an important influence on intensity of infection”. In fact, I would even argue that these data do provide evidence that water contact does play an important role (e.g. some association is apparent in fig 5, especially within males), but also suggest there may be other important factors.

Moreover, in the discussion the authors are clearly aware that factors such as body surface area exposed to water during different activities and time of day of contact (due to variation in cercarial densities) may play an important role, in addition to duration and frequency of contact. Indeed, looking at figure 4, it seems that a substantial proportion of water contact in females, particularly in adolescents and adults, is due to collecting water and household activities, while for males bathing accounts for a larger proportion of contacts, which is likely to involve more “intense” water contact. Furthermore, as the authors note, male contacts peak around midday, when cercarial densities are likely to be highest, while female contacts often occur at morning and evening. Thus, I wonder if, when adjusting for these 2 factors, proxies for exposure across the demographic groups would show a stronger correlation with the intensities of infection in fig 5.

I note that the authors adjusted for such factors in a previous analysis (in presumably the same Senegalese population - Scott et al 2003 Trop Med and Intl Health) – so I am curious as to why they did not try this here? The authors may also be interested to read our previous study on water contact patterns in Zanzibar – in which (albeit based on questionnaires and a much smaller dataset) we found that activities such as swimming, bathing, and playing in water were likely to constitute most “intense”/risky exposure, and indeed it was these that were associated with levels of infection, while other activities such as collecting water and washing clothes were not (Rudge et al Acta Tropica 2008, 105, 45-54).
Another factor which might play a role in exposure is the use of soap for bathing or washing clothes, which may have a “cercaricidal” effect. I’m not sure if this is relevant in this setting or if the authors recorded whether soap was used, but it is perhaps worth mentioning in the discussion.

I would also be a little careful about equating “exposure levels” fully with water contact (e.g. on p4 – “due to differences in exposure levels, i.e. human water contact patterns”). The authors seem to be aware of the importance of other factors such as snail distributions for exposure, but the wording does not always reflect this.

Finally, I feel the paper would also be strengthened by providing some stats tests for significant differences and associations (or lack thereof) to support there conclusions, even if just some relatively simple tests.

Thus I have suggested major revision, as I feel that a few further analyses could greatly strengthen the conclusions reached by the authors, unless they can provide acceptable explanations of why these analyses were not carried out. This rich dataset is an important contribution to the field and its results are deserving of publication.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.