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:** Lester Chitsulo

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"The contribution of water contact behaviour to high Schistosoma mansoni infection rates observed in the Senegal River basin. Submitted by Sow S. et al

The investigators examined the contribution of water contact behaviour to the high schistosomiasis infection rates in the northern Senegal shortly after the introduction of Schistosoma mansoni following the building of a barrage at Diama. Theories were proposed as to why the prevalence and intensity of infection were so high. This study examined the possible contribution of water contact. While the data presented and discussed is dated, the issue is timely as a lot of advocacy for the control of Neglected tropical diseases has rekindled interest in schistosomiasis control in sub-Saharan Africa. Schistosomiasis control will require more than large-scale treatment. Provision of water and adequate sanitation may well be essential for control, as will be noted below.

Dr Sow and colleagues present perhaps the largest dataset on directly observed water contacts. While the methods used in the study were appropriate and well described, it is of interest that all the water contact sites observed (figure 1) are on one-side of the water course, and away from the rice and sugar cane fields, where occupational exposure to schistosomiasis could also be intense. It is mentioned in describing the study population that "the majority of the population works in rice farming… or is
employed in nearby sugar estates". The investigators did not elicit information on water contact using questionnaires, however this method may have elucidated where else people of Ndombo village defecated and had infective water contact. Adolescence and adults are not likely to defecate in areas they are likely to be observed. This could explain why not a single act of defecation was observed during the study. The high levels and perennial nature of transmission noted in this area suggest significant faecal contamination of water bodies.

The types of contact activities likely to result in infection were noted. It was concluded that irrigation played a negligible role in infective water contact, and yet as noted above, rice farming and working in the sugar cane fields, were a major occupational activity. It is not discussed, but presumably irrigation may have been a predominantly male activity, as may have been fishing. It was also mentioned that observations of water contact behaviour were carried out between 6 am and 7 pm. Yet in the results, it was reported that women had two distinct peaks of exposure, between 2 and 5 pm, and again between 8 and 10 pm. It is not clear how the later peak was noted if observations ended at 7 pm.

In the data analysis, it was curious that young children were put in one age-group, 0 - 9 years, when it is known that prevalence and intensity of infection increasing tremendously from the age of 5 years through adolescence. It could be expected that children under 5 years of age would be exposed to infective water contact when taken to water by care-givers, while those over 5 years of age would roam independently and play in the water in such a hot environment.

In this study water contact and exposure levels were found to be similar to other schistosomiasis endemic areas. It has been discussed above that the observed water contact sites may not have captured all the infective activities of adolescent males and
men. This could one explanation of the finding that while women had apparently more and longer contact than men, infection levels were comparable.

Some issues need to be made more consistent in the manuscript as discussed above.

However this work should be published. More research is required in this area given the renewed interest in schistosomiasis control. The fact high levels of transmission could be maintained when the number of water contacts per day was only 0.42, and the average time spent in the water was only 4.3 minutes, suggest other control strategies to limit faecal contamination of water sources as well as water contact are required. It remains to be seen at what levels of coverage with potable water and sanitation would be required to make an impact on transmission. Treatment with praziquantel was also not adequate.