Author’s response to reviews

Title: Social capital is associated with lower mosquito vector indices: secondary analysis from a cluster randomised controlled trial of community mobilization for dengue prevention in Mexico

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Reviewer 1 Comment 1.1 How confident are the authors in some of the statements they are making - there are some phrases that blur the line between association and causality that don't seem to be warranted given the statistical analysis (eg, line 46 page 15 "it suggests that an overall high…"). The authors do acknowledge some of their speculations and use "we believe" often. Clearly delineating the outputs of the statistical analysis versus what is speculation (and worthy of further, explicit, investigation) is important. Response 1.1 Throughout the revised manuscript we specify confidence levels when we present findings from our analysis (Results section). In the Discussion, we interpret the findings and speculate further or suggest avenues for further research. Comment 1.2 This analysis hints at a possible association which should be followed up via additional analysis. With this in mind, I feel that the discussion should focus more upon how could the suggested causal mechanisms hinted at by the authors can be quantified and elucidated or further studied. Observational analyses stratified explicitly on social capital would be of interest, with the opportunity to stratify on a variety of other features and potential confounders. As a reader I was left unclear as to how some of the suggested relationships could be more convincingly determined in subsequent analyses. Response 1.2 We have revised the...
Discussion to include more explicit suggestions for future research to answer questions raised by our findings. Comment 1.3 I'm intrigued to note that Urban sites seem to have inherently lower social capital, and there is little discussion about how confounding factors may or may not contribute to this - perhaps urban environments are inherently more complex in terms of environmental suitability for larval habitats and social capital is masking the actual causal mechanism. The lack of association in urban contexts is worth further discussion. Response 1.3 We have clarified this point. Our urban sites had lower social capital, compatible with what other authors reported previously, and we cite references for this. We added a reference reporting more social connections between people in rural settings (p16, first paragraph). Households in rural communities were slightly less likely to have positive dengue entomological indices, but the difference was not significant at the 5% level (see new Tables 3 and 4). As noted by the reviewer, there can be many factors that make a difference to the vector indices in rural and urban settings, varying between places and with time of year etc. Comment 1.4 Line 21 page 8 - "with 100 simulations": it is unclear to me what exactly is being simulated here? Are individuals being dropped randomly? Response 1.4 We have expanded and clarified the description on p8 to read: "We created a scree plot of eigenvalues, used an eigenvalue of 1.5 as the cut-off for inclusion in the final index, and carried out a parallel analysis with 100 simulations to decide which factors should remain in the final index". Comment 1.5 Line 41 page 9 - "four constructs that we interpreted as...": the concept of "social capital" is relatively new to me - the authors state these criterion as coming from Siegler with some qualitative descriptors for each. I'm still unclear exactly how assignment of components to a construct occurred. Are the weights used to group the variables? (what is the rationale behind bold font used in some, but not others in the table? Especially Involvement, where two variables have weight 0.3, but only one is bold.) Response 1.5 Each construct groups variables with a weight of 0.3 or above for that construct. We added a sentence about this in the manuscript (p9). The weight of the variable “festive help” in the construct “involvement” in Table 2 should be in bold font and we have corrected this. Comment 1.6 Table 4 and 5 - Clarification on what ORna and ORa mean; an explicitly label linked to the Heterogeneity analysis is warranted above and beyond 'p' and a footnote. Response 1.6 We revised the analysis and tables in response to comments from reviewer 2. New tables 3 and 4 show the bivariate analysis of associations between social capital, intervention, and other variables with larvae and/or pupae (Table 3) and pupae alone (Table 4). Tables 5 and 6 show the final models of multivariate analyses. We show abbreviations as footnotes to each table where we use these. Comment 1.7 Line 41 - "each intervention community designed its own set of actions to prevent dengue" – is this a possible source of variation? What guidance was provided? I'm assuming "poor" strategies would be argued against by facilitators? Are all strategies equally viable, or should this also be part of the stratification process? Response 1.7 Community discussions about actions were evidence-based and we have reported the serological and entomological impact of the resulting mosaic of local actions in the BMJ 2015. In this manuscript, we have expanded the description about community actions (p16), and added references to papers describing the process in more detail. Our field teams led the discussions in each community, providing information about the dengue vector mosquito life-cycle and sharing findings from an entomological survey about the common breeding sites of mosquitoes and a survey of the local costs of cases of dengue. The actions proposed in each community followed from this discussion of recent local evidence, and answered the question how the community could act to control mosquito breeding sites. All communities included visits from brigadistas within their plans for mosquito control. The actions evolved over time. Based on knowledge of older community members, some communities opted