Reviewer’s report

Title: An integrated structural intervention to reduce vulnerability to HIV and sexually transmitted infections among female sex workers in Karnataka state, south India

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Reviewer: Paul Pronyk

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Reviewer’s comments

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This study presents process evaluation data from the Avahan project in south India, with a strong emphasis on the community component of this intervention targeting female sex workers. Observational data from the project has been previously reported, and has suggested the intervention has the potential to reduce HIV risk behavior and the risk of violence. These previous papers have not provided much depth on the community component of the project, which is quite important in contextualizing the intervention package and its delivery.

The manuscript is well-written and merits strong consideration for publication. The data presented was largely from routine monitoring of program delivery.

I have a number of specific comments and questions that I hope are helpful in strengthening the work.

1. My understanding is that the project was initiated in 2003, and ran through 2009. However, the data presented here is from 2007-2009 only. Why is this—was the performance monitoring system not in place earlier in the project?

2. In general, the data presented are simple counts of levels of utilization. The authors provide no time series data (which presumably exists) to profile changes over time. What was the baseline situation? In addition, we have no sense of actual levels of coverage among FSWs which one could presumably get from random FSW interviews. Perhaps these data are available from other sources? Are there estimates of numbers of FSWs in these districts? Similar points can be made for things like police officers trained—what % of the total were exposed to the initiative.

3. The intervention presented is incredibly complex and multi-dimensional. It would be useful to have a table outlining the various components, and perhaps a gantt chart outlining their sequencing in relation to how they were introduced in the various districts.
4. It might be useful to more in-depth information about the various meetings/groups – such as the district aids committees or the work with the police – the content of the sessions, the frequency of the meetings, the ‘intensity’ of work that took place with these stakeholders, etc.

5. In the section on program design, it is unclear how the various components of the intervention package were decided upon. The ‘needs assessment workshops’ presumably highlighted the concerns of FSWs, which may have influenced the design, but this potential translation is not presented. Some might argue that an awful lot is happening simultaneously. Were the actual program components conceived of in advance? Or was its evolution more opportunistic and organic in nature? Finally, was there much local adaptation of the program between districts – or was the program reasonably homogenous across all sites? This is quite important for others seeking to learn design-level lessons from the project.

6. Given the strong emphasis on collective empowerment, it might be useful to draw from the social capital literature, with particular reference to HIV. Also, there is no reference to previous process evaluation literature which is a little surprising.

7. The paragraph in the discussion regarding the limitations on page 17 of this study jars somewhat. It seems taken from previous manuscripts and the same limitations may not hold for process data re: large sample size, effect magnitude, etc…Indeed, no statistical testing was undertaken in this paper at all. In my mind, the main limitations are the lack of clear denominators to ascertain levels of coverage, the lack of time series data and the absence of baseline profiles, and other issues highlighted above.

8. The lack of qualitative data stands out as a limitation here. Was there a complementary/parallel portfolio of implementation research undertaken as part of the project? If not, why? This seems critical in understanding barriers, facilitators, local variation, and so forth.

9. Given the complex and ambitious nature of the program, there is little mention given to issues of cost, replicability and sustainability. This should be addressed. Also, while the authors assert there will be a ‘handover’ process, my understanding is that the Indian government has recently not been supportive of this – and there is a major risk of the program not being continued. It would be useful to at least mention this (if this is in fact the case) and discuss potential implications.

10. Finally, it would be useful if the authors might be able to outline a set of implementation lessons from the project for program managers and policy makers seeking to undertake similar work.

Overall, this is a solid manuscript. The project is one of the very few systematic efforts to contextualize and address structural barriers to HIV prevention among a highly vulnerable group. Process data is critical to enrich an understanding of
the intervention, its delivery and to provide wider depth to how potential shifts in how previously reported biological and behavioural outcomes were achieved.

**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