Reviewer's report

Title: Implementing Effective Hygiene Promotion: Lessons from the process evaluation of an intervention to promote Handwashing with Soap in rural India

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Reviewer: Frances Aboud

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BMC Title: Implementing Effective Hygiene Promotion: Lessons from the process evaluation of an intervention to promote Handwashing with Soap in rural India

The study is a process evaluation of a successful handwashing intervention in 7 villages located in India. Each village had 4 contacts over a month during group sessions, schools, and home visits. The way of assessing actual handwashing with soap at baseline and three follow-up visits to homes was ingenious. Observers and families were told they were observing domestic water use, so they presumably just carried on as usual. Methods for the process study include observation of attendance and delivery of the intervention, and interviews. It was necessary to read the original outcome evaluation in order to understand the nature of the intervention activities.

Overall, I felt the paper provided some interesting information about the process of implementing a handwashing program. It was strengthened by the fact that the outcomes study was just published and available to read. My only serious complaint (#1 below) is that it rings hollow to say that the intervention was “based on employing disgust, social aspirations, nurture and norms” and was successful for these reasons. As the data show, the activities did not activate or engage these motives. There was not a clear 1-1 correspondence between the activities and these motives; rather the activities appear to have activated or engaged people in other ways, not identified by the authors. They could either delete the motive part or look for additional ways that these activities engage people. In addition to their own data, current theories of behavior change useful in developing countries rely on a number of constructs and techniques for change (Briscoe & Aboud, 2013; Glanz & Bishop, 2010). So for theoretical and empirical reasons, it doesn’t make sense to base a change program on motives alone.

Major Comment

1. The introduction states that the activities sought to increase handwashing through three motives that were unrelated to health messaging, but rather were emotional/psychological drivers of behavior: 1. Nurture and Status among mothers (a good and loving parent), 2. Disgust at touching contaminated food, and 3. Affiliation motives to conform to the norm. Other parts of the manuscript are inconsistent with this claim. One is that “beliefs” are measured as mediators, implying that cognitive determinants of behavior, not emotional determinants, were expected to be addressed by the intervention. Second, each one of the
intervention activities could also have operated via other theoretically known constructs. The pledges were said to portray handwashing as a social norm, but were also instances of public behavioral commitment, which is known to make a person feel like following through (dissonance theory). They are also cues/reminders to action. Disgust seemed to be a child’s motive or one that arouses humor among adults. Humor and arousal are known to enhance memory. Third, all this focus on non-health messages and emotional or motivational messages is not borne out by participants’ answers to the questions about why to do handwashing. The most common reasons among intervention women were health (99%), good manners (84%), and protection of children (63%). Fortunately, the authors note these discrepancies in the Discussion. But it should alert the authors to the fact that what they thought was the purpose of the activity may not have been. The activity itself does not have a one-to-one correspondence with the motive laid out beside it in the original paper and inferred in this paper; it has a correspondence to other important determinants of behavior as well. At this point, all you can confirm is the message and activity, not the underlying motive or emotion. You might interpret these in the Discussion, but your interpretation will be speculative, in my opinion. A better way to frame this from the start is to state that possibly the purpose of the activities was to translate knowledge into action and make it occur regularly. At the moment, your team looks naïve in that they did not do the proper formative work in the area to find out what health messages people had already received from the anganwadi.

Discretionary Changes

2. The mediation analysis showed that change was not connected to reasons and perceived norm. This implies that the intervention directly affected handwashing without being mediated by these cognitive components. One interpretation is that the intervention did not directly address these components, even though the creators said they did (see #1 above). A second is that the intervention provided environmental cues that changed behavior directly (likely with a less educated group of people).

3. The fidelity information was useful. Specific problems sounded very realistic and commonly experienced by most who implement programs.

4. Participation in events, particularly community and school events was high, but less interest in the paraphernalia. These engagement figures were not correlated with outcomes, though there was no way of knowing how many people in a village had one exposure or two or no exposures, only how many attended each event. BTW, How was it possible to keep observers of the outcome study blind to condition if people had figurines and certificates displayed? Why do most people keep these tokens of recognition but don’t display them?

5. The cost analysis was very useful. Can you do a cost-effectiveness analysis given that at most 30% were now washing hands. Would it be worthwhile rolling this out at the anganwadi once a year in each village? It appears that most newly married mothers have not been to secondary school and so will not have been the target of the mother or student campaign.
6. How many of the fidelity or implementation process components were assessed here? You might cite A J Bellg 2004 in Health Psychology or Borrelli 2005 for a full discussion of fidelity in behavior change interventions. I felt you covered a number of components and so the paper was a good model of what Bellg and Borrelli were requesting in a process paper.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests,