Reviewer's report

Title: Acceptability, sustainability, reach, dose and fidelity of implementation of an educational intervention to improve hand washing in primary schools: process evaluation within a randomised controlled trial

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Reviewer: Margaret Schneider

Reviewer's report:

This paper reports on the process evaluation of a hand-washing intervention in elementary schools. The background and methods are well-written. The bulk of the report, however, focuses too specifically on the details of this program and ways that the intervention could be better delivered. Larger lessons regarding the delivery of school-based interventions are not highlighted. In addition, important details about the intervention and analyses are omitted. What is missing is an assessment of how well the study met the goals of fidelity, dose, reach, acceptability, and sustainability. Many details are presented, but an evaluative summary is lacking.

Detailed Comments:

1. Page 5, last paragraph: Was the threshold for free school meal eligibility actually 6.4%? This seems very low, indicating that the school were primarily upper-income.

2. Focus groups with children this young are of questionable utility. Is there any evidence that useful information was obtained?

3. Page 6, first paragraph: How often were observations conducted? Who conducted the observations?

4. Page 9, first paragraph: there is mention of a substudy—what was this?

5. Page 10: first quote does not add substantively to the paper.

6. Page 14: it is unclear what the text at the top of the page has to do with sustainability. This portion of the paper lacks cohesion.

7. Analyses: What variable was used to represent “delivery of the program” in the linear regression models?

8. Results: The information presented is too fine-grained for the reader to be able to form an impression as to the overall dose or fidelity of the intervention. Reach statistics are presented in a way that is meaningful and quantifiable. For dose, however, stating that “not all schools who delivered the intervention provided all components to all classes” should be followed by some quantification of how many components were provided to how many classes. Some of this information is presented in Table 2, but it is not discussed in the text. Overall, do the data suggest that the dose delivered should be sufficient to bring about change?
Similarly, under fidelity there is a detailed description of the many different ways that the program was delivered, but what does this mean in terms of fidelity? Was the fidelity sufficient to permit a test of the study hypotheses?

9. Discussion: much of the attention appears to be specifically on how this intervention could be made better. Since most researchers are not working with this particular program, they will be most interested in extracting the lessons from this study that may have implications for school-based interventions in general.

**Level of interest:** An article of limited interest

**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 I have no competing interests