Reviewer’s report

Title: Intervention Now to Eliminate Repeat Unintended Pregnancy in Teenagers (INTERUPT): a systematic review of intervention effectiveness and cost-effectiveness, and qualitative and realist synthesis of implementation factors and user engagement

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Reviewer: Jennifer Marino

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The review was completed by Jennifer Marino and Rachel Skinner

Review, BMED-D_1700169R1, "Intervention Now to Eliminate Repeat Unintended Pregnancy in Teenagers (INTERUPT): a systematic review of intervention effectiveness and cost-effectiveness, and qualitative and quantitative and realist synthesis of implementation factors and user engagement"

Summary: In a systematic review and meta-analysis of interventions to address repeat unintended pregnancy in teenagers, the authors screened 13,000+ citations from 20 electronic databases and identified 84 articles describing 67 quantitative and 10 qualitative studies.

Overall impressions: This is an ambitious, rigorous, and very important synthesis of existing data. This work is increased in value by the addition of stakeholder input from health-care professionals and young mothers at the stages of study selection and evaluation of results. However, this report is poorly organised and difficult to understand. Some aspects of the Methods have been neglected so it is not clear what was done - the methods appear to be appropriate but require further description. Two observations addressed in the Discussion do not appear in the Results. This report should be substantially expanded to do justice to the work and maximise its impact.

General

1. Overall: Because of the organisation of the report, I found it difficult to relate the Objectives to findings and conclusions. The Results are organised by type of intervention. The first objective (who is at risk of repeat teen pregnancy?) is addressed at the end of the Results and barely touched on in the Discussion. The second and third objectives are interwoven. The question of acceptability is addressed briefly in the Methods as a topic for the qualitative review and realist synthesis, but is not mentioned in the Objectives and is reported in Figure 4 but only very briefly in the text of the Results. The Results and Discussion should be organised in a manner that reflects the Objectives.
2. Overall: It appears that some of the findings relating to the first objective have been published (Charles et al., BMC Pregnancy and Childbirth (2016) 16:271). This work should be summarised and cited.

3. Methods: Please report the methods of the sensitivity analyses: how were the four studies mentioned in l.225 chosen? Were other sensitivity analyses conducted?

4. Methods: The particulars of the CART criteria used to modify the original search strategy in Appendix 2 should be included in the main body of the report. 127 articles does not seem a substantially more burdensome number to review than 84, especially since sensitivity analyses have already been undertaken.

5. Methods: Per ll. 130-2, the original search strategy extended back to 1990 under the advisement of the stakeholders. Appendix 2 revises the strategy to allow for a new Timeliness criterion, "(d)ue to changes in social norms, behaviours, etc. studies should be published from 1995 onwards." I find it unconvincing on its face that the difference between 1990 and 1995 is substantial, and would like to see a more developed argument and perhaps sensitivity analysis.

6. Discussion, ll. 356-7. "Meta-analyses found no statistically significant reduction in repeat pregnancy, although there was a reduction in live births." The latter observation is likely to be important, as it implies that some programmes result in increased termination of unwanted pregnancy (perhaps by enhancing access or acceptability), but no associated figures are reported in the Results.

7. Discussion, l. 375. "The current review showed dissipation after 24 months." Length of follow-up and timing of repeat pregnancy is not mentioned anywhere else in this paper, including the Results.

8. Discussion, Implications for research and Implications for clinicians and policymakers. The weakness of the quantitative evidence base certainly suggests that more work is required, but the authors need to take better advantage of the strong qualitative evidence they have presented to make concrete, specific recommendations for research, practice and policy.

Specific

1. Title. As only one cost-effectiveness study was identified, and no conclusions could be drawn from it, I am not certain "cost-effectiveness" belongs in the title.

2. Abstract. "Many repeat conceptions occurred in the context of poverty, low expectations and aspirations, and negligible opportunities." This is likely true, but is not reported in the text of the paper.
3. Methods, Outcomes. What was the specific measure of effectiveness in the summary meta-analyses? The manuscript concerns unintended pregnancy, but it is not clear what outcome was used - unintended conception, any conception, or any live birth.

4. Methods, Outcomes. What was the measure of acceptability in the summary meta-analyses?

5. Methods, overall. How were relative risks and confidence intervals calculated? Random or fixed effects models? What software was used to generate estimates and forest plots?

6. Results, l. 226. "a trend towards effectiveness was noted" - "trend" has a specific statistical meaning and should be avoided. It is always difficult to know how best to report findings sitting on the border of significance, so I suggest simply presenting the fact of it - e.g., "the estimate approached but did not reach statistical significance."

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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