Reviewer's report

Title: Characteristics of control group participants who increased their physical activity in a cluster-randomized lifestyle intervention trial

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Reviewer: Luke Wolfenden

Reviewer's report:

The authors examine an interesting, and infrequently investigated aspect of research trials - changes in reported behaviour of participants in the control group. Overall, the manuscript is well written and expressed clearly. The statistical analyses appear appropriate. There are however, a number of important issues which require further consideration.

Minor Essential Revisions

While claims that the modest effect sizes in physical activity interventions trials are due in part to improvements in the control conditions is technically correct, the public health relevance of this statement is dependent on what this change is attributable to. The authors suggest that it is the effect of the 'minimal' intervention received. The authors therefore present, as the basis of the study, that the identification of sociodemographic, medical and health behaviour characteristics associated with this change could identify sub-groups of the population whom interventions of this intensity are sufficiently supportive to encourage physical activity. If the change, however, were due to research reactivity effects I would suggest that the implications are that the research methods used in research of this kind could be consistently concealing or under estimating therapeutic benefits of interventions. It is not possible from this study to make this distinction. Nonetheless these issues should be acknowledged throughout both the introduction and the discussion of the research findings.

Specifically, There are a number of issues, which I believe require further consideration by the authors:

1. socio-demographic factors represent relatively crude prognostic factors. More proximal determinants of behavioural change such as behavioural intentions, self efficacy, and other behavioural and cognitive factors are likely to provide more reliable and sensitive predictors of behavioural change as they are consistent with behaviour change theory. While this is acknowledged by the authors in the manuscript, it remains an important limitation of the study

2. Changes in the control condition (and associations with this) could simply represent a statistical artefact of regression to the mean. I suspect that participants recruited to the trial (being from a primary care setting and with chronic disease risks) may have had quite low levels of reported physical activity at baseline which one would expect could only naturally improve over time. This
possibility should be addressed in the manuscript

3. Were participants blind to group allocation? If not, changes in the control condition (and the associations you find with this change) could represent reactivity to the experimental situation (see Shaddish, Cook and Campbell). Participants not receiving the ‘treatment’ may be motivated to show that they can do as well as those who do receive the treatment and compensate accordingly.

4. Changes in reported behaviour of controls (and associations with this) may also arise due to the repeated assessment (Kypri et al, Prev Med 2005;761-766) and should be stressed as being part of the ‘minimal’ intervention received by the control groups in the discussion.

5. The authors rightfully suggest that more research is required to identify those whom may respond to brief interventions. I would suggest that this is best done through experimental research. In light of the considerations above, we may need novel research methods and designs to examine this issue, including the use of ‘no intervention’ comparison groups, blinding to group allocation or ‘post test only’ outcome assessments to discern the effect of what is received by participants from other research reactivity effects.

6. The focus of the manuscript, both of the introduction and discussion is largely on predictive factors of control group participants. The value in comparisons with predictors of change in the intervention group should be clarified, or removed.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare i have no competing interests