Reviewer's report

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

Version: 1 Date: 19 November 2010

Reviewer: Tien Chey

Reviewer's report:

Summary

This is a secondary analysis of a clustered randomised trial. It assesses the predictors for change in physical activity greater or equal to 60 minutes per week for the usual care (UC) group, contrasts that with the intervention-telephone counseling (TC) group. The findings are relevant in today’s obesogenic environment where concerted efforts are being made to promote participation in physical activity. My concerns are with issues regarding method and statistics reported.

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Major Compulsory Revisions

1. It was unclear whether the aim of this paper is to find a parsimonious model to predict change of #60 minutes or a priori list of independent factors associated with the change. If a parsimonious model is the objective, it is limited by the variables collected. The model selection process of using p=0.2 level for retaining variables in the model need to be justified. Also multicollinearity of variables such as education and income need to be investigated. On the other hand, if the objective is to identify significant factors (with the constraint of variables collected) between the two randomised arms, then the variables included/adjusted in the model have to be comparable.

2. The authors have examined the differences in predictors between the completers and drop-outs (n=319 vs n=115) for the whole sample. But stratified analyses were carried out (UC and TC groups were modeled separately), have you check if the completers and drop-outs within randomised arm are comparable?

3. The randomisation process is to ensure patient characteristics are balanced for the two arms. With completed case analysis these may not be true. The sample size is small for a dichotomous outcome study. Though only one variable (smoking) is statistically significant different between the two randomised arms, few influential physical activity variables are on borderline significant such as gender, education. These variables are preferable be adjusted and retained in the model for comparison.

4. Nagelkerke R square is a pseudo-R-square statistics. It has severe limitation
and cannot be interpreted as in ordinary least squares in explaining the % variance explained in the model where the dependent variable is a dichotomised cut-off. My suggestion for a predictive logistic model is the concordant index or “area under the curve” for model performance and Hosmer-Lemeshow statistic for goodness-of-fit test.

5. The appropriate method to analyse randomised pre and post data is ANCOVA [see reference]. Analysis of change score is subject to bias and regression to the mean. There is a limit to change depending on your pre physical activity level.

6. The study design employed a cluster randomised procedure, that GP practice is the primary sampling unit. There is no adjustment for design effect in the analysis. Was the design effect negligible?

7. Different physical/medical conditions were reported for the two models. Have the authors consider using a composite categorical variable of number conditions? The number with “cancer” was small, hence the large confidence interval.

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Minor Essential Revisions

1. Results for the stratified models were mentioned throughout the text but only one was shown. Why was the TC arm not included as there were only two tables?

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Discretionary Revisions

1. Multivariate regression is often misused instead of multiple regression. Multivariate regression model imply that there were more than one dependent variable in the model such as MANOVA procedure.

2. The titles for Table are ambiguous, especially Table 1. It should refer to the completers used for this analysis. The Logan Health Living Program was referred as the origin of the data.

3. Have the authors consider doing a sensitivity analysis using all the data with missing data imputed, to see if the results still hold?

**Level of interest:** An article whose findings are important to those with closely related research interests

**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