Author’s response to reviews

Title: Adherence to daily dietary and activity goals set within a Māori and Pacific weight loss competition

Authors:

Marewa Glover (marewaglover@xtra.co.nz)

Marrit Nolte (marritnolte@hotmail.com)

Annemarie Wagemakers (annemarie.wagemakers@wur.nl)

Hayden McRobbie (hayden@thedragon.institute)

Rozanne Kruger (R.Kruger@massey.ac.nz)

Bernhard Breier (b.breier@massey.ac.nz)

Jane Stephen (j.stephen@hotmail.co.nz)

Mafi Funaki-Tahifote (MafiT@heartfoundation.org.nz)

Mathu Shanthakumar (m.shanthakumar@massey.ac.nz)

Version: 1 Date: 25 Oct 2018

Author’s response to reviews:

Comment / Change made

1. Please move all the results tables out of the results section and place them after the References in a section called "Figures, tables additional files".

Done

2. Under the heading "Authors' contributions", please confirm whether all authors read and approved the final manuscript.

Done
3. Michael G Perri (Reviewer 1): This paper has several important strengths and a number of key limitations.

The study's strengths involve (a) the high prevalence and clinical significance of the problem of obesity among New Zealand Pacific and Māori populations and (b) the development of a culturally relevant behavioral intervention to improve adherence to daily dietary and physical activity goals via group competitions. The major limitation of the project, as acknowledged by the authors, involves an extremely high rate of attrition. Only 5 of 19 teams of participants "persisted to 24 weeks." As a consequence, it is difficult to conduct any meaningful quantitative analyses of the strategies designed to improve adherence. Therefore, it would be more reasonable to revise the manuscript and present the study as a description of "lessons learned" rather than as an "evaluation" of a weight-loss competition.

Author comment:

We agree with the reviewer that due to the high drop-out of teams it was difficult to conduct the analysis intended in this paper. This we acknowledge in the paper as a major limitation. We do need to clarify, however, that the paper was not evaluating “the strategies designed to improve adherence”. This paper specifically was focused on assessing the viability of the WEHI daily challenge goals. To do this, we conducted a component evaluation which is a particular methodology explained in the paper on pg.7

“Component evaluation focuses on a particular aspect of an intervention to test and validate a program’s theory [41]. Of interest is whether or not the component was implemented as intended and adhered to and if so, whether the proximal outcomes aimed for could be detected and thus could indicate that the program theory was feasible.”

The strategies to improve adherence, which are not evaluated in this paper, were the other components described on pg.5:

“Support from both the health provider and team members, within region inter-team competition with incentives (spot and cash prizes) for completing and internet delivered education and support.”

We realise from the reviewer’s comment here that we had not made it clear enough that this paper evaluates a component rather than the overall competition. We have gone through the paper to remove statements that give this incorrect impression, as follows:

Page 4, line 3:

“This paper assesses the daily behavioural goals set for participants of a 24 week Pacific and Māori team weight loss competition.”
Title has been changed from:

Adherence to daily dietary and activity goals set within a to reduce cardiovascular and diabetes type 2 risk. Evaluation of a Māori and Pacific weight loss competition.

To:

Adherence to daily dietary and activity goals set within a Māori and Pacific weight loss competition.

We believe that it is implicit in the title, and the fact that it is a scientific paper, that “lessons learned” will be presented.

Reviewer 2:

The intervention itself is well thought through and the incorporation of a culturally relevant theory and approach is one of its strengths.

Author comment:

It is pleasing that we have articulated the strengths and the reviewer agreed with them.

Reviewer 2: However, the authors could also incorporate self-determination theory (SDT) (Deci & Ryan, 2000, American Psychologist, 55(1), 68-78) into a discussion of the results. Flexibility to choose behaviours is a big part of ‘autonomy’. The team environment, all with a common goal to lose weight, provides 'relatedness' and 'competence' is reinforced by points. The tenants of this theory are well grounded by empirical evidence and have been tested in a wide variety of populations.

Author comment:

It was interesting for us to read how aspects of our WEHI intervention are supported by SDT. We have considered the reviewers suggestion.

Introducing reference to SDT in the discussion would create a new weakness in the paper. That is, if we introduce SDT in the discussion, readers could rightly expect that we should have discussed the theory in the introduction/method. But, we did not use SDT in the design of the intervention. We used a more holistic indigenous theory. There are parallels. For instance, relatedness maps to te taha whānau (relationships with family/others), competence maps to te taha hinengaro (the mental realm including knowledge) and autonomy maps to te taha wairua (the spiritual realm) as well the te whare tapa wha model’s recognition of the wider socio-historical-political determinants of behaviour. We believe it is a strength that the intervention,
which was designed to work with Māori and Pacific people, used a theory more closely matched to Māori and Pacific holistic world views. Thus, we have not incorporated mention of SDT. Also, it would have been difficult to have done so without providing explanation of the theory and its terms thus extending the word count.

Reviewer 2:

The method of evaluation could be significantly improved with more of a qualitative approach to assessing the barriers and facilitators to adhering to the program, such as focus groups with teams that completed the program versus those that did not.

Author comment:

We agree that going beyond the document analysis we conducted would extend the evaluation. For this paper we conducted an analysis of program documentation only. We did include a recommendation for further research as follows at pg.15:

“Further evaluation assessing implementation and the barriers to adherence and retention is also warranted.”

A further paper reporting on the changes in behaviour from baseline to follow-up is being prepared for publication. A full report prepared for the Ministry of Health is available from the lead author. We could note this somewhere if doing so aligns with the journal’s editorial policy?

Reviewer 2:

The paper itself explains the theory well but not necessarily how the theory was incorporated into the development of the program and how it links with the daily goals. The paper is a little challenging to follow as it jumps around and needs to flow more sequentially.

Author comment:

This was done more fully in the rationale and method paper. However, to clarify we have added the elements of Te Whare Tapa Wha on which the four intervention components are based:

Page 5, line 15:
“The four intervention components based on this theory were: 1) support from both the health provider and team members (te taha whānau), 2) within region inter-team competition with incentives (spot and cash prizes) for completing (te taha hinengaro), 3) daily and weekly behavioural challenges (te taha tinana), and 4) internet delivered education and support (te taha hinengaro).”

Reviewer 2:

Identifying which activities were performed the most/least and weekday/weekend day differences are important data. It is intriguing that both exercise day and sweet treat-free day were performed the least. From these data the interpretation that future weight loss interventions should differentially incentivise week days and weekend adherence seems an intuitive idea.

Overall, I feel this is an important contribution to the field and that this research adds value to the literature. The population is also novel and at increased risk of obesity/cardiovascular disease risk.

Author comment:

These supportive comments recognising the contribution our paper can make to the literature are appreciated.

REQUESTED REVISIONS:

Design:

Completion/adherence to activities is self-report, this is a serious limitation.

Author comment:

We agree. We mention this in the discussion on page 15:

“A further limitation was that WEHI relied on self-reported activity which is vulnerable to social desirability bias, that is, participants would have been inclined to over-report completion of goals [66].”

REQUESTED REVISIONS:

The authors mention a control group was used, although they haven't presented any control group data? Furthermore, why were outcome measures not collected at week 48 so this is comparable to the intervention?
Author comment:
This paper was only about people who performed the intervention challenges.

REQUESTED REVISIONS:
The drop out of participants, weakening the statistical power is a concern.

Author comment:
We are aware of that. We mention this in the discussion.

Page 15:
“First, the drop out of participants and teams limited the amount of data available for analysis and weakened the power to test for differences and relationships.”

REQUESTED REVISIONS:
Pg 5. Line 31. Bathroom scales, therefore, was weight self-reported? Was this the same for waist circumference? Do you think there are any limitations of this approach given there was a monetary incentive for the best team. You have touched upon this in the discussion but a reader should not have to wait for the discussion for this to become clear. Please emphasise that anthropometrics were measured by researchers.

Author comment:
In text changes are made to clarify:

Page 5:
“Each team was given a set of bathroom scales to use as a motivational tool at group meetings if they wanted to.”

Page 4:
“Weight and waist circumference measurements (WC) were performed by research assistants. During the same meeting, questions on nutrition literacy and behaviour, physical activity, food security and body image were self-completed.”
REQUESTED REVISIONS:

Pg 6. Line 2. Were focus groups or patient and participant involvement (PPI) conducted prior to the start of the trial to identify important goals for the participants? Did they have an opportunity to inform the ranking of these behaviours based on what they felt were important. You mention in the discussion that ‘for weight loss interventions to be effective, prescribed goals need to be acceptable to participants, able to be completed by them and congruent with contextual demands in their lives’. Therefore for the success of your intervention it seems a prior participant involvement would be of utmost importance to inform the behaviours chosen and points system.

Author comment:

Formative work with the target population was not undertaken. The referred to rationale & method paper discusses the literature that was reviewed in more detail prior to the intervention being designed. Some of the study team had extensive past experience working clinically and or through research with the target populations and these and other previous studies provided sufficient insight to proceed from. Also, it was important to prioritise behavioural changes that would result in weight change, if implemented as recommended. The behaviours needed to align with NZ Eating and Activity Guidelines in order to be pragmatic for the NZ context.

Further, the funding was made available via a Request for Proposals process which stipulated the maximum funding available. There simply was insufficient funds to include formative evaluation work.

REQUESTED REVISIONS:

Pg 7. Line 20. It’s a shame that individual data is not available as this would be more informative than having data presented as only 5 teams.

Author comment:

We recognized this as a limitation:

Page 15, line 16:

“A significant limitation was that individual challenge completion data was not collected limiting the analyses that could be done.”
However, reason for it was to reduce the burden on the participant.

REQUESTED REVISIONS:

Execution:
Pg 7. Line 50. $17 + 1 + 1 = 19$ teams yet on Pg 8. Lone 1 you say '20' active teams. Which number is correct?

Done.

“The number of active teams decreased from 19 active teams in the first week to five active teams at the end of the competition.”

REQUESTED REVISIONS:

Figure 4 is somewhat misleading, surely the adjusted scores (for active teams is the most important). The total of 20 teams is of course going to give you a higher reported number of completions than 7. Moreover, there are inconsistencies throughout the manuscript, 21 active teams or 20 or 19. This is unclear.

Author comment:

Figure 4 shows the drop in completed challenges during the intervention period. This is both due to drop out of teams and reduction in motivation. This gives the reader an overview of the overall adherence to the daily challenges. Additionally, it presents which daily challenges were performed most/least per week. Figures 5-7 give a more detailed representation of adherence per team per week.

The inconsistency of numbers is fixed throughout the paper.

REQUESTED REVISIONS:

Pg 4. Line 43. Self-complete(d) questionnaires. Where were these questionnaires completed/administered? In the participants own home (web-based)? A research setting? What was the time demand/burden for the participants? Are these questions valid/reliable to capture this information? Can these be provided as supplementary information? I feel a stronger description of these measures is required. While you've referred the reader to reference [18], the methods still need to be described in adequate detail in this manuscript.
Clarified in text on page 4:

“Weight and waist circumference measurements (WC) were performed by research assistants. During the same meeting, questions on nutrition literacy and behaviour, physical activity, food security and body image were self-completed.”

We have added in further details which are directly relevant to the results presented and discussed in this paper. The data collected in the questionnaires is not presented in this paper. Nevertheless, the fuller information is discussed in the rationale and method paper which the reader is referred to.

REQUESTED REVISIONS:

The manuscript would benefit from a thorough review for English, sentence structure etc (see examples below).

Author comment:

Thank you for pointing us to these areas that could be improved.

REQUESTED REVISIONS:

Title: Rather than diabetes type 2 risk this should be written as type 2 diabetes risk. Consider using a semi-colon to split the title.

Author comment:

Title changed as follows: Page 4, line 4:

“The Ka Mau Te Wehi (a Māori saying that means Awesome!) competition was designed to trigger sustainable changes that could result in reduced CVD and type 2 diabetes (T2D) risk among adults with a BMI of 30 or over.”
REQUESTED REVISIONS:

Pg 2. Line 2. Background: Insert 'populations' after Māori; Pg 3. Line 28. Pacific and Māori. I feel that you need to expend these terms throughout the manuscript, either end with 'populations', 'individuals', 'islanders' or 'adults'.

Done.

Pg 2. Line 11. Change 'the goals' to 'these goals'.

Done.

Pg 3. Line 42. Change to: 'primary lifestyle treatment recommended for obesity'.

Done.

Pg. 9. Line 20. Component(s).

Checked each use of word in manuscript for correctness.

Pg 12. Line 29 - 40. This sentence is too long and difficult to follow. Please consider revising.

The page and line numbers provided did not align with a long sentence. So we were unable to make this revision.

Reviewer Interpretation:

The intervention has so many components that are linked to successful weight loss (done with family and friends, the use of financial incentives, the freedom to chose behaviours etc.). This makes it difficult for the authors to determine the most importance aspects of the intervention.

Author comment:

As explained above, we do need to clarify that the paper was not evaluating “the strategies designed to improve adherence”. This paper specifically was focused on assessing the viability of the WEHI daily challenge goals. To do this, we conducted a component evaluation which is a particular methodology explained in the paper on pg.7 “ Component evaluation focuses on a particular aspect of an intervention to test and validate a program’s theory [41]. Of interest is whether or not the component was implemented as intended and adhered to and if so, whether the proximal outcomes aimed for could be detected and thus could indicate that the program theory was feasible.”
We realise from the reviewer’s comment here that we had made it clear enough that this paper evaluates a component rather than the overall competition. We have gone through the paper to remove statements that give this incorrect impression.

The fact it ran over an extended holiday period seemingly had a significant impact on adherence. While this real world approach could be deemed an advantage this has huge implications on your findings. At what week in the intervention did this holiday period occur?

Northland & Manawatu from 29 August 2016, thus the xmas period was weeks 16 to week 19.

Auckland from 26th September, thus the xmas period fell on their week 12 to 15.

We have amended the relevant section on pg.15 in the limitations to read:

“A major contributor to the drop out was that the trial ran through the NZ summer Christmas/New Year holiday period (competition weeks 16-19 for Northland and Manawatu, and weeks 12-15 for Auckland). In NZ, community health organisations typically close down for over this period.”

Reviewer:

Pg 6. Line 26. Is it possible to provide some information on the participants/teams that were excluded? This could be important information, were they younger/older, likely to be male/female, lower socio-economic status, higher body mass at baseline etc.

Author comment:

Teams with no entered daily challenge data were not part of this study, and therefore not excluded. To avoid confusion, these sentences are removed from the manuscript.

Page 2, line 10

Page 7, line 15

Reviewer:

Pg 9. Line 59. 'Most of the participants were employed'. But teams report that challenges were more likely to be completed on weekdays than on weekends. Surely participants would have more time to perform activities on weekends, assuming they work Mon - Fri 9-5, what are the implications/considerations of this?
Author comment:

This is considered in the discussion. Page 12, line 15:

“Adherence was significantly lower on weekends. Other studies have reported a similar pattern, for instance, American adults reportedly consume more fat in the weekend [55]; meal sizes were also larger on the weekend [56] and rates of physical activity decreased [57]. Church commitments, which are an important part of Pacific culture [58], could have contributed to reduced adherence during the weekend for Pacific participants.”

Reviewer:

Pg 10. Line 7. Is there a distinction between lack of reporting and lack of compliance? For example, just because teams didn't report an activity might not mean it wasn't performed. It is possible for participants to under-report activities/behaviours.

Author comment:

We are not able to make this distinction since teams had to report their daily activity themselves. We mention this in the discussion as a major limitation.

Page 15:

“A further limitation was that WEHI relied on self-reported activity which is vulnerable to social desirability bias, that is, participants would have been inclined to over-report completion of goals [66].”

Reviewer: Pg 10. Line 22 - 27. Does your data agree with this? You mention that participants in this intervention completed stand up day most frequently. Therefore, does the easy of doing something (standing up) override an enjoyable activity LTPA?

“Fun leisure-time physical activities (e.g. swimming, walking) appear to be preferred over activity integrated into daily life (e.g. standing up more or taking the stairs), or health-related fitness activity (e.g. strength-building gym classes)”

Author comment:

We have added at pg. 12 bottom of page:

“Contrary to this, our easy standing challenge was performed most frequently.”
Reviewer: Pg 11. Line 1. Is there a difference in the impact of financial incentives if it goes to the individual (for their own gain) vs. external parties (a charity, sports clubs etc)?

Author comment:

The intervention was modelled on a previous successful competition that was aimed instead at stopping smoking. That intervention was successful and the way the incentive was structured was mostly liked. This is explained in the rationale and method paper.

ADDITIONAL REQUESTS/SUGGESTIONS:


Author:

Removed from abstract.

Done

Pg 2. Line 19. Team(s)?

Done

Pg 2. Line 39. Add in teams i.e …. (N=130) who began, only five ‘teams’ performed….

Done

Pg 2. Line 44. Lower value task. It is not clear what you mean here as you have not discussed low or high value tasks in the methods or introduction. Why are some more important than the others? Who decided this, the participants themselves or the researchers and was this based-on existing empirical evidence.

Author comment:

Reworded in abstract to make it clearer.

Page 2, line 18

“No difference in performance between goals was found suggesting they were equally viable, though tasks worth less points were performed slight more frequently.”
Reviewer:

You mention incentives throughout the abstract although it is not clear what you are referring to here. Are these monetary incentives, rewards, competition points? This should be emphasized.

Author comment:

Edited in abstract to make clearer as follows:

“Our team weight loss competition trial for participants with a BMI ≥30 used cash prizes to incentivise completion of nine daily behaviour goals.”

Reviewer: Pg 3. Line 24. High rates of what? Although mentioned in the previous sentence you should still specify you are referring to obesity.

Author comment:

Done.

“NZ resident Pacific and Māori (indigenous) people, who are over-represented among the most deprived, have disproportionately high rates of obesity (68.7% and 50.2% respectively) compared to the European population (30.5%) [3].”

Revision requested: 'Behaviour change' could be changed to 'behaviour change interventions' i.e. 'believed to improve adherence to behavioural change interventions [11].

Done.

Reviewer: Pg 4. Line 52. Why were smokers/nicotine users excluded? What was the rationale here? What if participants started smoking over the 48 weeks? Was this information captured?

Author comment:

Phrase added to explain this:

“We did not follow-up smoking status.

Revision requested: Pg 7. Line 27. Have you defined RC?”
Reviewer: Pg 7. Line 37. This might be in accordance with Journal guidelines, but why does ethical approval appear at the end of the methods section. It would be common practice for this to appear where you discuss the trial participants in the methods.

Author comment:
Removed as per journal layout.

Reviewer:

'For the teams that completed the competition, the nine challenges appeared to be equally viable.' This is stated more than once but elsewhere in the paper states that some challenges were deemed much more challenging than others so needs to be clarified, i.e. in the Results section- 'RC reports noted that participants found the Exercise Day and Sweet Treat-free Day the hardest.'

Author comment:

Although there was a difference in number of challenges performed, the differences between the challenges were not significant.

'Adherence on weekends could have been undermined by participants perceiving WEHI to be more like 'work', an activity belonging to work days, rather than 'fun'.-' Is there any evidence of this thinking in the data- if not, this might be too presumptuous to include

Deleted presumptuous statement.

Reviewer:

The Figures are of poor quality for a publication, especially 4-10 (gridlines and borders should be removed etc.). The authors might want to consider using panelled Figures i.e. 1a, 1b to avoid having 10 Figures (which might exceed the Journal guidelines).

Done.

Sorry about the spacing. We created a table of the revisions, but could not upload it here so we had to convert it to text.