Reviewer's report

Title: Interactive web-based lifestyle intervention and metabolic syndrome: findings from the Red Ruby (a randomized controlled trial)

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Reviewer: Sandra Saperstein

Reviewer's report:

This paper presents the results of a randomized controlled trial to evaluate the effectiveness of an interactive web-based lifestyle intervention on metabolic syndrome. The researchers utilized an intervention group and a wait-list control group to examine differences in metabolic syndrome components. Data were collected at baseline, 3 months, and 6 months and were analyzed using an intention-to-treat approach. Overall, the design is strong and the results are promising; however, issues with writing style will require substantial revisions and the discussion section is very weak.

Major Compulsory Revisions

1. This paper will require substantial revision for English usage. In most cases, the issues are minor, but there are grammatical errors throughout so a thorough review is recommended. In other cases, the wording will need to be edited for clarity, e.g. Sentences 2 and 3 in the Background in the Abstract. I am not sure what the authors are saying here.

2. Statistical analysis
   a. You state that you used mixed model analysis for within group differences and generalized linear mixed models for between group differences. However, according to the results, it looks like you used mixed model analysis for both within and between group differences on each metabolic syndrome component and generalized linear mixed model analysis for the analysis on changes in the sum of components. Please clarify the Statistical Analysis section.

2. Discussion
   a. The discussion is not clearly written and needs to be substantially revised. Some points are irrelevant to the study and could be deleted (e.g. paragraph 2).
   b. Other areas are not substantiated, e.g. paragraph 4, where you state that this study showed that regular updates of the study website or sending information by emails would be related to repeated and reliable visits to the website. However, no data was presented on number of log-ins to provide validity to the statement. You should include some of the rationale/previous research for the intervention design in the Introduction or as your discuss the website itself in the Methods section.
   c. I think the most important points that you can make based on the evidence you
present is that use of an interactive website utilizing frequently updated informational content with email notifications, interactive risk assessment tools, and tracking tools (plus whatever interaction there was about diet--See below comments about the Inbox) had a positive effect on metabolic syndrome components.

d. In the last paragraph of the discussion, you bring up gender differences in participation. Why do you think more males were interested in this intervention? However, the last two sentences of this paragraph do not make sense with the gender discussion.

Minor Essential Revisions

1. I am not sure why the trial is called the ‘Red Ruby’ when the website is called the “My Healthy Heart Profile.’ Was this study part of a larger study called ‘Red Ruby.’ I was waiting for context around the study name. You could consider adding more context or change the title of the article.

2. In the description of the ‘My Healthy Heart Profile’

a. You might consider calling the ‘Personal Homepage’ simply ‘Educational Materials.’ It sounds like the homepage is just educational materials. Were the educational materials tailored to the individual or did all users receive the same materials?

b. I am not sure why the Personal Information page is relevant at all to the intervention. I’m assuming it was there for the needs of the researchers to have this information, but it does not provide anything new or interactive for the user. If I am missing the point, this could be clarified.

c. Inbox – You state that the users received a tailored diet to their inbox. Was there ongoing discussion, or the potential for ongoing discussion, between the user and the dietician? Could the user only communicate with the dietician or could they communicate with anyone else through this part of the website? If the users and dietician could communicate, did they?

3. Statistical analysis

a. You state that you used mean, standard deviation, median, range, frequency and percentage. I don’t see the presentation of median or range in your tables, so that could be deleted.

b. It might be nice to include a sentence in this section that states that change scores were calculated and how they were calculated. This would help the reader understand the change scores that are presented in Table 2.

4. Figure 2: The Y-axis title was cut off.

Discretionary Revisions

1. I am curious about the effect of education and wonder about the education distribution of the final sample. Was there differential attrition between lower vs. higher education groups? Although education was not significant at baseline, it approached significance. I wonder if that changed by 3 or 6 months. If low
education stayed in, maybe the website was filling an information void. If higher stayed in, maybe the reading level was too high for the participants with lower education. Anyway, this is just an area of curiosity and not a recommendation for additional analysis.

**Level of interest:** An article of importance in its field

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.