Reviewer’s report

Title: Exploring the Feasibility and Acceptability of a Mixed-Methods Pilot Randomized Controlled Trial Testing a 12-Week Physical Activity Intervention with Adolescent and Young Adult Cancer Survivors

Version: 0 Date: 12 Aug 2019

Reviewer: Adam Wagner

Reviewer's report:

Thank you to the authors for a well written article. I think the trial is reported acceptably, but more work is needed to motivate and reflect on the limitations for future trials etc.

Substantive points:

- Addressing age: I find it very surprising that adolescents (from 15) and young adults (up to 39!) are included as one group - I would have considered them quite different groups. I don't think I will be the only reader to think this, so I think the authors need to defend/motivate why this group can be treated as one (homogenous?) group. Also, make clear /early/ what the age range includes (add to abstract and early in the background).

- Given the nature of the pilot work, I would like to see more detail about the types of cancer involved - not just about the number of breast cancer survivors. Please list the other types of cancers.

- Given the small numbers, and my comments about age above, I would like more details on the age of participants recruited. Given only 16 participants, could you just report the individual ages? How many were adolescent? How many in the 20s? Etc.

- Linked with my previous points: I would like more reflection on the participants recruited: they are predominantly female and seem to be in the older end of AYA. How does this impact on the researchers' findings? I don't know the literature, but do men and women engage with physical activity differently? I suspect they do. Does this differ by cancer type? Are there some cancers that more directly impact on ability to be active? Do some cancer that impact self-esteem more directly (eg breast cancer?)? The recruited sample is small, so the strength of conclusions need to be moderated, but I think more reflection is justified (perhaps less detail on missing data).

- If you go to a multi-site trial you are going to need substantial funding. I would be surprised by any grant funding panel approving such funding with no long term follow-up (I'd have thought at minimum outcomes at 6 months, or, more ideally, one year). Will your controls be willing to wait this long? Your trial only provides evidence on a waiting list control of 12 weeks - this is an unknown that your trial does not address. I would like this point to be explored in the limitations. Can you point to other successful trials in this area where a long waiting list control has been successful?

- Data analysis: Is the mean and SD appropriate for all variables? None are skew? If some are skew, it would be more appropriate to report them as median and interquartile range etc. I would like some
consideration of this. Also, as per item 17 in the CONSORT checklist: I am unclear why this item is marked as "not applicable" - please explain. Also, why can 95% CIs not be reported?

- L404: Here, or in the discussion - I wanted to know how the intervention proposed in refs 51 and 52 compared to the intervention of this study - how does this study's intervention contribute to and fit in with other literature?

- L467-470: Point about BCTs: I have sat on funding panels which have rejected applications due to insufficient consideration of behavioural change - this point deserves much stronger emphasis.

- L557-558: I think the authors need to revisit their funding statement assertion. How was this work funded? While perhaps not getting explicit funding in particular for this project, L561 notes that the first author "received donations" and L571 notes that the first author was supported by a "Vanier Canada Graduate scholarship" - I would expect such information to be given in the funding section. In short, I do not believe "Not applicable" is appropriate for CONSORT item 25.

- While accepting I am suggesting a fair amount of new material - if space permits - I think it would be useful to reflect on the health economic/resource implications of your intervention. Could a future trial benefit from an economic evaluation? Is it practical/feasible to deliver a tailored program to each cancer survivor? I'd suggest a future trial explores the economic implications.

Minor:

L76-79: I feel there is a strong need here to define terms of "adolescent" and "young adult"

L82-99: "Need for a trial": I find it odd that little (no?) literature is referenced in this section in the Background. I particularly wanted some evidence/justification about the lack of RCTs in this area (L85-86)


L176: Relating to my point with respect to age above: what were the ages of the AYA cancer survivors?

L255-261: Somewhere - here or in the results etc - please indicate the "direction" of the scales eg do higher esteem scores indicate higher esteem? Needed for psychological outcomes where the "orientation" is not so clear.

L274: It is appropriate that a formal size calculation is not completed/calculated, given hypothesis testing is not appropriate in the pilot/feasibility study context; however, can any justification be given for the recruited/approached sample size? Why only 30?

L292-293: Are there no norms for a more comparable age group? Seems odd to compare/place in context with over 60 year olds.

L294: What is "normal' range"?

L315-371: There is a lot of switching between percentages of different denominators in this section
(participants v. eligible v. sessions etc). I think it would be helpful for the reader and clearer to have the numbers relating to the percentages in parenthesis - eg: "100% (16/16)" etc.

L327: Can more detail be given about ineligibility? What was the most common reason for people to be ineligible? Could this be relaxed going forward, to make the intervention more applicable?

L351: For ease of reference, give the total number of sessions somewhere around here.

L363: 29% of what? Might be clearer with my suggested change above.

L413-414: Why should there be corroboration? Explicitly say what is sought to be overcome through this.

Pedantry:

L80: Replace "that" with "whether"

L83-84: I would like the language softened here around the value of non-RCT evidence: there is a suggestion that RCT provide the /only/ definitive/useful evidence - other evidence sources have their place and should not be completely disregarded.

L169: Drop the decimal places relating to the costs of the gift card.

L224: What was the relevant literature? I would like to see some justification for these figures.

L270-272: Will the findings be published? Some indication for the reader would be useful.

L285: While appreciating the desire to maintain consistency, I think readability would be improved by reporting age to the nearer integer (keep the decimal points etc for the Table)

L295: "due to significant difference in the walking track measured" - I can't parse this. Are some words missing, or is the word order slightly wrong? I think this could also do with spelling out.

L412: "population specific barriers" - an example would be good for non-cancer experts etc

L420: For clarity: perhaps insert "only" between "typically" and "provide"

L424: Insert "in" between "participate" and "lifestyle"

L439: "not cleared" - language sounds odd to me - reword?

L440: Substitute "a" with "any"?
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No