PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Using qualitative and co-design methods to inform the development of an intervention to support and improve physical activity in childhood cancer survivors: a study protocol for BEing Active after ChildhOod caNcer (BEACON)
AUTHORS	Brown, Morven; Araujo-Soares, Vera; Skinner, Roderick; Glaser, Adam; Sarwar, Naseem; Saxton, John M; Montague, Kyle; Hall, Jamie; Burns, Olivia; Sharp, Linda

VERSION 1 – REVIEW

REVIEWER	Joya Chandra University of Texas MD Anderson Cancer Center
REVIEW RETURNED	08-Jul-2020

GENERAL COMMENTS	This manuscript provides a study design rather than a completed study for assessing CCS PA preferences in preparation for intervention design. The topic (PA intervention design for CCS) is an important one, however, it is unusual to see publications without data. Some suggestions are to describe: 1. whether any incentives will be provided to participants 2. limitations of the study design 3. how baseline activity levels will influence data collection and analysis 4. whether in person researcher/participant interaction will be feasible given the global pandemic

REVIEWER	Anna Schwartz Northern Arizona University United States
REVIEW RETURNED	16-Jul-2020

GENERAL COMMENTS	The authors are to be lauded for their proposed work. There is a great need for theory-based pediatric cancer survivor physical activity interventions. The methods that are proposed should yield tremendous information to develop this intervention. In phase 1 cancer surivvors and their parents will be interviewed. The younger one's in face-to-face interviews and older children via web-based secure telephone. The second phase of the protocol will include stakeholders (survivors, parents, health care providers, researchers) to obtain information on content and mode of program delivery. The phase 2 co design will use audio and video recording to map activities and plan a prototype intervention.. Analysis of both phases of the protocol are appropriate to generate the information sought to develop a childhood cancer

	survivor intervention.The study has received appropriate ethical review and is currently underway.

VERSION 1 – AUTHOR RESPONSE

Reviewers' comments:
We thank both reviewers for taking the time to read and comment on our paper. We also thank them for their enthusiasm regarding the study. Below we address the points which were made by reviewer one.

Reviewer 1
This manuscript provides a study design rather than a completed study for assessing CCS PA preferences in preparation for intervention design. The topic (PA intervention design for CCS) is an important one, however, it is unusual to see publications without data. Some suggestions are to describe:
Comment 1. Whether any incentives will be provided to participants
Response:
We have made it clearer how our participants will be reimbursed and rewarded for their participation. Text has been added to the 'Ethics and dissemination' section outlining the ethical and practical considerations regarding incentives for participation.
The text now reads:
Interview participants will be offered payment of any travel expenses and a £20 high-street shopping voucher. This amount is based on the need to provide some compensation for the participant's time, expertise and contribution to the research but without coercing individuals to take part when they would rather not.[40] Participants will be notified of the voucher in the study information sheet and will be offered the voucher at the beginning of the interview to convey to them that they are being rewarded for their attendance, and not for what they share during the interview.[41] Participants recruited to co-design activities will receive a high street voucher which reflects the time commitment and nature of the activity they choose to participate in, in accordance with INVOLVE guidance.[42]

Comment 2. limitations of the study design
Comment 3. how baseline activity levels will influence data collection and analysis
Comment 4. whether in person researcher/participant interaction will be feasible given the global pandemic

Response:
We have added a paragraph in the discussion outlining potential limitations to the study design. This has addressed comments two-four. We have added details regarding the main potential limitations of the study, namely: selection bias by the healthcare professionals screening eligible patients, patients who are more physically active being more motivated to take part in a study about physical activity and also recruitment challenges. We have also been more explicit about having to integrate remote co-design methods into the study due to the current COVID-19 pandemic and have suggested potential limitations to conducting co-design remotely.

The text now reads:
The strength of our study lies in the adoption of an evidence-based, person-centred approach. However, we also recognise the need to mitigate potential study limitations. To minimise selection bias, the importance of giving all eligible patients the opportunity to hear about the study, and allowing them make their own choice as to whether they want to participate or not, will be highlighted to those involved in the screening process.[49] For example, participating in this research may appeal more to

CCSs who are physically active, than to those who are not. Therefore, patients will also be made aware that a judgement will not be made on their current activity levels and that we are interested in their views regardless of whether they consider themselves to be active or not. CCSs can be challenging to recruit to research,[50] therefore, we propose several routes by which CCSs may be made aware of the study. This will help to safeguard against any potential recruitment issues and will also ensure that a wide range of individuals are offered the opportunity to participate. We also acknowledge the potential impact of the current COVID-19 pandemic on the study, including the possible need to conduct co-design activities remotely. The use of video-conferencing could exclude those who have limited access to the required technology, or those who do not feel comfortable using it.[51] The use of remote methods may also hinder the interactive, creative and collaborative process essential to co-design. Therefore, we have proposed several ways that individuals can take part in co-design activities, including online synchronous and asynchronous methods. Careful and considered planning will be needeto adapt co-design activities to ensure participation and engagement, as well as an online environment in which individuals feel safe and able to contribute.

In response to comment 4, text has also been added to the section which describes the co-design process. Here we also now acknowledge how COVID-19 has influenced our choice of co-design activities.
The text reads:
This process will involve a range of methods in order to engage and collaborate with stakeholders flexibly. Due to the current global COVID-19 pandemic, we will offer multiple modes of participation including workshops (face-to-face or online), interviews (one-to-one or small groups of 2/3 people; face-to-face or online); and online collaborative groups. The mode of participation will be guided by participant preference, as well as COVID-19 guidelines at the time of study.

In addition to the reviewer's comments, amendments were also made to the paragraph outlining patient and public involvement. This was to make it clearer what groups contributed to giving feedback on the study concept and methods.

VERSION 2 – REVIEW

REVIEWER	Joya Chandra University of Texas MD Anderson Cancer Center, USA
REVIEW RETURNED	22-Sep-2020

GENERAL COMMENTS	The reviewers have addressed key issues raised by the prior review, to the benefit of the current version. However, some discussion about disparities in PA preference across cancer types and treatments is warranted - this could be mentioned in the limitations section. This could also be addressed by describing the population of survivors seen in the two clinics from where recruitment will primarily occur in terms of cancer diagnoses seen and use of treatment regimens with known cardiotoxic late effects.

VERSION 2 – AUTHOR RESPONSE

We thank you for further feedback and agree that it was beneficial to add in a paragraph about how influences on PA may differ across diagnostic and treatment groups. As suggested we have added an additional paragraph in the limitations section.