Reviewer's report

Title: Trajectories of physical activity, from young adulthood to older adulthood, and pancreatic cancer risk; a population-based case-control study in Ontario, Canada

Version: 0 Date: 10 Dec 2019

Reviewer: Verena Katzke

Reviewer's report:

The authors evaluated trajectories of physical activity over time and risk of pancreatic cancer in a case-control study. Despite having identified several trajectories, these were not associated with pancreatic cancer risk. However, physical activity at young age was inversely associated with risk, which was confined to men in sex-stratified analyses.

The authors conducted a very interesting research study with a novel approach to capture changes of physical activity comprehensively over one's life course and associated these with risk of pancreatic cancer. Despite the novel approach, the study setting per se is rather weak, given the case-control design and behavioural recall to assess physical activity at three time points in the past.

Abstract

"at" missing in the last sentence of your results section "…20s-30s, but not AT older ages…"

Background

Page 3, line 46: The WCRF CUP has been updated 2018 for pancreatic cancer, please update your reference accordingly (reference 10).

Page 3, line 56: you mention that life-course approaches with respect to physical activity had been evaluated for some cancer, hence only provide an overview article on pancreatic cancer. Could you search for some newest articles on cancers and physical activity and add these? This would be much more informative and would show the increasing use of trajectory modelling in the literature.
Methods

Page 5, sample size: Would you be so kind as to draw a flow chart? The sampling is rather confusing.

Page 7, measurement of other variables: did the questionnaires capture lifestyle variables before diagnosis, and if yes, how many weeks/months/years? Was this procedure comparable to the assessment of physical activity? And are diabetes and pancreatitis self-reported or had they been validated by a physician? I would appreciate it if you could be more precise here.

To some extend I do understand that you did not include BMI as a confounder due to the causal pathway problematic. However, I do not see the point in excluding diabetes and pancreatitis. Both are associated with pancreatic cancer, but (1) are they related to physical activity and (2) are they in the causal pathway? I have strong doubts.

Page 8, trajectories: Please make sure that the reader understands what PROC TRAJ is because this is no standard SAS procedure and cannot be found in the statistical package of SAS. It would also be nice to read more on how trajectories are actually formed. According to the literature, defining trajectories seems to more complex than the way you write it (see possible reference below).

Results

Page 10, line 29 on: I would suggest to be more careful in your wording. It reads as if the associations were significant albeit they are not.

Discussion

Page 13 limitations: I would suggest to emphasize in what directions the true associations could have been estimated due to your limitations, i.e. over- or under-estimation.

Page 14, top: Recall bias does lead to differential misclassification in this study, and not the other way around, as the authors stated.

Page 14, line 20: not only studies with a larger sample size but also a prospective design would be needed, i.e. prospective cohorts, that assessed physical activity and potential confounders independent of the outcome of interest, i.e. pancreatic cancer (no differential misclassification possible).
References


Number 20 lacks details on where to find the proc traj procedure in SAS. It is not a SAS procedure developed by SAS but a procedure developed by Jones and implementable in SAS and can be downloaded. Please add the link.

Hannah Lennon et al published an article on latent class trajectory modelling recently, this might be a good and new article to add to your list of references, i.e. in addition to reference 22 or by replacing it. The concept and how to interpret this approach is explained nicely. You may refer to this article for interested readers. (doi: 10.1136/bmjopen-2017-020683)

However, the most well-known author on these concepts is Daniel Nagin, see for example 10.1159/000360229 (doi). It would be good to elaborate on trajectory modelling in your methods section for the less experienced readers.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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