Reviewer's report

Title: Association of physical activity with hypertension and diabetes mellitus among Malaysian adults: a cross-sectional study

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Reviewer: Anthony Laverty

Reviewer's report:

Thanks for sending me this paper. Overall my view on this paper is that the authors seem to have access to some good data which could shed some light on some important questions, but that they haven’t quite made the best use of it in my opinion.

I am not quite clear why they have focused on BP and Diabetes. While obviously these are important, the survey I imagine also contains data on other aspects such as weight, which could also be considered.

I also wondered about sticking with binary measures for both of these outcomes. The data contains detail on the actual BP as well as the actual glucose value, and I think that examination of these in a continuous fashion alongside the binary cut offs may be enlightening.

A related point to this is that the authors also have detail on whether people are aware of their HTN or Diabetes status. While the mention this in the methods, they don’t do anything with this information. Given what we know about underdiagnosis, looking at diagnosed and undiagnosed HTN and Diabetes separately may be helpful. This also speaks to the reverse causality issue – if people do not know that they have HTN, then it seems unlikely (to me) that they are engaged in more PA because of this.

The other big issue with this paper is the mismatch between the conclusions and what has been found. The paper essentially doesn’t find any great benefits of PA – and the one finding for moderate level PA doesn’t show the dose response you would expect to see (i.e. moderate level PA is associated with less diabetes, but high PA isn’t). It then seems unwarranted to say that we should be promoting PA to the Malaysian pop. Although lots of other research tells us this, these findings do not, and the authors need to do a better job of reconciling other high level recommendations on PA and these findings.

Finally, although more debatable, I am not convinced that what we need are detailed clinical measurements to elucidate the impacts of PA on these outcomes. Perhaps we just need large scale pop longitudinal studies. Even aspects such as BP are in some sense process measures if we are really interested in mortality and quality of life, so more focus on clinical measurements is arguably taking us even further from what we (well me anyway, as a public health person and not a physician) are interested in.
I think that with some serious consideration of how to use these elements of the data better, the paper could be much improved

Other comments:

Abstract: Presumably you didn't ascertain BP from a finger prick test
Maybe define in some way (METS etc) the cut offs for PA levels here
% differences between groups may be helpful in the abstract too

Methods: For those who are not familiar, more detail on the questions in IPAQ should be given

Results: Some non-standard use of English. Personaly I would avoid “on the other hand” and I certainly wouldn't say “exaggeration of diabetes” – for no other reason than it isn’t even clear what this means – I say I have diabetes, but I have a “normal” glucose value (?)

Discussion: Is quite a big claim to say have controlled for all potential confounders – this is almost never the case
Also you say your findings concur with Millett in that there is attenuation, but the Millett paper found positive associations with outcomes, where you didn’t. This is the main finding of your paper, which needs more more discussion. This needs to be explicitly addressed
And your conclusion is that we should promote PA among those with HTN or Diabetes – but again, you could examine this issue (are there benefits specifically among those with HTN for example) using the data, but you haven’t which is a shame

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I have no competing interests