Reviewer's report

Title: Physical activity as a moderator for the association between screen behaviors and BMI: a cross-national study of adolescents in 31 countries

Version: 2 Date: 6 October 2014

Reviewer: Franco Cavallo

Reviewer's report:

Re: 'Physical activity as a moderator for the association between screen behaviors and BMI: a cross-national study of adolescents in 31 countries'

Ole Melkevik Ellen Haug Mette Rasmussen BenteAnne Siri Fismen Bente Wold Alberto Borraccino Erik Sigmund Robert Balazsi Jens Bucksch Jo Inchley Margarida Gaspar de Matos and Oddrun Samdal

BMC Public Health

Research article

Reviewer: Franco Cavallo

General Comments

The paper is interesting and well written. It deals with an important component of adolescent behaviour, i.e. screen-based behaviours and physical activity, in their relationship with overweight and obesity, as expressed by BMI. The methodology is well described and the results clearly illustrated; the data-base comes from the well-known HBSC international survey, whose overall sample size is well above 100,000 subjects and over 40 countries are covered in Europe and North America.

The paper is therefore worth publishing in my opinion, with some minor integration/clarifications which the authors should easily implement in their manuscript.

Specific comments

Title: "Physical activity as a moderator for the association between screen behaviors and BMI: a cross-national study of adolescents in 31 countries".

it is inconsistent with the declared objective: “...we wish to explore whether exceeding two hours in one or multiple SBs is associated with BMI or risk for overweight in adolescents participating ...” . In fact, the title seems to assume a proved existence of the relation between SBs behaviours and BMI, and focus only on the 'moderator' activity of PA, while the objective points to demonstrating the association between SBs and BMI, and only in a secondary phase, to assess whether PA is a moderator of this association.

This contradiction must be clarified.

Results section: Following the same line of thinking, one would expect in then
result (and discussion) section data showing the association between SBs behaviours and BMI, and not just a description of this association (page 9, lines 10-15). Again, one does not understand whether this association is assumed as already proved (then there should be a reference for it) or is it the main objective of this paper, as declared before, and therefore evidenced with its statistical significance.

Discussion section: the first two par of this section and the first sentence of the third par are somewhat confusing and repetitive. It should just be said that a relationship between BMI and not meeting MVPA recommendations does exist in boys and girls, while this is different in the group meeting MVPA guidelines, then start discussing this one as the main finding.

In particular, the sentence “… Consequently associations between exceeding 2 hours daily in one or more types of SBs and BMI differs between adolescents who report to be sufficiently active according to international recommendations and those who report being less physically active… “ doesn’t make much sense as one doesn’t understand what is consequent of what.

Before the last sentence in pag 12 line 23-24, it could also be said that overweight children with high SBs may have been pushed to do PA just for that reason (our survey being cross-sectional, we cannot really know what’s the cause and what’s the consequence) or that there is no relationship between SBs and PA because these two behaviours are not conflicting in boys (which is more and more noted in the recent literature).

Conclusions: again I would underline that PA is a moderator of the relationship between SBs and BMI only when recommendations for MVPA are respected, but not when they are not respected.

Table 2: include in the table label the explanation on how CI were calculated (see pag 7 line 3-4).

The label should start with “Prevalence of screen behaviours …”
Table headings should include, under ‘boys’ and ‘girls’: ‘Overweight prevalence within the different categories’.
Table3: just for a sake of easiness of reading, I would put in bold all significant ORs.

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

As I'm PI of the HBSC survey in Italy I know and have been collaborating with many of the authors.