

## Peer Review Report

# Review Report on Social inequalities in adolescents' psychological and somatic complaints: cross-national trends between 2002 and 2022 and the role of societal changes

Original Article, Int J Public Health

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### EVALUATION

#### **Q 1** Please summarize the main findings of the study.

The authors used data from the Health Behaviour in School-aged Children (HBSC) study 2002–2022 survey rounds to test whether country-level income inequality, schoolwork pressure and internet activity impacted the trends in adolescents' mental and somatic health complaints. They used gender, age, family structure and family SES as individual variables, and GNI, social welfare, income inequality, schoolwork pressure and internet activity as country-level variables (and their two- and three-way interactions) as predictors of the trends in mental and somatic symptoms.

In my view, one of the most important results is the non-linear increase (with a very steep surge) in both types of symptoms between 2018–2022. I encourage the authors to discuss it in more detail. Another result I found very interesting is that social inequalities had a greater impact in countries or at times with larger schoolwork pressure. While the cumulative disadvantage hypothesis seems a viable explanation, I would be curious to read 1–2 sentences more on this link in the Discussion. In the same vein, explication of the result that internet activity and family SES interact in their impact on trends in psychological symptoms would be interesting. I would have expected that this might also influence trends in somatic symptoms.

#### **Q 2** Please highlight the limitations and strengths.

##### STRENGTHS

The authors analyse a relatively wide time period, which gives very instructive insight into how and why the frequency of adolescent psycho-somatic symptoms changed. The fact that they included schoolwork pressure and internet activity gives a lot of novelty to the approach and the findings.

##### LIMITATIONS

The authors are highlighting the factors that limit their findings. I would add here that the internet activity variable was derived from the non-parallel PISA study, as a proxy of social media use; it needs a justification here why HBSC's own social media use variable was not used.

#### **Q 3** Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

##### MAJOR COMMENTS

- The study is replicable to the reader working in a similar area. Further details should be added to assist those not experts in the stats to understand the importance of B-splines and sensitivity analyses. The latter sounds to be crucial in adding (or not) the three-way interactions; this should be explicated more.
- The statistical methods are adequate to test the hypotheses. I, however, remain to be convinced why using schoolwork pressure and internet activity as country-level variables is better than incorporating them as individual-level variables, given that individual variability in these might be much higher than across countries.

- It should be clearer from the outset how the authors understand and operationalize 'social inequalities', and how does that link with (country-level) income inequality. One might assume these are correlated; it would be beneficial if you pointed out why you don't expect it (given that you found no multicollinearity).
- Also, a stronger and more coherent reasoning is needed why you incorporate schoolwork pressure and internet activity in the analysis, and why do you anticipate these interact with income and social inequalities. This needs to be clarified in the introduction and the discussion as well.
- Justification is needed for using non-parallel PISA data on internet activity, even if it is that in HBSC no measures of internet activity was used in all survey years.
- At some points, the paper is hard to read and understand. Further sentences would be needed to make the text more accessible. In fact, the whole text would benefit from a thorough re-reading (preferably by someone who was not involved in the analyses) to make it more accessible. Below I will highlight some parts where I struggled to understand what the authors wanted to say, but I reiterate that the whole text should be carefully re-read and readjusted where needed.
- In the Discussion, I miss a reflection on the non-linear trends you observed in complaints. The change is very pronounced and seemingly follows the same pattern across SES groups. I wonder if the recent surge (as compared to the relatively smaller changes between 2002-2018) can be attributed to the COVID pandemic and/or other factors, including the mental health crisis and adolescents' increased introspection and self-labelling mental health disorders?
- The references are not in IJPH format.
- Please uniformize minus signs and reporting confidence intervals.

#### MINOR COMMENTS

- Abstract: First sentence is long and convoluted.
- Abstract: "Results:" heading is missing.
- Abstract: "Across countries" appears twice, and there seems to be a logical error within the sentence ("stable trends" vs. "differed").
- Abstract: "Only income inequality..." this sentence is also hard to understand, please reformulate.
- P.2., lines 37-38: The "accumulation" needs a bit of elaboration here, otherwise sounds unjustified.
- P.2., line 43: "Notwithstanding the above reasoning" is redundant.
- P.2., line 55: "overlooking" is not a right word here, as earlier trends analyses could not "overlook" later changes.
- P.3. lines 67-69: "over time" and "across countries" please reformulate the sentence to be clearer.
- P.3. line 93: Please resolve HBSC here, too.
- P.3. line 93: Please double check year, wasn't it 1983?
- P.4. line 102: The first sentence is redundant, as you are not using the whole database.
- P.4. lines 107-109: Suggest reformulation (no significant differences between excluded and retained participants)
- P.5. lines 133-134: Please elaborate on why the ridity mean was set at 0.5.
- P.5. lines 147-148: You need to reason why no original HBSC data/variable was used here.
- P.6. line 167: "Shifts" in what?
- P. 6. line 175: Please elaborate on B-splines for the non-stat-savvy readers.
- P. 6. lines 176-177: It feels this sentence should come later, after the models being described.
- P. 6. line 190: Please elaborate why the sensitivity analyses were conducted.
- P. 7. line 225: "Both" - you meant "Either"? (Also line 276)
- P. 10. lines 297-313: It feels redundant to reiterate the main findings in one separate block. You may want to highlight a main finding and interpret it piecewise.
- P. 10. lines 308-309: It feels the two sub-sentences contradict each other ("increased" vs. "declined"), please clarify.
- P. 10. lines 324-328: "Among the analyzed..." This sentence is a monster, please break it down to smaller chunks.
- P. 11. line 337: I am not sure "regimes" is the right word here.
- P. 12. line 374: You mean, "lower SES in later life"?
- Figures: Please clarify the scale of the y-axes.

PLEASE COMMENT

**Q 4** Is the title appropriate, concise, attractive?

The title is very long and convoluted. I suggest shortening it.

**Q 5** Are the keywords appropriate?

From the keywords, "adolescents' mental health problems" seems too long and complex. I suggest using "adolescent health" + "psychosomatic symptoms" or something similar instead.

**Q 6** Is the English language of sufficient quality?

The manuscript uses adequate language.

**Q 7** Is the quality of the figures and tables satisfactory?

Yes.

**Q 8** Does the reference list cover the relevant literature adequately and in an unbiased manner?)

The coverage and content of the citations and the reference list is adequate. Please note they should be reformatted to IJPH requirements.

QUALITY ASSESSMENT

**Q 9** Originality



**Q 10** Rigor



**Q 11** Significance to the field



**Q 12** Interest to a general audience



**Q 13** Quality of the writing



**Q 14** Overall scientific quality of the study



REVISION LEVEL

**Q 15** Please make a recommendation based on your comments:

Minor revisions.