Reviewer’s report

Title: Explaining gender differences in non-fatal suicidal behaviour among adolescents: a population-based study

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Reviewer: Susan Rasmussen

Reviewer’s report:

This study reports levels of self-report suicidal behaviour and suicidal thinking in a large sample of adolescents living in southern Germany. Whilst the topic of adolescent self-harm and suicide is of immense importance and large scale studies such as the current one are greatly needed, I have a number of reservations about the methodology and results which I will attempt to list below.

Major Compulsory Revisions

1. My main concern about the study revolves around the suicide questions. As these questions do not appear to take into account motivation, and are purely focussed on suicide (rather than including self-harm) I worry about what these results might actually reflect. In addition, when asking about suicide in this manner with no definition (to my knowledge from reading the paper) it is difficult to know whether the behaviours and thoughts being reported by the adolescents do indeed meet the predetermined criteria for suicidal behaviour. This is an issue which must be addressed by the authors, as it is currently not clear what the motivation was for the 8% who reported having engaged in suicidal behaviours while over 14% report suicidal thinking, i.e. was the motivation for the behaviour to die? The large scale studies on adolescent self-harm which have been reported over the last decade does suggest that it is important to ensure that the adolescents have clear definitions of what behaviours are being measured to avoid misreporting of behaviours. In addition, I would like further information about 1) whether online lifetime behaviours were included, 2) whether motivations were included in the questionnaire, and 3) whether methods being used were recorded? Without this knowledge, it is difficult to see how the study is adding to our current understanding of suicide.

2. The prevalence rates for suicide and suicidal thinking are not described clearly in the result section. I would expect to see a description of these prevalence rates in terms of number of people and percentages (and not just reported in the table). I am also wondering whether depression and anxiety should be controlled for in the subsequent analyses to ensure that the results are not affected by variations in mood. In general I struggled a bit with the result section and in particular with the interaction between gender and emotional/behavioural problems. I wonder if the authors can clarify how they calculated this interaction and whether this is the optimal method for understanding the relationship between these variables?
3. I also think that based on the issues reported in the introduction such as engaging in risk taking behaviour, and what we know about differences in lethality of suicide attempts and methods used, it would have been useful to include measures of these issues in the present study. I therefore feel there is a need for a clarification of the choice of methods included/excluded in the study.

4. More generally there is a fair amount of repetition of information in the discussion which could be cut to provide a more concise discussion of the findings. I also think the results would benefit from a consideration of how the outcomes of some of the larger studies looking at self-harming behaviours which have been conducted elsewhere, might relate to the current findings.

5. In relation to the tables it would be useful to include the p values as well, and considering the inclusion of very useful demographic details it would also have been of interest to report whether any of these factors are predictive of suicidal behaviour.

Minor Essential Revisions

1. Page 4: study population and design section: the final section on sample size is confusing and requires clarifications. The authors state that all 9th grade students were requested to take part but they have included data for 89%. What happened to the remaining 11%

2. Page 5: it would be useful with a section on sample size and power analysis in the statistical analyses component.

3. Page 6, lines 3/4: change sentence “The Bayes Information criterion (BIC) allows comparing models according to their estimated….”, to say “The Bayes Information criterion (BIC) allows comparison of models according to their estimated….”

4. Page 6, 3rd paragraph: change sentence starting “Females students had significantly higher scores in the scales withdrawn, somatic complaints, anxious/depressed…..” to “Females students reported significantly higher scores on the scales measuring withdrawal, somatic complaints, anxiety/depression…..”

5. Page 6, 3rd paragraph: following on from the above sentence, the end of that sentence requires clarification in terms of what is meant by ‘total score’.

6. Page 6, 3rd line from bottom: change the following sentence “This model is also the one with the smallest BIC and therefore the one that we should use…” to say “This model is also the one with the smallest BIC and therefore is the one that we should use…”

7. Page 7, 2nd paragraph: I don’t understand the sentence starting “The additional effect of gender to the emotional and behavioural problems…”. Firstly, it is a very long sentence, but it is also not clear what is being reported here.

8. Page 7, last paragraph: the final sentence starting “boys tend to act out their personal problems and therefore more likely to show…” should be changed to say “boys tend to act out their personal problems and therefore are more likely to show…”
9. Page 8, line 15: sentence starting “additionally, in case of problems, females tend more to communicating and help-seeking behaviours but also often show ruminative thinking and increased attention to these problems which consequently can lead to an impairment of their mental state and therefore is seen to be a cause for gender differences especially in internalizing problems by some authors” has to be rewritten. I think the authors are trying to say that some research has demonstrated that females are more likely to communicate their problems to others and to engage in help-seeking behaviours but at the same time they are also more likely to ruminate about problems they encounter which can affect their wellbeing. However, this is not quite clear and should be checked.

10. Page 8 end of 2nd paragraph: full stop after references should be removed

11. Page 8, final paragraph: the sentence starting “the main purpose of this study was to analyse...” should be rewritten to state the purpose more succinctly, i.e. the main purpose was to investigate any potential gender differences in emotional and behavioural problems and the extent to which these are predictive of adolescent suicidal behaviour/thinking.

12. Page 8, final paragraph: the sentence starting “our results clearly demonstrate that gender alone does only explain 2.3-3.7% of the information of non-fatal suicidal behaviour, while emotional and behavioural problems explain 23.2-30% of the information” should be rewritten to more clearly state what is meant by ‘information’. In addition the comma in 23.2 should be changed to a full stop.

13. Page 9, line 6: the sentence starting “overall the results of our study support the view that girls clearly are at higher risk for experiencing non-fatal….”, should be rewritten to say “overall the results of our study support the view that girls clearly are at higher risk of engaging in non-fatal….”

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests