Author's response to reviews

Title: Adolescents’ health and health behaviour as predictors of injury death - A prospective cohort follow-up of 652,530 person-years

Authors:

Ville M Mattila (ville.mattila@uta.fi)
Jari Parkkari (jari.parkkari@uta.fi)
Leena Koivusilta (leeko@utu.fi)
Tapio Nummi (tapio.nummi@uta.fi)
Pekka Kannus (pekka.kannus@uta.fi)
Arja Rimpela (arja.rimpela@uta.fi)

Version: 2 Date: 11 October 2007

Author’s response to reviews: see over
Dear Dr J. A. Le Good

Thank you for your e-mail including the comments on our manuscript entitled "Adolescents' health and health behaviour as predictors of injury death - A prospective cohort follow-up of 652,530 person-years".

We thank the reviewers for constructive criticism and comments. We have revised the manuscript according to the editor’s and reviewers’ suggestions. Our point-by-point responses below are given in italics in the same order as the suggestions were given in your letter.

We hope that the revisions made and arguments given are satisfactory and that the revised manuscript is now acceptable for publication in the BMC Public Health.

We look forward to hearing from you soon and are willing to discuss our paper further whenever needed.

Yours sincerely,

Ville Mattila, MD, PhD
Our point-by-point responses below are given in *italics* in the same order as the suggestions were given in the comment letter.

**Editor’s comments**

We would be grateful if you could address the comments in a revised manuscript, and in particular, calculate the statistics after omitting the 14 cases where there was an unknown cause of death, and provide a cover letter giving a point-by-point response to the concerns.

*Thank you for your positive comments! The 14 cases have been omitted and statistics re-calculated as suggested. Also, the tables have been corrected accordingly. We have prepared a cover letter with point-by-point response to the concerns.*
Reviewer Comments:

Reviewer: Anders Hjern  
Reviewer's report:  
General  
This is an impressive study made in a quite unique dataset. The article is concise and has a relevant structur. The conclusions have important public health relevance and the statistical methods used are adequate. 

Thank you very much for your positive opening words!

-----------------------------------------------------------------------------

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

-----------------------------------------------------------------------------

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)  
The quality of the English language is not sufficient for publication. There are a great many strange expressions, improper use of adjectives etc. In several places the language is so poor that it is difficult to understand the meaning. A favourite here is the last sentence of the second paragraph: "Comprehensive strategies aiming at the healthy promotion of adolescents most likely contribute to injury deaths, too." There is also signs of a poor proof reading with regards to references which are usually added after a . and not before. The results section in the abstract could be more concise.  

Along with other requested changes, the language of the entire manuscript has been revised, including the abstract. References have been also checked as suggested.

-----------------------------------------------------------------------------

Discretionary Revisions (which the author can choose to ignore)  
What next?: Accept after minor essential revisions  
Level of interest: An article of importance in its field  
Quality of written English: Needs some language corrections before being published  
Statistical review: No, the manuscript does not need to be seen by a statistician.  
Declaration of competing interests:  
I declare that I have no competing interests.
Reviewer: William Pickett
Reviewer's report:
General
This is an interesting paper. I have mixed feelings about this manuscript and would ask the authors to consider these points as constructive suggestions. On one hand (positive), the analysis, its construction, and its presentation are excellent. The results are reported in a very professional manner. On the other hand (negative), the theoretical underpinnings of this manuscript are very weak, and you have ignored a large body of existing literature in the development of your arguments and their discussion. For example, to suggest that studies of risk factors for injury are scare and limited to socioeconomic studies is just not true. There is a huge body of literature on social and lifestyle determinants of injury. You have just chosen to ignore it (or are unaware of it). Second, the analysis is not based upon an underlying theory, and this would have helped.

Thank you very much for your interesting comments. We have now attempted to improve our literature review. The authors agree that the association between health and health behaviour and injury risk have been previously described (now cited on page 3, para#1). However, the authors were unable to find longitudinal studies on health determinants and injury deaths among young people. If the Reviewer has some specific study in mind, could You be so kind and provide the citation. Further, our underlying theory is that health and health behaviours have an effect on adolescent injury risk independently from socio-economic status (page 4, para #1)

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
1. I would suggest that the literature review is incomplete and misleading. Your contention that most epidemiological studies on risk factors for injury deaths surround socioeconomic risk factors is not true. There is a great body of literature on health behaviours and injury risks out there ... you just haven't cited much of it. This review needs to be re-written with greater attention to the existing body of evidence. Further evidence of your lack of consultation with the existing literature is in the discussion, where you do not provide citations for most of the points that you are raising.

   The literature review in the introduction has been edited as suggested. We now point out that there are also studies concerning behavioural risk factors for injuries, although longitudinal studies concerning health behavioural risk factors of injury deaths among young adults are scarce. The discussion has been elaborated correspondingly and relevant citations added as suggested.

2. Your analysis is quite well done, but it would be strengthened by basing it upon an underlying theoretical framework; either social or biological in nature.

   Our theoretical framework is based on our previous findings that socio-economic status is not strongly related to injuries in Finland. We hypothesized that health compromising behaviours in adolescence (such as drinking and smoking)
and competitive, risk taking behaviours are independent risk factors for injury death in young adulthood (page 4, para #1).

3. Your analysis does not consider the fact that many of the risk factors under study will change over time, and that these measures of exposure for different times are not available for analysis (or are they?).

   Due to the study setting we do not know how the exposure to risk factors has changed over time. However, there is evidence that health behaviours adopted at adolescence often persist into adulthood. Moreover, our aim was to explore and assess such risk indicators that would enable identification of injury-prone persons already in adolescence.

4. The finding that drinking and smoking are associated with risks for injury is not too novel. These behaviours are known to cluster and are markers of an underlying lifestyle that leads to major injury risks. Several people have looked at substance use and its effects on risks for injury. Some have modelled these behaviours together (i.e. in scales) instead of as individual risk factors. Discussion of your results should be made in light of the existing literature.

   We now cite studies that have shown the association between substance use and injury death risk as suggested. The authors agree that the association between injuries and drinking and smoking is not too novel, but originality of the present study is that this association has not been previously confirmed in a longitudinal study setting among adolescents with an average 11 year follow-up.

5. The conclusion that you are not going to base any intervention program on the findings is conservative; surely there is some randomized trial or other evidence that could be cited surrounding (e.g.) drinking countermeasures to prevent injury occurrence.

   We now propose interventions to those who have been hospitalised due to alcohol-related injury and cite a randomized controlled trial by Gentelillo and co-workers (page 12, para#1).

6. It would be helpful to examine the consistency of the risk relationships observed for specific types of injury (beyond intentional and unintentional). Your approach is analogous to putting all cancers together and looking for "risk factors for cancer". You may find stronger relationships when you examine individual types of injury death as outcomes, although power may be limited for some analyses. It may also be helpful to explore differences in the relationships examined by sex.

   We thank the Reviewer for this interesting point. We did new analyses separating injury death outcomes, but since injury-related deaths are so uncommon among our study population (57,407 persons, mean follow-up time 11.4 years) statistical significance was not reached. In addition, as the number of injury deaths in women was 66, statistical significance was not reached when analysed by sex. However, as power sufficed for separate analysis of risk factors for alcohol-related injury deaths, these results were added to the paper (page 10, para#2).

Overall, I would encourage you in that I think that your analysis is robust and compelling, it is nicely presented, and the results have some merit. However, the manuscript would benefit from a more sophisticated theoretical base, more
in-depth consideration of existing literature, and some further sub-analyses.

Thank you for your constructive comments!

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
None

Discretionary Revisions (which the author can choose to ignore)
None

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

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 declare that I have no competing interests.
Reviewer's report
Title: Adolescents' health and health behaviour as predictors of injury death - A prospective cohort follow-up of 652,530 person-years
Version: 1 Date: 4 September 2007
Reviewer: Matti Hillbom

Reviewer's report:

General
In a prospective cohort of 57,407 Finns aged 14 to 18 years and followed for an average of 11.4 years the authors observed 312 injury deaths. Recurring drunkenness and daily smoking were significant risk factors for injury death, irrespective of whether the index injury was intentional or unintentional. Poor health and socioeconomic background did not predict injury deaths. They conclude that injury prevention interventions may benefit from promoting healthy lifestyle in adolescence.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Death Register data of the non-respondents should be given more accurately. There were 14,971 (20.7%) non-responding cohort members. How many intentional and unintentional injury deaths occurred among them? Was the distribution by injury type similar to that of respondents? The last paragraph in Statistical methods should be provided by additional data and removed to the Results section. It is important to know whether bias due to non-respondents could influence the observations. This should be discussed.

   *Injury deaths among non-respondents are now more thoroughly presented in the results section (page 9, para #2) as suggested. In addition, this issue is discussed (page 11, para#3).*

2. In the Methods you should tell us whether you used mailed questionnaires or did you contact the cohort members by phone etc. You should also describe more accurately what is meant by occasional drinking (how often and did occasional drinkers drink to intoxication?), recurrent drinking (how often?) and recurring drunkenness (daily, several times a week, every week-end etc.?). How the questions were formulated to obtain the data?

   *The Adolescent Health and Lifestyle Survey is collected via mailed questionnaires (page 5, para#1). The multiple-choice questions have been added together with more accurate description of drinking style. Drinking style is now more accurately described as suggested (page 7, para #2). The questions were multiple-choice questions. The questions are available in the internet (page 5, para#1).*

3. You should calculate the statistics in tables after having omitted those 14 with unknown cause of death and correct the tables.

   *The 14 cases have been omitted and statistics has been re-calculated as suggested by the reviewer and the editor. The tables have been corrected (omitting these 14 cases did not affect markedly either HRs or CIs)*

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Page 6: Why are not all injury-based deaths autopsied in Finland?
Basically all injury-based deaths should be autopsied in Finland, but for various (usually unknown) reasons there are always single cases where this did not occur. Nonetheless, the Finnish autopsy percentage (94-97%) is one of the highest in the world.

2. Page 8 (Table 2). Should be (Table 3)
   This has been corrected.

3. Page 9: Do not use males and females (this is not an animal experiment). Use instead men and women.
   The words “men” and “women” have been used as suggested.

4. Page 9: What are the four health variables?
   This has now been clarified (page 9, para#3).

5. Page 11, first paragraph, last sentence. Could be better to add to this sentence “…irrespective of injury type…”
   The sentence has been edited as suggested.

6. Page 12, third row: “…are behaviours that persist into adulthood” Add reference 17 at the end of this sentence.
   The reference 17 has been added at the end of that sentence.

7. Page 12, second paragraph: what phenomenon?
   The paragraph has been edited based on comments by two of the reviewers.

8. Table 3. Unintentional injury deaths should include only 136 subjects because 14 of unknown cause do not belong to either intentional or unintentional groups.
   The number of unintentional injuries has been corrected.

Discretionary Revisions (which the author can choose to ignore)
1. The causality of drunkenness to injury risk is well established. Concerning injury deaths in this material, the authors should show how many of those in each injury category were intoxicated by alcohol (or drugs) at death. Such data will easily be drawn from autopsy reports.
   The numbers of alcohol-related deaths in each injury category have now been added to table 2 as suggested. In addition, hazard ratios have been calculated for alcohol-related deaths separately (page 10, para#2).

2. Surprisingly, the authors found daily smoking to predict injury death. It is well-known that there is a close correlation between smoking and drinking. Did you test for interactions? How do you explain daily smoking as a predictor for injury death among relatively young people?
   Based on our data and previous literature it is known that alcohol and smoking have interactions. However, even when put into same model they were significant, although their HRs decreased (data not shown). The authors suggest that persons smoking are characterized by other health compromising and risk taking behaviour, which may contribute to increased injury risk (page 12, para#1).

3. Did you observe that those who participated in organized sports were
non-smokers or abstinent more often compared to others?

*Those participating in organized sports smoked less (12% vs 27%) (p<0.001)*

*but no difference in their drinking style was seen (recurring drunkenness 16% vs. 17%) (p=0.26).*

**What next?:** Accept after minor essential revisions

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests.