Reviewer's report

Title: A Systematic Review of Post-Deployment Injury-Related Mortality Among Military Personnel Deployed to Conflict Zones

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Reviewer: Hollie Thomas

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General

Overall, the article is clearly written and the question is well presented. However there are several fundamental areas that require clearer definitions, further information or careful scrutiny to ensure the methods are appropriate and the discussion is well balanced.

Major Compulsory Revisions

1. The description of the methodology of the systematic review is severely lacking in detail. The authors give no indication of how they arrived at their final count of 20 included studies. Ideally a reader would want details of:
   - How many references did the search strategy identify initially?
   - Of those references, how many abstracts were obtained and read?
   - Who read those abstracts, 1 or 2 authors?
   - If read by more than one author, how did authors agree on inclusion vs exclusion?
   - What level of agreement was achieved eg kappa statistic?
   - What were the main reasons for excluding studies and number of studies excluded for each main reason?

2. Results – Injury-related mortality among Vietnam veterans: I think the authors need to carefully re-word their results in order to report the findings of proportional mortality and mortality rates separately. Currently they state “most investigations showed that injury-related mortality was elevated in veterans who served in Vietnam compared with those that did not.” However this statement seems to be referring to results from both the studies that quote proportional mortality and mortality rates. It is inappropriate to say injury-related mortality was elevated in studies quoting proportional mortality because you do not know that, all you can say is that the proportion of injury-related deaths was greater in those veterans. That might be due to fewer deaths from other causes.

3. Results- throughout the results section the authors seem to pay little attention to the confidence intervals they quote in the results tables. They tend to concentrate on the point estimate which for example might suggest a slight excess of deaths among conflict-zone veterans but then provide no appropriate
comment on whether this association was independent or not (many CIs quoted cross the null value of 1.0 and therefore do not support an independent association).

4. Meta-analysis – The authors have correctly not combined the proportionate mortality data in the meta-analysis, but their reasoning seems to be because they found no method of doing so. It should be clarified why it would be inappropriate to compare this estimate between samples (i.e. for each sample you only know number of deaths as a proportion of total number of deaths, you do not know total sample/population size as the denominator).

5. Meta-analysis – I question the relevance of actually carrying out a meta-analysis at all given the small number of studies (2 studies per conflict zone per follow-up). Even dividing into short and longer follow-up is misleading when, for example, shorter follow-up amongst Gulf veterans is described as 3 to 8 years when in fact one study has a follow-up of 3 years and one study has a follow-up of 8 years. Also the cut-off points for short and longer follow-up amongst the Gulf veterans are not discrete with the boundary of 7 and 8 years crossing the categories.

6. Either with or without a meta-analysis, the authors should remember to highlight that the evidence is coming from two studies of Vietnam veterans and two studies of Gulf War veterans, both in the main text and abstract. Admittedly the studies of Gulf War veterans do contain all the US and UK service personnel deployed to the Gulf providing strong evidence, but this cannot be said of the samples of Vietnam veterans.

7. The authors would be advised to clarify how their results relating to short-term follow-up of Vietnam veterans differ from those quoted by Boyle et al 1989 Epidemiological Reviews 11, 1-27. I'm aware that those authors include data relating to mortality amongst Vietnam veterans.

Minor Essential Revisions
None

Discretionary Revisions

1. Methods 2nd para: the quoted results from Kang and Bullman demonstrate little selection bias between deployment to non-conflict areas versus non-deployment but cannot be directly related to the comparisons used in this review which are between deployment to conflict areas versus non-deployment. Can the authors provide any helpful comment on this?

2. Results 1st para: it would be helpful to state in the text how many studies related to Vietnam War veterans and how many to Gulf War veterans. Similarly it would be helpful to know early on in the section how many studies involved US, UK or Australian veterans. It would also be helpful to know exactly how many samples were studied, i.e. highlight the extended follow-up of same samples. I think all of this summary information would help readers understand the nature of
the data.

3. Results – Methodological Quality Rating: the authors might wish to highlight that the retrospective cohort investigations scored more highly in general than the proportionate mortality investigations and they might wish to provide a mean score for each group of studies.

4. Results - Injury-related mortality among Vietnam veterans, last para: it would be helpful to the reader to point out that the level of all injury related mortality seems similar amongst men and women, but in particular the mortality rate related to motor-vehicle accidents was higher in women than in men.

5. Results – it might be helpful and informative to readers for the authors to calculate and present the mortality rate difference, i.e. to present the actual number of excess deaths from external causes that would be due to deployment. Even if a mortality rate is greater among deployed veterans, the actual number of attributable deaths might be relatively small per 100,000 person years for example.

**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