Reviewer's report

Title: Lack of a Healthy Soldier Effect in Veterans of U.S. Military Service in Iraq and Afghanistan

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Reviewer: Ron Spiro

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Population health metrics
Lack of a healthy soldier effect …
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This paper examines the ‘healthy soldier effect’ (HSE) in recent veterans. HSE is a variant of the healthy worker effect, applied to soldiers, who enter the military based on selection criteria generally ensuring good health and access to care. Previous studies have examined HSE in veterans of previous wars; I'm not sure any have examined this yet in the recent war.

Major issues

While the topic is interesting, I have a couple of reservations about this paper. First, the multiple samples weren’t clearly described; second, it may be the case that its too soon to evaluate the HSE for total mortality, and without specific COD, the conclusions are unlikely to hold over time.

1. The Abstract suggests 3 groups: VHA enrollees (2002-2011), a subset of VHA enrollees who did not use the VA, and a DOD sample. In the paper, its seems the VHA enrollees were divided into 2 groups; those with and without clinical contact (the N's of each should be reported). In the Figure and the Tables, it seems that the first group, VHA users, were omitted – perhaps they should have been included as a 3rd group?

2. As for the second reservation, it’s likely that the causes of death observed to date are a limited set of possible COD’s, and that over time, it would be interesting to know if, as seemed to be the case for Vietnam vets, the primary causes of early death within the first decade or two of followup, were external causes (e.g., MVA, suicide, accidents), whereas after 3 or 4 decades, various disease-related conditions (e.g., heart disease, cancer) came into play differentially between veterans and non-vets, and within veterans depending on deployment. A greater recognition of this limitation would be useful.

3. A number of factors that might alter the relations observed were not fully explored here: e.g., multiple deployments were likely among many troops, and may have interesting effects on near and long-term mortality. In recent deployments by US armed forces, the use of Guard and Reserve troops has increased, and in many ways they can be quite different from Active duty troops...
(e.g., older, more likely to be married with children). Thus, it might have been useful to contrast these two subgroups of the military force. While new battlefield technologies have resulted in lower death rates, the number and types of wounds/injuries sustained may have implications for long-term health. These should be considered.

4. The notion of ‘healthy warrior’ should also be considered. Among troops who are in the military, it's often the case that some are selected for deployment and others are not. I believe this issue was discussed in several papers in American Journal of Epidemiology in 2008/09, e.g., Jennifer Wilson.

Minor issues
1. The age range for VHA is noted (p. 7) as 18 to 72, but what is the range for DOD?
2. Deployment overseas, and deployment to combat zones are important factors to consider in relation to mortality.
3. Page 9, 4th line, should Hispanic be non-Hispanic (see the Table)?
4. Next para, 5th line, “those 24 and younger” – looks like those 40-72 were also high?
5. Given that the VA cohort had no VA clinical contact, (a) we don’t know about non-VA clinical contact, and (b) we don’t know about clinical contact among the DOD cohort.
6. Page 11, next to last line, what is the basis for inferring “long-term” military service – is this in reference to the length of an individual’s service?
7. Page 12, while women might not have had official combat status, the nature of this war was such that any woman deployed was likely to have been exposed to attacks or their aftermath; also, was any consideration given to MST?
8. In the Figure, I think the horizontal arrows should go to the right, to indicate as cases move down the chart, these move OUT of the path into exclusions, deaths, etc. Except for the “deaths” added back into the VA cohort.
9. Table 1 – why are some entries in bold?

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

Quality of written English: Acceptable

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