Author's response to reviews

Title: Challenges of Self-Reported Medical Conditions and Electronic Medical Records among Members of a Large Military Cohort

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Author's response to reviews: see over
Editors
BioMed Central Medical Research Methodology

Dear Editors,

Enclosed please find our revised manuscript “Challenges of Self-Reported Medical Conditions and Electronic Medical Records among Members of a Large Military Cohort.” We appreciate the opportunity to respond to reviewer comments and all authors agree this revision has improved the clarity of our objectives in the original manuscript. We have submitted a version of the revised manuscript with tracked changes as well as a clean version of the manuscript and this response letter. Our responses to each of the reviewers’ comments (in bold) follow below:

Reviewer's report
Title: Challenges of Self-Reported Medical Conditions and Electronic Medical Records among Members of a Large Military Cohort
Version: 1 Date: 21 January 2008
Reviewer: Lisa Iversen

Reviewer's report:
Review of 'Challenges of Self-Reported Medical Conditions and Electronic Medical Records among Members of a Large Military Cohort' General comments: This is a well-written interesting paper. Improvements could be made particularly by a wider discussion of the implications of the findings.

Major Compulsory Revisions
1. It would be helpful to know how many military personnel were originally invited to participate in the first panel of the Millennium Cohort and how those invited compare to those who actually participated in terms of demographical information and health status. This will allow some understanding of how generalisable the cohort is to the wider population of US military personnel.

We appreciate this comment as we have spent considerable time investigating potential biases in the Cohort. We have added much more description of the invited sample and references in the first full paragraph of the methods section.
2. The authors should explain why the particular 38 conditions were chosen. For instance the cohort was asked about asthma but not about other atopic conditions such as hay fever or allergic rhinitis. I also wonder why in such a young cohort the authors have chosen to ask about a number of conditions associated with older age.

The focus was on more serious diseases. At baseline, 46% of subjects were age 35 and older. With the planned 21 year follow-up, the majority of the cohort will be over the age of 50, increasing the likelihood of many of these targeted conditions of interest occurring. We have added more explanation to the first paragraph of the “Medical outcomes” paragraph on page 6.

3. To help interpret the findings, Table 2 should present the 95% CI associated with the prevalence figures. Although the prevalence figures on the whole are higher when derived from self-reported information compared with electronic records for many of the conditions the proportions will not be statistically different.

This is a good point and will give the reader an idea as to whether the prevalence of self-reported differs from the prevalence of electronically recorded. We have made significant revisions and included 95% confidence intervals for the prevalence estimates of self-reported medical conditions in Table 2.

4. The authors need to present a more convincing argument that positive agreement increased with length of service illustrating that self-reported diagnoses are likely to be reflected in electronic medical records given enough opportunity for capture in health encounter data. Length of service must as the authors acknowledge be related to ageing which in turn must be related to the prevalence of a number of these conditions.

This is a very good point that the reviewer makes. We interpret the reviewer to be requesting information on duration of service in relation to age. We now report this in the paper, as there was a correlation of r=91.4% between age and service duration. Further, we are reporting on the degree of agreement between two different data sources that we believe will be better given more time for ascertainment, and not because the prevalence of conditions may increase. The choice to use the positive and negative agreement measures vs the more traditional kappa statistic was made after much consideration to the problem of low prevalence of some of these conditions. Additionally, to make the analysis not vulnerable to prevalence we needed a measure calculated independent of prevalence and chose the positive and negative agreement measures presented in this paper. We have added further discussion to this important point on page 15.

5. Have the authors considered the possibility that in conditions where an individual might be likely to make a self-diagnosis and perhaps manage the condition using over-the-counter medications might account for the discrepancy between self-reported and electronic medical records data? For example, the migraine headache and the bladder infection results might reflect an element of this.

This is a very good point. It is not possible to know if an individual self-diagnosed and/or managed a condition such as migraines without consulting a healthcare professional. We have included additional discussion to this limitation at the end of page 13.
6. The authors should suggest instances where they would use the different types of information. For example, self-reported information appears to be sufficient for ruling out history of a particular condition (reflected in high negative agreement values) but for studies of the true prevalence of a condition you might want to use an objective measure of the condition (since we know that medical records are not a gold standard) etc. Such a discussion putting their findings in context would strengthen this paper.

This is a great suggestion that we agree will help strengthen the paper. We have included discussion on page 17, paragraph prior to the summary/conclusion paragraph.

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. Table 3 footnote requires amending or further explanation, the conditions included appear to be 3% or greater (not 5%) of percentage of self-report of the cohort.

We thank the reviewer for this comment and have revised the footnote.

Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

1. It would be useful so see length of service information as part of the demographic and military characteristics presented in Table 1.

We have now included length of service information as part of the demographic and military characteristics presented in Table 1.

2. Mean age and mean length of service for the study population and for those who reported at least one condition vs. those without at least one condition would be a useful addition to the Results text.

Good point, we have included this information in the discussion section.

3. Figure 2 does not contain all the conditions listed in Table 3 - the authors should provide their reasons for this decision.

We agree that this was confusing and have revised the legend of the figure as well as the last paragraph of the results section.

4. The authors need to be careful during the Discussion. Early in the paper they argue against using kappa since it is dependent on prevalence, but on page 11 they discuss that given the low prevalence of conditions it was not surprising that negative agreement was quite high which suggests a similar dependence on prevalence.

We did not mean to imply that negative agreement is dependent upon prevalence and have revised this area of the text.
Reviewer's report
Title: Challenges of Self-Reported Medical Conditions and Electronic Medical Records among Members of a Large Military Cohort
Version: 1 Date: 30 January 2008
Reviewer: Liset van Dijk
Reviewer's report:
General
This paper covers an interesting methodological problem: the comparison of self-reported data with electronic medical records for a wide range of diseases. However, I have the idea that the authors do not fully use the fact that they have data on such a wide range of diseases. Moreover, I think that the question that was posed in the questionnaire limits the possibilities to compare the self-reported data with the electronic records. I will explain this in more detail below.

Major Compulsory Revisions

1. The way the question on self-reported medical conditions is posed (has your doctor or other health professional EVER told you that you have any of the following conditions) makes it very hard to compare data of all diseases with the electronic medical records. For example, what if I had sinusitis when I was a child. I will report I have had a sinusitis. However, it will not show up in the medical records. I think the comparison between the self-reported conditions and the electronic medical records can only be made for chronic diseases. For acute complaints it is hard, even for those who are in the military service for over 16 years (so stratifying does not solve all problems, especially not for acute problems). I would suggest to leave out all acute complaints and focus on the chronic complaints. At least the authors should pay much more attention to this issue in the discussion.

This is a good point and we agree with the reviewer that many of these acute or transient medical conditions may have happened in childhood or prior to being in the military and having military healthcare. To better describe these differences, we have significantly revised the tables to differentiate chronic diagnoses and acute or transient diagnoses as much as possible. We have also revised the results section based on these table revisions and added to the discussion section that this investigation of chronic diagnoses may be of greater value due to the limitations of acute disease ascertainment.

2. The authors discuss the results methodologically. The discussion would gain strength if they would also look at the results for the different diseases and reason why the results for
certain diseases were found and why this may differ for different diseases. The strength of their study is that they are able to do that. Asthma for example: it is possible that a person has been diagnosed asthma as a child, but that s/he does not have asthma as an adult. For kidney failure requiring dialysis one can imagine that a person really know when s/he has that. That would imply that there is underreporting in the electronic medical data. Methodological problems could as such be illustrated with the results for certain diseases. For example for some diseased the translation from self-reported diagnosed to ICD-9 code is easier than for others: did that affect the results? How? Could that be illustrated with figures for these diseases?

This is a very good point the reviewer makes. We have added quite a bit more discussion of this concept on the bottom of page 12 and top of page 13.

Minor Compulsory Revisions

1. For a non-American non-military reader some parts of the paper are hard to read. Some information could be left out of the paper, for example the deployment experience to Southwest Asia, Bosnia, since it is not used in the paper.

As suggested, we attempted to remove information such as “Southwest Asia, Bosnia, and Kosovo”.

2. How complete are the medical record data from the three sources used? And is all care that military people use included in the military databases?

While on active duty, service members have free and easy access to health care. Since these persons have ready access to essentially free medical care in Defense Department facilities and they seldom seek medical care outside the Defense Department health care system. However, this limitation is more appropriately discussed in the discussion section, page 16.

3. As I read the paper, the survey was held before the idea to perform this study (to link self-reported data with medical records) evolved. The paper would benefit from mentioning this explicitly.

The original intention of the Millennium Cohort Study was to capture self-reported mental and physical symptom and health conditions from a large population-based military population and link with the multiple electronic medical data sources in the military health care system (Gray, et al.; 2002). We have added more clarity to the methods section.


4. The methods section is long and contains much information on what was not done. I understand why the authors chose to do that (to explain their choices). However, it would be more clear if only the method chosen would be described. The authors could put the other information in an appendix, for those who are interested to read it.
We appreciate this comment. The significant internal debates over the correct statistical methods to use in this study made us realize that others would in turn question our selection. It is for that reason that more information was given that does not describe the methods we used, but rather some of the reasons why certain methods were not used. We further think it important to include given the readership of this methods journal. We have reviewed and revised the methods in an attempt to more concisely present the material.

5. Table 3 is much easier to read than table 2. Why not including all diseases in table 3? Also because the high values for negative agreement are mainly caused by the low prevalence of the diseased included in the study.

More clarity was necessary as both reviewers noted this point. We have revised table 2 based on previous comments by the reviewer and revised the footnotes to more appropriately describe the table. The choice of the positive and negative measures of agreement over the more traditional kappa statistic was done based on the low prevalence of many of these conditions and the significant dependence that kappa has on prevalence.

6. The discussion section is very long. I would focus more on the main problem (the lack of concordance between the time interval asked for in the questionnaire and the time interval for which medical records are available). And as stated before, the discussion would gain from a better connection between methodological arguments and examples for specific diseases.

We have revised the discussion as suggested by the reviewer.

**Discretionary Revisions**

1. In the methods section more attention could be paid to the question how the representative the included cohort is compared to the first panel. That is mentioned in the Discussion section, but it would be better in the Methods section.

We agree with this comment and have expanded the methods section to describe how representative the cohort is to the rest of the military.

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

**Declaration of competing interests:**

I declare that I have no competing interests
We sincerely appreciate the opportunity to respond to the thoughtful comments and suggestions provided by the reviewers. As corresponding author, please contact me if I can provide any additional information.

Very sincerely,

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