Reviewer's report

Title: Verifying causes of death in Thailand: rationale & methods for empirical investigation

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Reviewer: Elisabeth França

Reviewer's report:

The focus of this study is to present the general methodology and some results of a comprehensive study of registered causes in a nationally representative sample of deaths in Thailand in 2005. It was designed to investigate approximately 10,000 deaths that occurred in hospitals (35%) and at home (65%), and derive “correct” estimates of mortality by sex, age and cause. It is of great interest for an international audience, especially for the health decision-makers from developing countries, which have problems of quality in cause of death attribution. It is also of great interest as a scientific article in its field because it presents the rationale for verifying causes of death, and, more importantly, for using the findings to derive corrected estimates of leading causes of death.

I read this article with great interest and I compliment the authors for their investigation and the use of adequate methodology in such an important public health issue as the quality of mortality statistics in a developing country. I have only a few specific comments to address. The most important is that the reader should be clearly informed right up at the Introduction section about the importance of the overall project which was described in this paper and in three other papers already submitted. I suggest to include one phrase in the second paragraph to show why it was important to conduct …"a comprehensive field research project…"

Minor Essential Revisions

1. As pointed out above, in the whole paper it is important to differentiate the overall project and the study which is the object of this paper. Sometimes I was a little confused by the use of identical words throughout the text.

2. In the Abstract Results, please consider including the major differences between the percent specific cause of death in vital registration and after adjustments for misclassification and VA (verbal autopsy) validation findings. I think the authors could have done a better job in discussing these kinds of results in a paper such as this, which presents the methods for investigating causes of death.

3. At the end of the first paragraph of the Introduction on page 3, please check the presentation of the objectives of the overall project because the correction of estimates of cause-specific mortality for Thailand was not included.
4. In the first paragraph of the Introduction on page 4, the authors should indicate the references of the three other articles of the overall project.

5. On page 9, first paragraph, I would appreciate a more specific and detailed description of the methods used to adjust for biases for VA diagnoses of individual causes of death. This had important implications in the results of proportionate mortality for some causes of death as shown for HIV/AIDS for males in Fig. 5. So I think it would be useful to put this issue into context for readers who would not read the VA specific paper submitted.

6. Some of the most interesting themes in the manuscript can be found in the items on “Data collection and processing” and “Data analysis” of the Methods section, but in general the presentation needs to be more informative for the average reader. For example, on page 13, first paragraph, it is mentioned that to ascertain the cause of death for deaths in health facilities two independent sources were used: the medical record and the VA cause of death. At the first instance I was curious about the procedure used when there is no agreement between them but this was mentioned only in the second paragraph of page 14. On the other hand, in the first lines of page 14 it was mentioned that underlying causes were available from three sources, the two mentioned earlier and also from the vital registration system. I feel that the description of these topics could be improved and please consider being more specific on the description of Figure 2, which is summarized in only a few phrases at the end of the second paragraph on page 13.

7. I was a little confused by the choice of the comparison of the proportionate distributions of registered causes of death on the sampling frame (n=395374) with the sample drawn for the study (n=11984) and the sample recruited (n=9644) as shown on Table 2 to evaluate if losses to follow up could affect the generalizability of the study results. I assume that the cause of death considered in the recruited sample is the original cause of the vital statistics but it would be good if this could be specified. Also on this topic, I was curious to know if there were any important differences in the age and sex distributions between the sample recruited (n=9644) and the losses (n=2340) as had occurred with the distribution of the study sample across provinces pointed out by the authors on page 15, last paragraph.

8. Finally, please consider emphasizing and discussing the steps of the data processing and the analytical plan presented in figures 2 and 3. A small point to mention is that they could become more comprehensible if some intermediary boxes with further information were included, especially at the end of the figures.

Discretionary Revisions

1. Maybe the sub-title “Study objectives” (p. 8) could be removed and the text included in the precedent sub-title “Rationale for current research”.

2. I am not sure if Figure 1 is really essential for the paper. If so, the authors
should differentiate the regions and point out in the map which provinces were selected for the study.

3. Page 16, last paragraph: the first four lines could be omitted.

Level of interest: An article of outstanding merit and interest in its field

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.