Reviewer’s report

Title: The burden of premature mortality in Thailand, 2005: new estimates from corrected vital registration

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Reviewer: Farshad Pourmalek

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The burden of premature mortality in Thailand, 2005: new estimates from corrected vital registration

High proportion of ill-defined causes of death in Thailand’s death registration system is an important issue being addressed by this study, yielding applicable results for Thailand and similar countries. Clarifications listed below are needed.

The study uses a number of input information sources and estimation methods and in turn, is part of a bigger group of studies. In the meantime, some of the methods used in the study are not described even shortly, which precludes swift understanding of the reader audience. For some other parts of the methods, the reader is referenced to inaccessible citations. Yet other methodological items remain referenced to citations but without general description of the method outline.

Major Compulsory Revisions

1. Page2, Abstract, Methods: “A nationally-representative sample of 12,000 deaths in 2005/06 was selected and verbal autopsy interviews were conducted for almost 10,000 deaths.” Explanation is needed - in Methods section - about the reason for not performing verbal autopsy interviews for 2000 deaths and how their similarity (versus systematic difference) with the other 10000 deaths was assessed. The 12,000-deaths sample is not mentioned in the manuscript text, but the sample is referred to as a 10,000 deaths sized sample (in page 3, second paragraph).

2. Verbal autopsy procedures need short description in this paper.

3. Page 2, Abstract, methods: “Verbal autopsy procedures were validated against 2558 cases for which medical record review was possible.” Short description of methods and results of this validation are needed.

4. Page 3, last paragraph: The detailed study design, methods and findings are described in previous articles in this series. [4-5,7] The three cited studies are not published and accessible. Short description is needed in this paper about what is the reader expected to know from referring to these three studies in order to read and judge about the current study.

5. Page 4, last whole sentence: “The SPC is a nationally representative sample of about 85,000 households conducted mid-decade since the mid 1960s.” Short description is needed for sampling method of the ‘Survey of Population Change’
6. Page 4, first sentence: “The two key objectives of this research were to (i) understand the likely patterns of misclassification by cause in each setting that result in the high proportion of ill-defined deaths observed in the registration data; and (ii) to determine the validity of diagnoses for deaths that are classified to specific causes.” Please summarize the research findings that clearly show (i) “the patterns of misclassification by cause in each setting” (in-hospital and out-of-hospital deaths), and (ii) “the validity of diagnoses for deaths that are classified to specific causes” in terms of quantitative measures.

7. Page 4, first paragraph: “This paper presents national estimates of cause-specific mortality by age and sex for Thailand (in 2005), derived from the detailed findings from the two arms of the field study.” The ‘verbal autopsies’ and ‘estimation of mortality undercount’ were performed for year 2005/06, and the ‘cause-specific mortality fractions’ are estimated for year 2005. How many months do the ‘2005/6 verbal autopsies’ and the ‘2005/6 estimates of mortality undercount’ differ with the reference year for cause-specific mortality fractions estimates (possible extremes of about 1-11 months due to different calendar systems). How much did any changes in all-cause mortality, cause-specific mortalities, and death under-registration affect the results and how were such possible changes assessed?

8. Explanation is needed about the rationale(s) for not providing all-cause and by-cause mortality rates in this manuscript.

9. It is not adequately clear whether the study cited as [10] is the ‘2005-06 SPC results’.

10. Short description of ‘Chandrasekar-Deming method’ is needed for readers.

11. In general, the Methods section includes many items that belong to Results. Providing some basic amounts of numerical information in the Methods section may occasionally be inevitable and in fact, prove to facilitate readers’ understanding of the study methods and processes. However, over-mixing the methods and results together nullifies the rationale behind compartmentalization of the manuscript.

12. Page 6, first whole paragraph: “The SPC also provided estimates of child (under 5) mortality. We compared these with corresponding estimates from other surveys and censuses in Thailand over the past 4 decades to estimate levels of child mortality prevailing in 2005 by fitting a curve to the observed data.” What input values (under five mortality rates) were used from ‘other surveys and censuses”? What was the curve-fitting model? What was the estimated under five mortality rate for 2005?

13. Page 7, last paragraph: Mention is needed for age and sex limitation in redistribution of ill-defined causes.

14. Annex Table 2: “Note: 1. These death counts are based on the improved cause of death information from the SPICE mortality project;” What is the SPICE mortality project?
15. Annex Table 2: For both sexes and all ages, “all causes” sum up to 443,520, while they are mentioned as 443,236 in annex table 2.

16. Page 11, first whole paragraph: “Among children, perinatal conditions and congenital anomalies dominate the cause specific mortality structure (see Table 4), as might be expected in a population with levels of under-five mortality around 20 per 1000. [8] These findings however, may be biased by the relatively low proportion of deaths at these ages in the study sample compared with registration data. [4,7]” Describe what would be the truth (versus presence of this possible bias). How could low sample size in this age group differentially affect different causes?

17. Page 13, first whole paragraph: “A comparative analysis of findings from this study with findings from a study with similar objectives conducted in 1999 [16] reveal several important differences (Table 8).” Short description of similarities and differences of 1999 and 2005 studies are needed.

18. Tables 4-7: Interpretation is needed for observation of higher proportions of ill-defined causes in males compared with females except for the eldest age group.

Minor Essential Revisions

1. Page 2, Abstract, results: “Upon correction, stroke is the leading cause of death in Thailand (11%), followed by HIV/AIDS and ischaemic heart disease (5-7%).” “5-7%” is ambiguous. Does it mean that 5% and 7% refer to HIV/AIDS and ischaemic heart disease respectively or else?

2. Page 11, last paragraph: “At ages 15-49 years, HIV/AIDS is the leading cause of death in both males and females, and, with the exception of road traffic deaths among males, is by far the principal concern for preventing mortality at young adult ages. Overall, more than one-third (37%) of all male deaths at these ages are due to injuries.” Proportion of “all male deaths at these ages” (15-49 years) due to injuries is mentioned as 19.0 in table 4. So how it is mentioned as 37% in this sentence?

3. Page 24: Table 4: Why this table is not by male and female?

4. Page 28: Table 8: Provide total death numbers and percent of ill-defined causes.

Discretionary Revisions

1. “Burden of premature mortality” in title creates an expectation for seeing the results of YLL estimation. This paper provides corrected estimates of life expectancy and leading causes of death, but does not provide YLL estimates. “Burden of premature mortality” is better to be modified in title.

2. Page 6, first whole paragraph: “Simulations of plausible differential undercounts of mortality from the two sources (in-hospital and out-of-hospital deaths) had very little effect on the adjusted age-specific death rates (results not shown).” Are these simulation methods and results not provided in this paper to observe brevity?
3. Page 12, first sentence: “The cause-specific mortality patterns at older adult ages, 50-74 years and 75 years and above, are similar for males and females. (see Tables 6 and 7)” They are relatively similar.

4. Page 24: Table 4: Percent of deaths sum to 101.5.

Level of interest: An article of importance 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.