Reviewer’s report

Title: Time Delays in Diagnosis of Tuberculosis: A Systematic Review of Available Evidence

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Reviewer: Alan Altraja

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The manuscript “Time Delays in Diagnosis of Tuberculosis: A Systematic Review of Available Evidence” by Chandrashekhar T. Sreeramareddy, Kishore V. Panduru nad J. Van den Ende takes together data on patient delay, health system delay, and total delay in pulmonary tuberculosis. This is an interesting study with a pretty well-written, reading-prompting abstract, which picks up an interesting topic of challenging the effectiveness of passive case finding.

However, this is a type of analyses, where methodological aspects are of sensitive nature, and several concerns arise in association with the core manuscript.

Major Compulsory Revisions.

1. The study handles pulmonary tuberculosis. This should be mentioned also in the Title and “Abstract”.
2. Page number are missing, thus making references to the text is somewhat complicated.
3. Paragraph “Data extraction and analysis” in the “methods” section: the authors have thoroughly written, how they have defined the end of the delay period. However, how did the authors define the onset of symptoms (i.e. the beginning of the delay)? From the onset of whatever symptom related to TB the patient experienced first or several symptoms that might have lead to a suspicion of TB?
4. Same page, “Operational definitions”: clear definitions of LMIC and HIC should be provided.
5. There are no statistical calculations used to substantiate the facts the authors claim in “Results” and comment in “Discussion”. E.g. comparisons between LMIC and HIC for different aspects of the delay etc.
6. The authors claim about having performed their analysis on studies carried out on smear/culture-positive tuberculosis. However, “smear/culture-positive” does not appear anywhere in “Methods”.
7. “Results”, “Search results”: it is not common and does not facilitate understanding, if this section begins just only with a reference to a figure (“Figure 2 shows…”).
8. The same paragraph, rows 5-10, and Figure 2: of the 88 studies remained, 45
were excluded, however, 45 (43 articles and 2 abstracts) remained. Is this correct?

9. The sentence on page “Results”, “Reasons for exclusion are given in figure 2: Six studies were retrospective, 11 were longitudinal patient recruitment studies with structured interview of the patients and 22 studies were designed as cross-sectional surveys with patient interviews.”: it is not clear, does this description refer to the 45 excluded studies? If this is the case, which type of studies did the rest belong to? If these are reasons for exclusion, then why are these not provided in an appropriate section in “Methods”.

10. The study has excluded altogether a very large amount of studies (45 out of 352). The authors need to discuss the issue and possible bias caused by this strict selection on the results they found. There are methodologies to take into account even results from studies, which have observed either only patient delay or lone health care system delay into such analyses. Instead, the authors have provided a pretty weak statement: (in “Weaknesses in our methodology”, 2nd paragraph: “Despite carrying out a comprehensive search some studies may have been missed to include in this review.”).

11. In “Results”, paragraphs “Patient delay”, “Health care system delay”, and “Total delay” contain very homologous presentation of data, which may better fit into a table, to facilitate understanding. There, also statistical differences could be provided smoothly.

12. The use of terminology is vague throughout the manuscript, without defining them. Particularly, it concerns usage of “diagnostic delay”. The results of this research article provide data divided as “Patient delay”, “Health care system delay”, and “Total delay”. This issue should be corrected or definitions should be provided.

13. The “Discussion” of the manuscript should be strengthened in many of its parts. For example, 1st paragraph, last sentence: “When the diagnostic delays were compared it was expectedly higher among LMICs.” Why “expectedly”? Further, in “Weaknesses in our methodology”, 2nd paragraph: “If studies which did not find a longer diagnostic delay might not have been published ...”: why do the authors think that results not showing extremes in delay have probably not published?

14. Why Table 1 only contains diagnostic delays among pulmonary tuberculosis patients in low and middle income countries? Again, what is meant by “diagnostic delay” (title of the table)?

15. The figures should have footnotes rather than titles, containing explanations of abbreviation used etc. to make any figures a self explanatory unit.

16. Figure 3: it could be presented as figure 3a, 3b and 3c (indicating total delay). What do the bubbles indicate on Figure 3 (on Patient delay)? Statistical comparisons and asterisks to indicate significant findings could be of value.

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. “Discussion”, 2nd paragraph, reference [57] should better follow the previous sentence.
2. The text contains some incorrect grammar.

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**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:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests