Reviewer’s report

Title: Cost of Dengue Outbreaks: Literature Review and Country Case Studies

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Reviewer: Lennert Veerman

Reviewer’s report:

This is a paper about an under-investigated topic, the costs of dengue outbreaks. The paper reviews the published evidence, and then presents four case studies in different countries.

The mixed design does not make for a very ‘tidy’ paper, but the paper contains sufficient new information to be worth publishing. However, it needs some careful revision.

The conclusion that it is much cheaper to prevent outbreaks than to treat them is not adequately supported by the evidence that was presented.

The quality of the writing could be improved; the tone is rather conversational and at some points seems careless.

Major compulsory revisions

Please use the PRISMA guidelines (http://www.prisma-statement.org/) for the reporting of the systematic review, and add an appendix with responses to the checklist.

Reformulate the research question and make sure it is answered in the paper and the abstract. I am confused about the objective to assess costs of outbreaks, followed by the presentation of results in terms of cost per case, and the inclusion of costs of illness in the results, although the introduction specifies this study is not about those.

Revise the conclusion.

Review the writing.

Minor essential and discretionary revisions

(These can be accepted or rejected. In the latter case, please explain why.)

Abstract: “The aim of this study on the cost of dengue outbreaks is to unveil economic evidence so as to promote sustained dengue vector control, …” This suggests bias on the part of the authors – before the results are in, it is not known what is the more cost-effective option. Please rephrase.

Abstract: “The literature review distinguished between costs of dengue illness including cost of dengue outbreaks, cost of interventions and cost-effectiveness of interventions.” This is methods, not results.

Abstract (and manuscript): The introduction states that the study is about “the
cost of dengue outbreaks”. Yet the results give only costs per patient, not per outbreak.

Abstract: There is a lot of interpretation in the results section. Try to make it more factual - what did you find? Interpretation is for the discussion.

Abstract: “However, for these figures to be comparable, they need to be standardized.” Indeed. Yet it wasn’t done in this paper. Please do so.

Abstract: “Cost of vector control interventions that prevent outbreaks have been reported in 4 studies, indicating that the costs of such interventions are much lower than those of actual outbreaks.”

Abstract: “IEC” Avoid abbreviations in abstracts. If they have to be used, write in full at first use.

Abstract: “…direct medical cost and indirect costs showed no uniform pattern in the proportions of cost items as a percentage of total costs.” This is hard to follow. Please reformulate.

Abstract: “This might also be due to the pilot-study character of cost-data collection.” This is not specific enough to be a valid explanation. Small sample size, sloppy execution, real differences; these could all be explanations.

Abstract: “… it would be economically meaningful to put more resources into transmission prevention and early outbreak detection and response.” What exactly does ‘economically meaningful’ mean? More importantly, I cannot conclude this from the evidence given, and certainly not with a statement that leaves as little doubt as this one. Always? Everywhere? Under what conditions?

P.4: “Resources used for the prevention and treatment of dengue are not available for alternative uses in the economy as a whole or in health systems.” If not in the economy as a whole, then not in health systems either, of course. The reverse order would make more sense.

P.4: “especially in endemic countries with dengue-outbreak scenarios.” How does having ‘scenarios' matter? I think you mean the outbreaks themselves.

P.4: “to appraise the efficiency of improved surveillance systems with respect to the potential resources saved.” Isn’t efficiency always about saving resources?

P.4: “The present paper aims at reviewing published evidence on cost of dengue outbreaks in contrast to costs of dengue illness.” However, those are not central in the reporting. Furthermore, the results section starts with a section that specifically includes cost of dengue illness.

P.5: “too late.” Dramatic but vague. Too late for what?

P.5: “However, the aim of the literature review is to establish evidence on the published costs of dengue outbreaks. It will give an overview, whether such work
has been conducted. If so, the review will help to better determine what the methodological challenges are and what the actual costs of dengue outbreaks are.” Please try to formulate more clearly and succinctly. What does it mean to ‘establish’ evidence? The second sentence is unclear – how can you give an overview of work that hasn’t been conducted? “Better” determine? Better than what?

P. 5, Methods: Were the selection criteria established in advance or along the way?

P.5: “In general, dengue cost studies were defined as …” What does ‘in general’ mean, here? Please be specific, and if you used different definitions for different studies, explain why.

P.6: What are ‘methodological sources’?

P.6: “The level of evidence of the papers was not assessed in a thorough manner within the present review.” Though it is very honest to write this, it does not enhance confidence in the study. Please apply the Beatty classification to the remaining studies.

P.8: “Expansion factors were not used.” What are ‘expansion factors’?

P.8: “Each respondent had to sign a consent form.” That sounds rather coercive. Please rephrase. (“Each respondent signed…”?)

P. 9/10: Either present the information in the text, or in the table, but do not duplicate information.

P. 12: “Taliberti et al. (26) estimate the cost of dengue prevention and control in Sao Paolo in 2005 to be far less” Less than what?

P.12: If you start a sentence with a number, please write it out (Three, not 3.) With the country case studies, it would be informative to briefly tell a bit more about the outbreak. Either with the results or in the introduction.

P.12: “The modelling methods used for assessing the economic value of vaccine intervention and the cost-effectiveness of vector control programs might lead to future research on the cost-effectiveness of national surveillance systems, but do not reveal any direct information on the cost of dengue illness or outbreaks.” That is strange. In order to assess cost-effectiveness, they must have used some data or assumptions around the costs of outbreaks? Do you mean they don’t present primary information, or that they do not report in a manner that allows to know the cost estimates used?

P. 12/13: The costings for Vietnam don’t include staff costs? Why not? It would seem that even a rough estimate is better than omitting them entirely?

P.13: “e.g. 55% versus 35.1% versus 9.9% respectively” The ‘e.g.’ suggests that this an example only. Was that intended? If so, please give all ratios.
P.14: Please capitalise names of hospitals.

P.17: “Although no precise information is yet available, the findings of the literature review have been confirmed: It seems to be much cheaper to prevent dengue outbreaks than to pay for the consequences of an outbreak in terms of treatment costs and additional costs for vector control and IEC activities.” I do not see how this can be concluded without knowing how frequently outbreaks would occur, and what their size would be, comparing a situation with and without adequate prevention measures in place.

Table 1 can be omitted and the criteria described in the text.

Table 3: Replace text “After exclusion of duplicates and inaccessible publications (n=12 and n=3), n=9 documents were added based on reference search to the full-text evaluation process.” with appropriate boxes.

Table 4: Are these costs converted to costs in the same base year? If not, consider adding a column and present comparable costs.

Figures: Do these include the costs of health care personnel? Add total/average costs to all figures – they are not consistently given in the text.

Level of interest: An article of limited interest

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.