Reviewer’s report

Title: Estimating lifetime economic burden of stroke according to the age of onset in South Korea: a cost of illness study

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Reviewer: Panrasri Khonputsa

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Estimating lifetime economic burden of stroke according to the age of onset in South Korea: a cost of illness study

This is a well designed analysis of the lifetime cost of stroke in Korea using insurance claims data. Although the data may or may not well represent the true data on cost of stroke treatment, they can be used as a good proxy proving the limited time and resource needed for new data collection. It would be more interesting, however, to see whether the true cost of treatment differ from the claims. The authors may consider collecting the former data at some treatment centers using the unit cost approach (i.e. cost of drugs, cost of health personnel time, cost of laboratory tests, etc.)

The manuscript is well written. Some typing errors were noticed (see below), and some phrases and sentences need some more clarification

I suggest some discretionary revisions as shown below:

Abstract
Line 36-37
It will be clearer to understand if more information on the method in the abstract is added. For example, sources of transition probabilities for other states (e.g. incidence), and costs other than the medical cost.

Background
Line 62
Need a space between ‘assign’ and ‘greater’

Methods
Line 89-90
Could the authors show the number of stroke cases for each cohort in Table 1?
Line 161
It is not clear to me why risks (Rfs, Rnfs, and Ds) were converted to probabilities using the formula
p=1-e^{-rt}.

As observed, when t (length of cycle) is 1, p is equal the risk.

Line 192
Please explain more what the cost of a fatal stroke is and add a reference. Do I understand correctly that this is also the cost of treatment? How is it different from the cost of treatment in the first or second year? Why is it more expensive?

Line 202
If possible, please explain why the transportation cost for outpatient is much cheaper than the transportation cost for admission.

Line 203-204
May consider deleting (1,000 KW is approximately equal to 1 US dollar) because it appears twice in the same page.

Line 221
Please give an example of how to calculate the out-of-pocket spending for the second year (and beyond) using the ratios of insurance-covered second-year to the first year costs. Specifically, it is not clear how the two underlined phrases relate?

Perhaps, move the method used for sensitivity analysis into this section.

Results
In Table 3, please make sure that the cost of fatal stroke for men and women aged 85 at stroke onset does not include the cost of premature death.

In addition, could the authors show the cost of illness with the distinction between the cost of treatment, out of pocket cost, and productivity cost?

Level of interest: An article whose findings are important to those with closely related research interests

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.