Author's response to reviews

Title: Cost of Stroke: A Controlled National Study Evaluating Societal Effects on Patients and Their Partners

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Author's response to reviews: see over
Reviewer's report I
Title: Health, Social and Economic Consequences of Ischemic and Hemorrhagic Stroke: A Controlled National Study Evaluating Societal Effects on Patients and Their Partners
Version: 2
Date: 6 March 2015
Reviewer: Josefine Persson
Reviewers report:
Major compulsory revision
1. Abstract: Please clarify if the total costs per stroke type after the stroke onset is annual costs or life-time costs, as well as if you refer to the total cost per patient?
This have been included in the abstract

2. Method, fourth paragraph, concerning indirect cost: More information is needed concerning how indirect costs are calculated concerning use of method. If you use the human capital approach, then it should be mentioned with a description of the method.

Corrected is text: The human capital approach is used to measure the productivity costs based on the difference in labor market income between the cases and the matched controls.

3. Method, seventh paragraph: Please motivate why you use 2009 prices and not prices more closely to current time.
We used this period which were within the studied period.

4. Method, concerning statistical analysis of survival data: please describe the statistical analysis used to analyses the survival data used in figure 1.
Included.

5. Method, sixth paragraph: As you mention the distribution of stroke types in the study is not equal to previous finding, where the proportions of ischemic stroke is approximately 85% whereas in this study only 38% of the included patients were coded as ischemic stroke. The difference is of major concern and should be analysed further. The proportion of unspecified stroke is as large as 52% in this study, is it possible to code the group of unspecified stroke into ischemic or haemorrhagic in the analysis? Otherwise, you need to validate that you have the correct composition of patients in each stroke type category. This is of major importance since you base your result on these stroke type categories. If it is not
possible to code the unspecified stroke into ischemic or haemorrhagic, then I strongly recommend that you present your result for all patients in one group. This is due to lack of knowledge about the composition of stroke patients in each stroke type category, and if you cannot validate that the composition is correct the result in each stroke type category does not really say that much.

*We included this.*

6. Discussion: It is necessary to add a paragraph were you discuss your findings compared to other cost of illness analysis made for the stroke disease. Your result is somewhat lower than previous studies and it is necessary to mention your reflections of this facts.

*We believe that the relative lower estimates are due to some important factors: 1) we compare to a control group and estimate the additive difference, 2) we include all costs but indirect cost is relative lower due to a larger proportion is on pension (which is also the case for the controls).*

7. Discussion: This study does not include home nursing or nursing homes, which have been shown in previous studies being a considerable part of the total burden of stroke in the society. This may obviously vary in different health care systems, nonetheless it is necessary to mention this in the discussion and also give reflection of this fact.

*We agree: we mentioned this in the limitations of the study*

Minor Essential revisions
8. Introduction, second paragraph, forth sentence: Some of those reference you refer to does not only include direct cost, but also indirect cost, i.e. loss of productivity, and also cost of informal care. Please correct statement.

*Thank you, corrected.*

9. Introduction, second paragraph, fifth sentence: Quality of life is not equal to QALY (Quality Adjusted Life Year). Please correct statement. Quality of life is a broad measurement of several dimensions in a person’s life situation in contrast to QALY which is based on an index and measures one person health status compared to 1 (full health) in each year.

*We have adjusted accordingly*

*We no longer use the QALY term in the text.*

10. Introduction, second paragraph, sixth sentence: A cost of illness with a societal perspective should also include relatives burden, i.e. cost of informal
care, which in essence is the quantity of time relative spent on giving support or care to the patients. The time is valued into monetary terms and should be included in the total cost. This have been done before which makes your statement “No studies have evaluated the total health and social burden prior to the stroke incident” incorrect.

This is now corrected. We have deleted “total”, and now write; No studies have evaluated the health and social burden prior to the stroke incident for patients and the patients’ partners including the total national socioeconomic impact on the consequences of the disease with respect to morbidities, mortality, economy and before and after the stroke incident.

11. Method, concerning controls: Please clarify the description of included controls. Controls are mentioned in the second paragraph with no description, later in the fifth paragraph the description of controls is made but is could be mentioned earlier in the paragraph that it is the controls that you refer to.  
12. Method, seventh paragraph: please clarify why you performed a nonparametric bootstrap analysis on data based on registries and for which cost categories.

You are right; We changed the order of the paragraph describing the controls earlier.

13. Discussion, fifth paragraph: You mention that you found the stroke disease had a significant health and social effect on caregiver, however, health is not measured in this study, only social and economic consequences. Please clarify or correct sentence.

It is now clarified that we find the impact on health care consumption – not health.

Discretionary Revisions
14. Method, sixth paragraph: Please be consistent of choice of word, patients and pts are mentioned.  
Corrected
15. Result, last sentence: Number of included patients in each disease category is already mentioned and unnecessary to mention again. It is preferable to present the results as “Mean (95% CI) age for patients with ischemic stroke were...” and so on.  
Corrected
16. Result, Survival in Stroke: Please be consistent of choice of word, (95% CI) has been mentioned in Result and in this paragraph (95% confidence interval) is mentioned.  
Corrected
17. Table 2. It is preferable to refer to health care consumed rather than health care received.  
Corrected
18. Table 3. It is necessary to give information of whom the health care costs
Concerns, patients or spouses?

Corrected

19. Table 4. You refer to Partner in the headings and spouse in the table, please choose either of them.

We have chosen partner. Thank you.

20. Figure 1. Please state which figure is (A), (B) and (C).

We agree, it is however mentioned in the legends.

Level of interest: An article of importance in its field

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´ below.

Reviewer's report II

Title: Health, Social and Economic Consequences of Ischemic and Hemorrhagic Stroke: A Controlled National Study Evaluating Societal Effects on Patients and Their Partners

Version: 2

Date: 27 February 2015

Reviewer: Rebecca Kandiyali

Reviewer's report:

The strength of this paper is the quantity and completeness of the data, especially with respect to the broader societal costs. This would definitely be of interest to those working within the field. The paper would benefit from editing – there are a few typos, and the odd issue with diction and syntax.

Major compulsory revisions

1. Title: a paper on “health, social and economic consequences” of stroke anticipates a broader coverage than this paper – this is a cost study and does not focus on health consequences in terms of health related quality of life. Replace with costs or resource use and costs? This paper will be useful to others looking for costs in the field, if you have a more focussed title you will be more likely to be identified. In general, try and refrain from making too many broad claims about health and social consequences.

Thank you, we changed accordingly

2. In general, the discussion could benefit from a clearer structure and redrafting of sections (some indicated below). Repetition should be avoided. Some elements appear more speculative or anecdotal, and more reference could be made to the methods and findings in the paper. Please redraft the discussion, paying attention to the specific points following.
We have shortened the discussion

3. Please ensure consistency of terms (e.g., various terms used to refer to transfer payments, patients/people/cases) throughout.

Corrected

4. Page 7 (4) This paper needs to also include methods that cover data handling (missingness) and statistical methods (survival analysis methods).

“For the survival analysis we show the Kaplan-Meier survival plots. The Kaplan-Meier survival curves takes into account the censoring of data and since not all patients dies before the end of the analysis period the data used in the analysis period is censored. The survival curves are stratified into case and control groups, and the curves show the survival distribution function estimate.”


You are correct; we have not presented these data, deleted.

6. Page 10 (6) “stroke had significant health and social effects on caregivers” –while burden of stroke has impacts in terms of both QoL and healthcare resource use this study does not demonstrate this.

Deleted

7. Page 10 (17) patients do not present “social limitations” – please reword, do you mean role limitations?

Corrected

8. Page 11 (3) I do not understand the paragraph “social compensation were made in the selection” – neither do I understand “occurrence and management of stroke following a social gradient”. Are you making a statement about socioeconomic status in terms of the incidence and management of stroke? Please reword as appropriate.

Thank you: we selected the control by location and civil status but did not control for similar income level or other social factors.

9. Table 3 and 5: Please order more logically first left hand column. There are too many sums in bold and the reader cannot see how they have been arrived at. Please order in a logical sequence (inpatient before outpatient) and restrict the number of summary totals. The reader may need to know what net costs are (net from whose perspective?). Additionally, don’t assume that the reader is familiar
with a health insurance scheme – you might provide more info about how healthcare is funded (see point 4. Below).

**Corrected**

**Minor essential revisions**

1. Please provide a clear reference to the study design in the introduction. Wording needs to be simple and explanatory.

**Inserted**

2. Within introduction: Provide a brief explanation of the means by which healthcare costs are reimbursed in Denmark.

It is now stated, that “Health care in Denmark is predominantly publicly funded”

3. Page 1 (3-5) First sentence is almost a tautology – can you make it more interesting and relevant to the study?

**Corrected**

4. Page 1 (15) Note that QoL is not the same as QALYs which should be glossed as quality-adjusted-life years. QUALY is not the usual spelling.

**Corrected**

5. Page 5 (24) Please explain what the Coherent Social Statistics database is? Should all words be capitalised?

**Corrected**

6. Page 9 (20) not sure you can apply term “impact” in this way.

**Corrected**

7. Page 10 (17) by patients do you mean cases?

**Corrected**

8. Page 11 (7) “consequence on social life and the greater burden” this appears speculative – not based on evidence from this study.

**Deleted**

9. Page 11 (19) Please clarify if this means that some patients with strokes prior 1997 are presented as your “before stroke” group and what it might mean in terms of biases.

*We did not calculate on cases before 1997. The sentence is not relevant and is now deleted.*
10. Table 2 and 4: Distribution of healthcare – make clear if this is % and also if resources have ever been used or were used over a specific time period or time point. Not clear how to interpret. Consider charting?

Corrected

11. Page 21 (all figures) could this be done for all stroke rather than just ischemic stroke?

*We can include but the figures are similar and if we include there would be many figures, why we chose to give example with ischemic*

12. Within discussion: The most interesting study finding is the association this study makes in relation to resource use prior to stroke and partner resource use. Can the discussion draw out why these associations may be, and perhaps be a bit more explanatory – e.g. could make reference to lifestyle factors like exercise and diet.

*Agree, included*

**Discretionary revisions**

1. Within discussion/conclusion, consider adding implication for practice and research (that are practicable). For instance Page 12 (9-11) Are CV risk factors not assessed in Denmark for this purpose already – can the authors provide more context?

*We changed the text*

2. I am aware of other cost studies in stroke other than those referenced–consider comparing results with those conducted in other countries. You might also find the way they present your equivalent of tables 3 and 5 useful.

*Thank you for this comment*

3. Page 6 (1) Could clarify (in a footnote?) what you mean by “unsuccessful matching” and what you did.

*We have a match over 99% in all our samples. In practice we can match 100% or close to 100% in our selections*

4. Figures need improved formatting where possible.

*We have colors are more distinct, please inform if this is not useful.*
**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, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I declare that I have no competing interests.