**Author's response to reviews**

**Title:** Knowledge of stroke risk factors among primary care patients with previous stroke or TIA: a questionnaire study.

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**Version:** 2  **Date:** 6 May 2010

**Author's response to reviews:** see over
Dear Editor,

We are now sending the revised version of our article “Knowledge of stroke risk factors among primary care patients with previous stroke or TIA: a questionnaire study” (manuscript id 6043413343475233).

We are grateful for the comments and suggestions we got from the reviewers, and we hope that we have been able to address their concerns about our article (see below).

Yours Sincerely

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In the manuscript, text that has been added or changed is marked with yellow.

General changes

• Change of order between Atrial fibrillation and a family history of cardiovascular disease in Abstract/Results, row 6-7, in order to avoid a possible misinterpretation of "family history" belonging to both diseases.

• As the second last sentence in the Discussion section the following sentence was added: "The fact that the risk factors were self reported makes misunderstandings possible.”

Reviewer 1 – Alison Ward

Major compulsory revisions

Comment 1

The standard of writing would be greatly improved by some careful editing. The text also needs to be reduced and there is often repetition between what is in the tables and in the text. The manuscript reads more like a report than a journal article and needs to be considerably improved.

Response

This is a rather general comment, but we think that it at least to some extent has been taken care of by the sum of our responses to the comments from the reviewers below. One example of editing is this:

In the Results section, the part about the Study population has been rearranged, so that the presentation order is the same as in Table 1: Stroke related diagnoses, lifestyle factors and social factors. The social factors have been integrated into Table 1. (Cf Rev 3, comm 4)

Comment 2

Reading the background it appears that there are already many studies on this topic. The authors need to make the case for conducting their study and demonstrate what evidence gap they will fill with their results.

Response

Most studies have been done in general populations, not in stroke/TIA survivors. This has been stressed by adding the following, in the first paragraph of the Background section (before ref [9-11]):

"among people in general".

We stressed that the studies we referred to concerned patients with recent stroke, or were performed in different contexts, by changing the text in the first paragraph in the Background section as follows:

"Further, a few previous studies assessing stroke or TIA patients’ knowledge about stroke risk factors have indicated poor knowledge about stroke, including knowledge about risk factors some months after stroke [7, 15], in rehabilitation patients [16, 17] or in an Indian context [18].”

(This also included a change of order of the references 15-18)
Comment 4.1

Study population. Two sources or participants are described: The medical records at GPHCC and the stroke register. However, later in the paragraph they say there were three sources. What was the third?

Response

We used two different softwares for extracting relevant patients from the medical records and the result from these extractions were mostly, but not entirely, the same. Maybe it is confusing to call these extractors "sources" since the source in both cases was of course the medical records. We tried to clarify this by changing the sentence referred to into this wording:
"The majority of patients fulfilling the inclusion criteria were found by using both the medical records and the separate stroke register."

Comment 4.2

Study population. What time frame was used? All that is stated here is that patients were selected if they had a diagnosis by 1st May 2006. How far back did they go? Were they selecting first stroke? In addition to Figure 1 they state that 20 patients who had a diagnosis of stroke after 1st May 2005 were excluded. This needs to be clarified in the text and in the figure.

Response

The correct time frame was 1st May 2005. The reason for this was that we to start with wanted to collect background data from the medical records (see Rev 2, comm 3b). The date has been corrected in the text (Methods section, Study population, first paragraph).

In Figure 1, we added a footnote to comment on this:
"2) Excluded in order to make it possible to collect data from the records during a longer period and also to exclude patients still in a rehabilitation phase."

Minor Essential revisions

Comment 5

The referencing is not conventional. Reference 14 appears before reference 8-13.

Response

The order of references has been corrected, nr 14 is now nr 8, and 8-13 is now 9-14.

Comment 6

It is not clear how the figures in the Table 1 and the text match up.

Response

This has hopefully been clarified with the addition of the following sentence (Results section/Study population/end of second paragraph):
"In Table 1, the stroke related diagnoses based on both ICD-10 codes and other information from the medical records are shown."
The same information has also been added in the long version of the Table 1 heading.
Comment 7
Table 2. The response categories do not need to be in sub-title as well as in the table.

Response
In Table 2, the response categories have been removed from the sub-title.

Comment 8
At the end of the section on non-responders there is a sentense which reads: ‘Sub-heading for this section’ – This needs to be removed.

Response
This has been corrected.

Comment 9
An important finding was that the patients who had participated in at least one groupe meeting designed to provide information about risk factors for stroke were no better than those who had not attended. No information is given about the content of the format of these annual meetings which may be useful for readers designing education on risk factors.

Response
We added a sentence in the Methods section, Background information: "The patients own risk factors were always discussed according to a checkli st, which included blood pressure, blood lipids, blood glucose and lifestyle factors.”

Reviewer 2 – Anthony G Rudd
Major compulsory revisions

Comment 1
The main weakness of this study is that the sample size is relatively small (182) and when broken down into subgroups e.g. those with a risk factor of carotid stenosis or excess alcohol this becomes a real problem. This should be acknowledged in the discussion.

Response
In order to do this, we have added a sentence in the end of the Discussion section: "Another limitation is the small number of patients in some of the subgroups, for example patients with excessive alcohol consumption or carotid stenosis.”

Comment 2
The other concern is that the sample is taken from one general practice area in Sweden and it is therefore difficult to know how representative the data are of the national or international picture. This problem could be mitigated if there was a more detailed presentation of findings from previous similar studies in the discussion.

Response
In the **Methods section**, **Setting**, we added information to the text to explain that the main difference between Värmdö and Sweden is that the population is a little younger:

"The population is growing and during the last ten years it has increased with 40 percent, which is the highest increase rate in Sweden during this period. Värmdö is situated in the Stockholm archipelago and the population is somewhat younger than the average Swedish population; only 10% of the inhabitants are 65 years or older (17% in Sweden). One third of the population has education from above the upper secondary school (34% in Sweden)."

**Comment 3a**

The supplemental file submitted with the paper contains important information and should I think be published with the paper.

**Response**

The reason for this information to be published as an additional file was that it was formatted as "landscape". We have now restructured it and adapted it to the "portrait" format. It has now been included as Table 3, and the former Table 3 has been renamed Table 4.

**Comment 3b**

However it is not clear to me whether the risk factors that the patients thought they had were actually risk factors that had been recorded objectively in the medical records. If these data are available then it would be worth including these in the table.

**Response**

We planned at the beginning of the study to include both reported and recorded risk factors. For ethical reasons we asked all patients if we had their permission to check for more detailed information in the medical records. A majority, but not all of them gave us permission to do this (169 of 182 patients). We could thus not have a complete data set regarding the recorded risk factors, and this made it difficult to compare the two sets of data. Besides, the quality of data, especially regarding lifestyle factors, was rather low: for example information about alcohol was registered for 50% of the patients, and about BMI for 29%. For this reason we chose not to include data about recorded risk factors in the study.

**Minor points**

**Comment 1**

Page 10 the words 'subheading for this section' seem out of place after the first paragraph.

**Response**

This has been corrected.

**Comment 2**

Reference 24 should I think be Hacke and not Hack.

**Response**

This has been corrected.
Reviewer 3 – Amanda Thrift

Major compulsory revisions

Comment 1
Methods. It is unclear how representative this sample may be of all survivors of stroke in this region. Are there likely to be survivors of stroke who have been missed using the approach described in the manuscript? The authors should clarify the representativeness of this group of people of all patients with stroke or TIA who live in this region. If this sample is not representative, please justify the approach used.

Response
In the Methods section, we added a sentence (as the second last sentence in the Study population paragraph) to clarify the cooperation with the hospital: “The hospital reported all patients with stroke/TIA living in Värmdö (based on postcode numbers) to GPHCC.”
In the Discussion section, before the Limitation paragraph, we inserted a new paragraph about the fact that we probably had missed very few patients, and we also added two new references for this:
"There is a very strong tradition in Sweden and in the other Nordic countries to refer patients suspected of having suffered a stroke/TIA to hospital for Computed Tomography or Magnetic Resonance Imaging. National, regional and local guidelines stress the importance of referring all patients with recent (less than a week) symptoms compatible with stroke/TIA directly to hospital for further investigations and evaluation [28]. Recent Swedish studies show that only about five percent of first-ever stroke patients have not been in contact with hospital, and these comprise mainly patients living in nursing homes [29]. It is thus a strength of this study that we are likely to have included nearly all first-ever stroke/TIA patients. The patients we might have failed to include could be nursing home patients with concomitant severe diseases, or patients with mild symptoms who never saw a doctor for their stroke/TIA symptoms.”

Minor Essential revisions

Comment 2a
Overall the paper i very well written, although the introduction could be improved. For example, in the second sentence of the introduction please clarify that the “survivors” of stroke remain at high risk of having another vascular event (as many patients will die from the consequences of their first stroke).

Response
The first part of this sentence has been changed to: "Survivors of stroke or TIA remain at high risk…”
(A corresponding change has also been made in the introduction part of the abstract.)
Comment 2b

Further, I would be surprised if a patient’s lack of knowledge about risk factors is an "essential factor in the lack of compliance". Isn’t it more likely that the patient’s lack of knowledge about risk factors "contributes to the lack of compliance"? Please amend.

Response

The text has been changed to: "...was suggested as a contributing factor to the lack of compliance..."

Comment 3

The word "respectively" should be removed from the manuscript and the comparisons written out in full. This will improve readability.

In addition, in the last paragraph on page 10 (A stroke/TIA diagnosis…) (first sentence) the authors report the percentage of stroke or TIA diagnoses were recorded as haemorrhagic or schaemic. It is unclear which of these two groups corresponds to the three percentages provided.

Response

This has been corrected.

Comment 4

The data in the second paragraph of page 11 ("One hundred…") would be better included in Table 1, and just briefly described here.

Response

The social factors have been integrated in Table 1, and this part of the text in the Results section has been reduced to:
"Social factors are also listed in Table 1. A higher proportion of the women were living alone and a higher proportion of men had a high educational level. The majority of the patients (n=145, 79.7%) reported being able to fill in the questionnaire without any help from other persons. Ninety-two patients in the study population (50.5%) had participated in group meetings for stroke/TIA patients at GPHCC. More than half of those who had participated (52.2%) had done so more than once."

Comment 5

In the last paragraph on page 13 (After Performing…), the odds ratio for cerebral haemorrhage is not the same as that reported in Table 3 [New Table 4]. Please amend.

Response

It has been amended.

Comment 6

Last paragraph of results. Data are provided on prescribed drugs and patients knowledge about whether or not these drugs were intended for prevention. As antihypertensive agents are also important secondary prevention agents for stroke or TIA, the authors should include data on knowledge about whether patients know that these drugs were also provided for prevention.
Response

At the end of the Results section, the last paragraph, we changed the wording and added the following information about antihypertensive, antilipemic and hypoglycemic agents:

"Anticoagulants and platelet aggregation inhibitors are important drugs for stroke/TIA prevention but only half of the patients who reported taking these drugs marked them as intended for prevention. About a third of patients who reported taking antihypertensive or antilipemic agents and very few of those taking hypoglycemic agents marked them as intended for prevention (Table 5)."

The data were also presented in a new table, Table 5, and in the text we now refer to the table for this data.

In the Discussion section, at the end of paragraph 8 [The task of listing…] we added the following sentence:

“The still lower proportions for patients using antihypertensive, antilipemic and hypoglycemic agents also indicate the importance of better patient education.”

Comment 7

Much of the discussion, for example the whole first paragraph, simply restate the findings. It would be of interest here to have some discussion about how their findings differed to those of others, and the potential reasons for these disparities, and not only a repetition of the results.

Response

Some sentences have been added in the Discussion section:

End of first paragraph: “Kraywinkel et al also reported better knowledge of a specific risk factor among those affected by it [23].”

End of second paragraph [Diabetes mellitus…]: ” In a study conducted in India, diabetes was among the best known stroke/TIA risk factors, at the same level as hypertension, smoking and excessive intake of alcohol, but the general level of knowledge was much lower than in our study [17].”

End of fifth paragraph [Patients in our study…]: ”Occasionally, a diagnosis of cerebral haemorrhage has also been used as an exclusion criteria when studying knowledge about risk factors [15].

End of sixth paragraph [In some studies…]: ” Higher age was found to have a negative effect in some studies [11, 14, 15] but no effect in others [23]. Lower educational level was found to have a negative effect in a study conducted in India, but not in some other studies [15, 23].”

Comment 8

In Table 1, please define the abbreviations used in the legend.

Response

This has been amended.

Comment 9

Table 2 would be more useful to readers if it included both univariable and multivariable results. In addition age should be included as this was adjusted for in the analysis. Readers can then see for themselves how these factors changes when
adjustment was made for other factors in the model. It would also be useful to include in this table other factors assessed in univariable analyses.

*Response*

We suppose this is meant to be former Table 3, now Table 4, in which the model is presented. We have added a column with univariable OR for the included factors, and we also added information about this in the subtitle.

*Comment 10*

In figure 1 the authors show that 20 patients were excluded because they had their stroke after 1 May 2005. In text (page 4) a date of 1 May 2006 is provided. Please amend so that correct date is provided in both places.

*Response*

See answer to Rev 1, comm 4.2.

*Discretionary revisions*

*Comment 11*

Did the authors ask participants about compliance with treatment? If so, they may be able to assess whether compliance was associated with knowledge about preventive treatments. This may provide further compelling evidence for improving education about preventive treatments among those at high risk of stroke recurrence. It is understood that this information may not have been collected. However, if it was, then this would be worthy of reporting.

*Response*

It would have been interesting to have such data, but unfortunately we did not collect it. One reason was that the questionnaire we used already was rather long. However, it might be a good idea for another study…

*Comment 12*

The authors reported that very few patients were aware that the “distracters” did not affect the risk of having a new stroke or TIA. Were those who answered these questions correctly more likely to correctly answer the questions on the known risk factors for stroke or TIA?

*Response*

No, the patients who correctly answered the questions about distractors did not answer the risk factor questions any better. Vi added the following sentence in the Results section/Patients’ identification of…, second paragraph: "Knowledge about distractors was not correlated with knowledge about known risk factors (Sperman’s rho 0.06).”

*Comment 13*

Few patients identified diabetes as a risk factor for stroke, even those who had diabetes. What might be the likely explanation for this? Is it that the people with diabetes more often associate this condition with heart disease, retinopathy, or other conditions?
Response

This is a finding also in other studies. In the Methods section, third paragraph [Diabetes mellitus...], we therefore added a reference (Maasland) and also a sentence at the end of the paragraph:

"In the prevention and education of the diabetic patients, most focus tend to be on cardiovascular complications and complications from the eyes and the feet, and cerebrovascular complications may receive less attention."