Reviewer's report

Title: Effect of socioeconomic status on three-year mortality after first-ever stroke: Nanjing Stroke Registry

Version: 1 Date: 3 May 2006

Reviewer: Anton E Kunst

Reviewer's report:

General; main strengths of the paper

1. This is the first study (to my knowledge and according to the authors) on socio-economic inequalities in stroke mortality in China.

2. It uses a large data registry with linkage to detailed information on the socioeconomic status of patients.

Major compulsory revisions

3. The key results of the paper are presented in table 2. This table uses only two types of regression models to estimate the association between SEP factors and stroke. While no control variables are included in the first model, the second model includes a wide array of variables that have very distinct relationships to SES and stroke. These variables include:
   a. basic demographic variables, such as age and sex, which are commonly considered as confounders in the association between SEP indicators and health outcomes;
   b. other SEP variables, which should be included only if the aim is to determine the "independent" effects of different components of SEP (e.g. education vs. income);
   c. behavioral variables, such as smoking and drinking, which should be included only if the aim is to determine the extent to which the association between SEP and health outcomes can be attributed to inequalities in these health behaviors;
   d. physiological variables and disease parameters, which should be included only if the aim is to determine whether there are variations according to SEP in the disease processes leading to stroke death.

   Thus, it would be highly informative if (but only if!) multivariate modeling is done in a step-wise way, adding to each subsequent model a set of different type of variables. The basic model should include age and sex only. I strongly recommend the authors to follow this step-wise approach.

4. The authors recognize that this hospital-based study excludes persons who my have had stroke but did not reach the hospital, either because they died before reaching the hospital, or before the stroke incident was too mild for the patient. The authors fail to discuss whether this selection bias strongly differs according to socioeconomic position. If persons from lower classes would be admitted to hospitals only if they have relatively severe forms of stroke, this may artificially increase estimates of socio-economic differences in stroke mortality. The authors should discuss this possibility of differential selection bias and its potential effects on their inequality estimates. Might this explain why the inequalities in survival are exceptionally large?

5. In the methods section, the authors describe a regression model with a restricted set of variables. Results according to this model are however not given in table 2 or in the text of the Results section. In any case, I recommend the alternative approach given under point 3.

6. The discussion section is difficult to follow on page 10 above, and especially page 11 above/mid. I suggest to shorten the summary on page 10 (and focus on SEP differences) and to replace the two paragraphs on page 11 with new paragraphs that aim to forward possible explanations of the large inequalities in stroke that are observed in this study. What is the possible role of health care? See also my comment 4 on the role of possible artifacts.

Minor essential revisions

7. The language needs improvement at various places.
Major discretionary revisions

8. The study is restricted to the 1/3 of stroke cases in the Nanjing Registry due to cerebral infarction. The 2/3 of cases with cerebral hemorrhage is excluded. While this distinction may be logic from a neurological or etiological perspective, from a public health perspective this restriction is a regrettable loss of information. The authors should consider including all stroke cases, in order to present of more comprehensive picture of inequalities in stroke survival in China. One more table may be added.

9. I recommend combining the two upper educational levels, in order to increase the precision of the Hazard Ratios for this variable. Note that the upper educational level (postgraduate degree) contains only 48 patients and seems to have a deviant level of stroke survival.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: No

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