Reviewer's report

Title: Explanations of socioeconomic differences in changes in physical function in older adults: results from the Longitudinal Aging Study Amsterdam

Version: 2 Date: 5 December 2005

Reviewer: Mai Stafford

Reviewer's report:

General
This longitudinal study describes changes in physical function over a 9 year follow-up for different socioeconomic groups (defined by education and income). It presents these changes separately for younger and older old adults to examine socioeconomic trajectories along different points of the ageing process. It also assesses the contribution of disease status, health-related behaviours and psychosocial factors in explaining these SES differences in physical function.

This is a well-conducted and clearly described study that addresses an issue of interest to an international audience. A reasonably large sample size and a rich dataset of health and other information allow the researchers to address clearly their research questions.

I feel the policy implications could be spelt out more. Aside from this possible limitation, this excellent work is worthy of publication.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. The authors do not state their a priori rationale for studying SES inequalities in physical functioning and the possible widening of this SES gap as people age. Why do the authors expect there may be differences in the SES-functioning association at different ages? Why was 70 chosen as a cut-off?

As retirement age is 65, there is potentially more change in lifestyle around this age. Do you think you may underestimate differences by age using 70 years as cut-off?

2. Are education and income appropriate measures of SES in this age group?

3. Could missing data be an explanation for differential findings by age group? Smoking is missing for more than 10% of over 70s; BMI missing for >15% of over 70s.

4. The authors play off disease, behavioural factors and psychosocial factors against each other. At a given time point, we can ask what is their relative contribution. However, they are not really independent: behavioural and psychosocial factors lead to disease; psychosocial factors lead to behavioural characteristics. The analysis therefore underestimates the contribution of behavioural and psychosocial factors.

5. The abstract could clarify that disease status did not explain much of the (change in) SES inequalities. However, the authors should note that they have limited power to detect changes by disease status because of small numbers in some disease categories.

6. What is the reason for reducing several continuous explanatory variables to categorical variables? This reduces power.

7. BMI and physical activity explain a large part of the SES gradient in physical function for the under 70s, but not for those aged 70+. Are BMI and physical activity associated with physical function at 70+ years? Does the SES gradient in BMI/physical activity decline between <70 and 70+
years? More detail could be presented here.
8. Rather than presenting a p-value for each dummy variable in Tables 3 and 4, a single test for the statistical significance of a group of dummy variables (e.g. Wald test) could be used and presented. This would be more appropriate and more concise.
9. Figure 1 title has reference to Figure 2 - typo?

Discretionary Revisions (which the author can choose to ignore)
1. Statistical adjustment for sex: do the authors consider this is sufficient or was there any evidence of interaction by sex?
2. The authors state that studies have looked at what contributes to SES differences in physical function but do not cite any references (p4).
3. Did the authors consider using alternative (subject-specific) imputation methods?
4. Changes in explanatory variables over time may help explain SES differences in physical function slope, as indicated by the authors. Did they have data to address this question?
5. Consider adding brief description to for each model in Tables 3 & 4 (e.g. Model 2 = adjusted for behavioural factors).

What next?: Accept after minor essential revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests.