Reviewer's report

Title: Cohort differences in disease and disability in the young-old: findings from the MRC Cognitive Function and Ageing Study (MRC-CFAS)

Version: 1 Date: 4 April 2007

Reviewer: Amanda Nicholson

Reviewer's report:

General
This well-written paper addresses the important issue of the trends in health and disability in the older population, in the context of general increased life expectancy. The paper examines self-reported health in cross-sectional surveys of 65-69 year olds in a defined geographical area (eastern Cambridgeshire, UK), repeated 5 years apart so that two adjacent birth cohorts were sampled. Each surveyed sample was then followed for 4 year survival. The authors find no difference in survival or in major health conditions such stroke or CHD between the two groups but do find significant differences in number of chronic condition reported and specifically in arthritis and COPD. They conclude that is evidence of rising levels of ill-health in this age –group.

Possible explanations for the observed increase include:
1. True increasing prevalence of disability due to increased survival to age of 65 years or increase in non-life threatening conditions.
2. Increased diagnosis. Are the same symptoms five years later being given a different diagnosis?
3. Increased reporting of symptoms by population.

The stable population structure, sampling method and acceptable response rate ensure samples can be compared meaningfully in order to examine secular trends in ill-health. There are however limitations to the data, which the authors acknowledge:
1. The population is relatively young so that prevalence of morbidity not high.
2. 5 year time interval is small gap (the birth cohorts although not overlapping are adjacent) so any trends with time are likely to be modest.
3. These issues compound the major problem which is that study is underpowered for many of the analyses reported. Cohort sizes of 687 & 689 mean that for an outcome of incidence/ prevalence of 8% ( eg mortality) the study has 80% power to detect OR of 1.65 or greater. Thus significant results are only found for more common conditions. Equivalent size effect sizes for less common conditions (eg stroke) would fail to reach significance.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The authors acknowledge the limited power of the study for some outcomes but the discussion should be written more clearly to explain the alternative explanations for observed increase in ill-health and how the data supports them – plus the limits of the data in addressing these alternatives. This is at present addressed mainly in the last half of the last paragraph. For example if the increase in ill-health is due to increased survival to age of 65 years, one might expect an increase in history of CHD / stroke which the study may be unable to detect. The disparity between increase in reported disease but non-significant increases in disability should be discussed in this context.

The conclusion in the abstract should be reworded as at present the last sentence appears incomplete. It would reflect the data better if it referred to an increase in reported ill-health which may reflect changes in diagnosis or reporting.

The use of term cohort in the title and abstract background, is slightly confusing when
• most results are from cross-sectional data
• this study design cannot separate cohort differences from period effects (ie changes over time that affect all age –groups)
Separating the effect of diagnostic trends would be easier if the methods stated which conditions (other than stroke) referred to doctor-diagnosis and which conditions may have been self-diagnosed.

No details are given of how deaths were identified/validated or the completeness of this follow-up.

Table 1 does not give significance levels of the differences between cohorts.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Review of other studies' results in the Discussion is hard to follow in some places eg para 2 p7 where the effect of increased mortality on reported ill-health is unclear.

Table 1 & 2 would be clearer with total N at top of the columns.

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Discretionary Revisions (which the author can choose to ignore)

Is year of first diagnosis available? This may give some insight into period effects.

References for the models of morbidity (eg Fries, Gruenberg) would be helpful for the interested but non expert reader.

Leaving armed forces as a separate social class group in Table 3 may result in some very small cells in the regression analyses.

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

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

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