Reviewer's report

Title: Life style and longevity among initially healthy middle-aged men: prospective cohort study

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Reviewer: Aage Tverdal

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Life style and longevity among initially healthy middle-aged men: prospective cohort study

It is of interest to study why some men live to advanced age. In this modest sized study population the focus was on life-style and survival to age 85 years.

Major

The method is suboptimal. The framework is logistic regression with survival to 85 years (yes, no) as endpoint. Within this framework they had to exclude men who could not have attained 85 years at the end of follow-up. This exclusion (censoring) reduced the study population from 2014 to 821 (59%). A much more adequate framework is survival analysis. This study could estimate the survival between, say 45 years, and 85 years. Confer for instance the paper by R Sakata et al. Impact of smoking on mortality and life expectancy in Japanese smokers: a prospective cohort study. BMJ, 25 October 2012.

The huge selection of the study population makes it hard (impossible) to assess the validity of the findings. For instance it is found that (total?) cholesterol and systolic blood pressure have no significant impact on the chance of attaining 85 years. This should be compared with their previous paper (ref 3), where both these variables were significantly related to cardiovascular death which made up more than 50% of all deaths. Furthermore, if I understand table 4 right, smokers of more than 10 cigarettes (per day?) have a greater chance (odds) of attaining 85 years than smokers of less than 10 cigarettes? And is it more favourable to be obese than having a BMI below 25 kg/m2?

Minor

The recruitment took place during 1972-1975. The mortality rate has been steadily declining in Norway and I wonder whether date (or at least calendar year) of inclusion should be included in the models?

In the “Statistical Analysis” paragraph it is stated that: “The assumptions underlying multiple logistic regression analysis were checked and found to be adequately met”. This does not convey much information to the reader. What is checked and how was it done?

In the discussion, paragraph 4, it is claimed that the interaction between
overweight and physical fitness as predictors of longevity is novel. Where in the paper is this finding hidden and has there been done some statistical testing? There is nothing about interaction in the “Statistical Analysis” section.

The authors have rightly done analyses stratified by smoking status. It had been even better to study the never smokers as these person are likely to remain never smokers throughout the follow-up. Ex-smokers may start smoking again, and smokers may quit smoking. The smoking prevalence in Norway has been steadily declining throughout the follow-up period of this study.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests