Reviewer's report

Title: Health-related quality of life after vertebral or hip fracture: a seven-year follow-up study

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Reviewer: George Ioannidis

Reviewer's report:

The authors conducted a longitudinal study that examined the association between hip and spine fracture and health related quality of life over time as measured by the SF-36. Given that the authors have already published data using this population, the novel aspect of this trial is the change in HRQL from 2 to 7 years or from baseline to 7 years. While this study is interesting, there are some methodological issues that need to be clarified and some results that need further explanation.

Major Compulsory Revisions:

1. When was the reference group selected? There may be baseline differences between the groups if the selection of the reference group occurred 7 years after the hip and vertebral fracture group. The management of the osteoporosis, medications given, and lifestyle factors may be quite different for these two time periods. In addition, we do not know the prevalence of fractures in the reference group. As a consequence, the comparison between the reference group and fractures groups may be misleading and the conclusions drawn may be false. Do the authors have any evidence that the groups are similar for important baseline characteristics?

2. The novel aspect of this study is the change in HRQL from year 2 to year 7. However, the results (from table 2) may be difficult to explain. It appears that HRQL decrease from year 2 to year 7 which is counter-intuitive. One would expect that HRQL would gradually increase over this time period. Is there any plausible explanation for the observation? Is this problem due to drop-outs or new fractures? Are these comparisons reliable given these findings?

3. Comparisons between vertebral and hip fracture groups are interesting. However, these results need to be adjusted for other variables (i.e. other disease conditions). This would allow for better interpretation of the results.

4. While there may be some statistically significant differences between groups the authors should state in the manuscript whether these differences are clinically meaningful. Significant difference between groups or over the duration of the study may be a function of the sample size. It is extremely important to state that the authors believe that these differences or clinically meaningful.

5. How were new fractures adjusted for in the analyses? These new fracture may
explain differences between groups and over time in HRQL. The authors may want to run the analyses for individuals that did not have new fractures.

6. Table 4. The results are based on bivariate analysis so they may be misleading. The authors need to adjust for other important variables.

In general, I would suggest that the authors focus on the novel aspects of the findings and attempt to adjust for important covariates in all analyses. It is very important that the authors explain why HRQL decreases from year 2 to year 7. There may be some factor that causes this change other than the fracture groups.

**Level of interest:** An article of limited interest

**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.