Reviewer’s report

Title: Distribution but not amount of protein intake is associated with frailty: A cross-sectional investigation in the region of Nurnberg

Version: 1 Date: 22 March 2013

Reviewer: Sara Espinoza

Reviewer’s report:

This is an analysis of protein intake by frailty status in community-dwelling older adults living in Germany. Although the results are largely negative, they would have relevance to individuals studying this limited area of nutritional status, protein intake, and frailty. Further, the authors’ background and review of the literature is thorough and their presentation of the results is balanced. However, there are major concerns about the power to include a large number of covariates in the multivariable models for the number of outcomes in this relatively small study and sample size. Some suggestions for improvement are provided below.

Minor Compulsory Revisions

1) There are some minor grammatical errors, primarily lack of the use of commas for appropriate sentence structure and emphasis. An editor should review from grammatical issues.

Major Compulsory Revisions

1) The odds of being frail, pre-frail, as well as odds of possessing the individual frailty characteristics were tested using multinomial logistic regression analysis. The authors adjusted for several covariates (8); however, given the limited number of events or outcomes, there is likely insufficient power to include all of these covariates. A rule of thumb is that there should be 8-10 events/outcomes for each covariate added to a multivariable model. Therefore, in the case of frailty, only 30 individuals in the cohort were characterized as frail. Therefore, a multivariate model could safely only include 1 predictor and 2 additional covariates. In the case of pre-frailty, there are more outcomes (79); therefore, a model could include 1 predictor and 7 additional covariates. The authors should comment on their power to include all of the indicated covariates in this analysis; and, if insufficient power, should re-analyze their data to include the appropriate number of covariates.

2) In Table 1, please provide the n and proportion (%) for all population characteristics. Also, please include an additional column which provides the characteristics for the population as a whole. The column headings would be: non-frail, pre-frail, frail, total, and then the p-value for the differences in characteristics by frailty classification.

3) In Table 2, there are too many covariates listed in these models for the
number of events in the population. See comments above under Methods.

4) In Table 2, please specifically state whether “first quartile” indicates individuals in the lowest quartile of protein intake.

5) The studies on protein intake and nutrition that have been cited by the authors have had larger sample size than the present study. The authors state that small sample size is a limitation of the study and could affect results.

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

No conflict of interest