Reviewer’s report

Title: Dietary patterns associated with fall related fracture in elderly Japanese: a population based prospective study

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Reviewer: Amanda Devine

Reviewer’s report:

This study has examined the dietary patterns of elderly Japanese and related these to risk of fracture. Instead of focusing on nutrient intake and fracture outcome the authors have used factor analysis to determine the dietary patterns of intake for the group. With this information they have determined three types of dietary patterns: Vegetable; Meat; and Traditional Japanese. The findings from this study are different to that of other studies suggesting a protective effect of meat consumption and non-protective effect of vegetable consumption.

Major Compulsory Revisions

The first issue is the statistical approach and I think it is necessary that this manuscript be seen by an expert statistician. Can the authors describe the subjects division into tertiles as confirmed, moderately confirmed and unconfirmed, more fully? The unconfirmed suggests that the participant didn’t meet the factor analysis classification for that dietary pattern. Is this the case? This may help with readers not familiar with the factor analysis process.

In Table 3 when the characteristics of the three dietary patterns are described by tertile of intake does the Kruskal Wallis have an adjustment for the multiple tests used here? Essentially all participant data is being used three times in each dietary pattern analysis.

Can the authors provide a mean nutrient intake for each dietary pattern by tertile so the nutrient composition of the dietary pattern can be determined? This may assist with understanding of the negative effect attributed to the Vegetable Pattern of eating. For example, is this style particularly low in protein or dietary calcium?

Interestingly Table 4 and Figure 2 illustrate an increased hazard ratio of fall-related fracture with the Vegetable Pattern. The p for trend is significant for the Vegetable Pattern, however, Table 5 explains that vegetables with light green leaves have a reduced hazard ratio for fall related fracture. This is just one food item but these data are contradictory and need further explanation.

Interestingly Table 4 and Figure 3 illustrate a reduced hazard ratio with the Meat Pattern. The p for trend is not significant however but reported as such (P for trend = 0.056). Because the moderately confirmed tertile T2 is significant only for the Meat Pattern – can the authors explain this in light of the fact that these participants are not as likely as those in tertile 3 to have a meat based diet?
The fall related fracture n=28 individuals from an elderly population of 877 people seems particularly low (3%). Can the authors comment of the falls rate in the Japanese population? Can the authors outline the criteria for a fall related fracture due to minimal trauma and the associated sites of fracture?

Minor Essential Revisions
The header for table 3 is also difficult to read.

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

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

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