Author's response to reviews

Title: Low bone mineral density is a significant risk factor for low-energy distal radius fractures in middle-aged and elderly men: A case-control study

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Author's response to reviews: see over
Dear Editor of BMC Musculoskeletal Disorders,

Re: MS ID: 1252827154754727 entitled: Low bone mineral density is a significant risk factor for low-energy distal radius fractures in middle-aged and elderly men: A case-control study

We have now revised the manuscript in accordance with the second reviewer and associate editor’s comments and we do hope that the manuscript now meets all the requirements which have been addressed.

Please see below our responses below.

We hope the editor will now find the revised manuscript suitable for publication in BMC Musculoskeletal Disorders.

Enclosed:

• The second revised manuscript.
• The second revision of the manuscript with alterations shown in the manuscript.
• Second responses to reviewer’s comments.

Sincerely
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Associate editor’s comments:

The authors have adequately addressed most of the reviewer comments, although there are a few remaining issues to address.

With regard to adjusting for age: while matching in a follow-up study does control for confounding, matching in a case-control study does not. In fact, in a case-control study if the matching factor is correlated with the exposure (independent variable), matching introduces confounding into a study (Rothman KJ, Modern Epidemiology, 1986). If this is the case, the confounding must be controlled for in the analysis. Whether or not age is correlated with each variable in Table 2 was not assessed, thus the ORs should be adjusted for age. Furthermore, some of the ORs differ by >10% between the crude and age-adjusted tables, suggesting potential confounding (although this could merely reflect the instability of the ORs due to the small Ns).

Our reply: In the revised table 2 we now only present the main finding of our study demonstrating an association between reduced BMD (osteopenia and osteoporosis) and low energy distal radius fracture, this both in unadjusted analysis and in analysis adjusted for age as requested by the editor. Data on weight and living alone is now only presented in the text in the result section in the manuscript. The other variables in the original table 2 are redundant to present as no differences between fracture patients and controls was seen as shown in table 1. We believe the alterations now make it easier to read the manuscript.

Associate Editor's comments:

Please describe how many potential controls were invited and how many agreed to participate. Also, the possibility of ascertainment bias should be addressed as a potential limitation, i.e. if the control group does not adequately represent the population from which the cases arose in terms of the distribution of risk factors. For example, perhaps those men with low BMD or history of fracture were more likely to agree to be a control in this study of risk factors for fracture.

Our reply: The number of potential controls invited has now been addressed in the result section (see paragraph 3) and in the discussion we are also discussing the potential limitation of the participation rate recruiting controls (end of 3rd paragraph in the discussion).

Associate Editor's comments:

As pointed out by Reviewer 2, it is important that the regression analysis be described in greater detail. It should be obvious to the reader that these are bi-variate associations, unadjusted for other factors (perhaps with the exception of age). The small number of subjects precludes any analyses to assess which risk factors are independently associated with fracture. Thus, it should also be clear to the reader that these factors are not necessarily independently associated with wrist fracture.

Our reply: We now clearly in the material and method section describe that the variables were adjusted for age only.

Associate Editor's comments:

Finally, there are several grammatical errors that must be fixed throughout the manuscript.
Our reply:
The manuscript has been read thoroughly by one of the co-authors who is an native American and fluent in English (Professor Marc Hochberg).

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Reviewer 2:

Our reply:
The description of the regression analysis has been altered and clarified (see also our comment to associate editor). Table 2 has undergone major revision and we now also present age adjusted results. The manuscript has been read thoroughly by one of the co-authors who is an native American and fluent in English (Professor Marc Hochberg).