Author's response to reviews

Title: Factors related to functional prognosis in elderly patients after accidental hip fractures. A prospective cohort study.

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Author's response to reviews: see over
Dear Dr. Giulio Pioli,

Regarding the article MS: 147239913316909 Factors related to functional prognosis in elderly patients after accidental hip fractures. A prospective cohort study. Itziar Vergara Kalliopi Vrotsou Miren Oribe Nerea Gonzalez Susana Garcia and Jose Maria Quintana, please find below the point by point answers to referees request and suggestions.

A reviewed version of the manuscript, including all the requests, has been uploaded as well as a corrected version of Figure1.

I am grateful for your consideration and insights.

Don’t hesitate to contact me for any further clarification.

Best regards,

Itziar Vergara

R1-Kristina Radinovic

INTRODUCTION: I have no comments.

Major Compulsory Revisions

METHODS

1. First paragraph:
1. Please clarify for which period a prospective cohort study was carried out:
   It has been added that the cohort study was carried out for a period of six months.
2. Please clarify what was the enrolment period. It was written in the method, the first paragraph “Information was collected at two time points: at baseline, as soon as the patient was included in the study...” Could you be more precise?
   This paragraph has been rewritten as follows:
   “Information was collected at two time points: at baseline, at the time the patient was attended at the ED due to the fall, and 6 months after the fall. Baseline information was obtained from medical records, from both the ER database and the hospital medical record, and through personal interviews. These interviews took place always during the first week after the fall.”

2. Fourth paragraph:
   1. You stated that patients were assessed 6 months after the fall by reviewing their clinical records and by applying the baseline questionnaires. Did you perform 6-month postoperative visit?
   Patients were not specifically scheduled for a follow up visit in the frame of this research study. They received programmed visit from the medical service that treated the fracture at the time required by their clinical condition.

RESULTS
1. First paragraph;
1. Please define for what period 857 patients were included in the study?
This paragraph has been rewritten as follows:
“In total, 857 patients were initially included in the study, all having attended the ER services of one of the six participating hospitals for a hip fracture following an accidental fall. From these, 638 fulfilled the inclusion criteria and were actually followed up for six months.”

2. Fifth paragraph:
1. What combined variable, please clarify?
This term has been added to the statistical analysis section as follows:
“Analysis was performed separately with the Barthel Index and Lawton IADL Scale results, and also from the perspective of global functional decline, defining a combined variable that considered patients’ status to have deteriorated if either their Barthel Index or Lawton IADL Scale scores dropped by aforementioned amounts.”
We understand that this may clarify the sentence at the results section.

Minor Essential Revisions
1. Table 1. Could you show the results for Charlson Index as well, beside comorbidities?
The results for Charlson Index have been added to table 1.
2. Figure 1. Please correct spelling error for participate: It has been corrected and a new version of the figure uploaded.

Discretionary Revisions
Could you show the results regarding length of hospital stay and complications in the first paragraph of the results section?
The median (Q1, Q3) length of hospital stay was 12 (9, 15) days. Only a 4% of subjects that received surgical treatment, suffered a complication and the most frequent was superficial infections, presented in 5 cases.

R2-Roy Mathew

To the authors:
Your article titled “Factors related to functional prognosis in elderly patients after accidental hip fractures. A prospective cohort study”, has been reviewed. It is a report of a prospectively collected cohort of individuals with “accidental hip” fracture and predictors of functional recovery following the fracture. I think this was an overall well written paper. The data is a bit sparse but still consistent with much of the prior literature on this topic.
I would have liked to see more detail on the comorbidities of the patients (rather than yes/no) or at least give ranges of Charlson index scores. There are relevant disorders to
**Minor reviews:**

1. Line 7: **Corresponding author, not autor:** it has been corrected
2. Line 140 – “were used” occurs twice: it has been corrected

**Discretionary review:**

3. Line 221 – phrasing is confusing. Discharge as reference to leaving the emergency department to another floor seems confusing – maybe because of how I use the term (Typically to mean leaving the hospital altogether). Transfer or admission to a specific unit maybe more universally recognized.

   The sentence has been rewritten as follows.
   “From the ER, patients were transferred to a traumatology ward at the same hospital (92%), or discharged to their homes (3.6%), or to another hospital ward.”

**Major revisions:**

4. Line 131-132: **Moment of interview, is that standardized for all patients? Varying time from fracture to first interview could bias the recall of patients. Should clarify this in methods.**

   Baseline information was collected as soon as possible and always during the first week after the fall, both for hospitalized patient and for those discharged at home. In order to clarify this relevant information, the sentence in the method section has been written as follows:

   Information was collected at two time points: at baseline, at the time the patient was attended at the ED due to the fall, and 6 months after the fall. Baseline information was obtained from medical records, from both the ER database and the hospital medical record, and through personal interviews. These interviews took place always during the first week after the fall.

5. **I would not include ER visits post fracture in table 3 – why would this be a predictor of recovery? You were interested in baseline characteristics that would predict poor functional recovery.**
The referee is right and we agree with his suggestion of removing ER visits from the global model. This item was initially included because we also studied the potential influence of events during recovery period, and ER visit was the only that showed association. Nevertheless, the model has been recalculated and no changes arise, which confirms the consistence of the study’ rationale.

6. Lines 289-291: You mention that there was no significant effect of type of fracture on recovery. It may be that you do not have enough numbers to discern this effect. You could site some references to see if this is consistent with the literature.

The most frequent fractures observed in the studied subjects were simple intertrochanteric and femoral neck fractures, being a 55% and 41% of the total respectively. We totally agree with the referee regarding less frequent type of fractures that are actually not enough represented in the sample. But according to these data and the incidence of the type of fractures included in the study we think that the lack of effect of the type of fracture may be stated. Nevertheless, this issue has been included in the discussion as follows:

“Regarding the characteristics of the fracture, association was not found between the type of fracture and the functional recovery, even though type fracture is clearly associated with mortality [29-31]. With regard to the type of treatment, differences were not found in six months functional recovery between those receiving internal fixation of prosthetic replacement. Similar results have been described even though differences were observed in the short term functional performance during hospitalization [32].”

7. Similarly, the type of repair, if any, may affect recovery – can see what the literature states about this and could be placed in the discussion.

This issue has been included in the discussion and references have been added. The improved paragraph was pasted in the answer to the previous question, number 6.

8. I would also clarify what “accidental” hip fracture means. Would someone with a pathologic fracture be expected to have the same outcome as someone with a purely mechanical fall related fracture? Could mention if any were suspected of having a pathologic fracture.

Fractures to be suspected of being pathologic were excluded from the study. This information has been added in the methodology section, because, effectively was mistakenly missing from the previous version.

“Patients with physical or psychological impairments that prevented them from properly completing the questionnaires were excluded from the study, as were any cases in which syncope [16] was identified as the main cause of the fall or a pathologic fracture was suspected”.

R3: Sarianna Sipila
The manuscript has been written in a little bit untidy and sloppy way

Major Compulsory Revisions

1. The text would benefit from language revision.
   The text has been reviewed by native speaking editors (Ideas Need Communicating Company [http://www.comunicareningles.com/])

Abstract

2. The abstract includes terms which remain unclear to the reader, e.g. functional prognosis and treatment period.
   The term functional prognosis has been changed by functional recovery. Unfortunately I am not able to find the term “treatment period” in the abstract, so I cannot review it.

3. Grouping of variables is also unclear in both abstract and in the methods. In addition to independent (socio-demographic etc variables) and main outcomes (Barthel Index and Lawton IADL Scale) there are other measures done like Health related QoL and Osteoarthritis Index.
   In order to clarify the studied variables, the paragraph has been rewritten as follows.
   “The following were studied as independent factors: socio-demographic data (age, sex, instruction level, living condition, received help), characteristics of the fracture, treatment performed, destination at discharge, health-related quality of life (measured with the 12-Item Short Form Health Survey) and hip function (assessed with the short version of the Western Ontario and McMaster Universities Osteoarthritis Index).”

4. Data analysis remains unclear in the abstract.
   Information about the analysis has been added to the abstract, as requested by the referee.

5. Baseline data collection time needs to be defined in more detail. The authors write that “data was collected at the moment of the fracture”.
   In order to clarify the data collection time variables, the sentence has been rewritten as follows.
   “Data were collected in the first week after the fracture occurred and after 6 months of follow-up.”

6. In the results, multivariate analysis includes variables which are not clearly mentioned in the methods.
   That has been corrected and those variables included.

Introduction

7. Last sentence in the introduction should be deleted or removed into the discussion.
   The sentence has been deleted

Methods

8. Method section would benefit from reorganization (may be subtitles) of the text.
The text has been reorganized as follows: description of the study and the health system where it has been developed; description of studied subjects and inclusion and exclusion criteria; description of the information collection process, describing when, how and what was collected at baseline time and when, how and what was collected at six months; description of the main measure tools used; description of statistical analysis.

9. **Baseline data was collected from medical records and by personal interviews but follow-up data with questionnaire. Change in data collection method may have significant impact on the results (it may even be that the measurements are not reliable).**

It is true that for the six months information collection, questionnaires where sent by mail to participants. A 30% of them self-completed and returned the questionnaires, and for the rest, as explained in the methods section, a telephonic interview performed by the same trained interviewers that at basal time was made. In our opinion, it is hard to expect this difference to introduce a significant bias in the presented results, given that the questionnaires are suitable for self-completion too. Nevertheless, following the referee request, the following sentence has been included as a limitation:

“These instruments were used both, by interviewers and self-completed by the participants which could be considered as an additional limitation, even though, used instruments were suitable for both types of use.”

10. **It is also important to point out that the baseline PADL and IADL information assesses prefracture, not current condition.**

The method section described the mentioned issue with the following sentence.

“...level of independence and functioning, both before the fall (retrospectively) and at the moment of the interview...”

11. **What do the authors mean by “validated Spanish language version of SF-12 was used when available”?**

The sentence was wrongly constructed. It has been rewritten as follows.

“Validated Spanish language versions of these all aforementioned questionnaires were used.”

12. **It remains unclear how independent variables were selected for the multivariate model.**

In the article it is stated that: “The multivariate regression model was constructed with backward selection procedure?, initially considering all variables with p-values ≤ 0.10.”

13. **Do the authors have any information on rehabilitation prescribed for the participants after the fracture.**

Yes. 137 (24.6%) of the 557 studied subject were prescribed rehabilitation. Differences were not found between the functional recovery of these subjects (p=0.287), neither considering the mean of the number of session received by them (p=0.481)

**Results**

14. **Flow chart and tables are clear.**
Conclusion

15. Conclusion is appropriate and well written and limitations of the study stated. I would add in the limitations the collection of the main outcome (interview at baseline and questionnaire at follow-up). Conclusion is the best part of the manuscript. It has been added.

Discretionary Revisions

16. Statistical analysis could be more sophisticated with such a nice number of participants. Is there a reason, why main outcomes were dichotomized for the statistical analysis?

Thank you for this interesting comment. Data have been dichotomized in order to answer to the main objective of this work which was to describe the profile of patients with bad functional recovery prognosis. The tests used for the measurement of functional capacity have well defined, accepted and clinically relevant cut points, and those have been applied to this work. The consideration of functional capacity in a continuous way, although may had allowed for more sophisticated analyses, was not the most suitable option to achieve the clinical application we are seeking here.