Author’s response to reviews

Title: How much do combined affective and cognitive impairments worsen rehabilitation outcomes after hip fracture?

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Version: 2 Date: 12 Feb 2018

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BGTC-D-17-00511R1

How much do combined affective and cognitive impairments worsen rehabilitation outcomes after hip fracture?

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BMC Geriatrics

Response to reviewers

Modifications to address the Editor’s technical comments:

- Authors’ names/ List of Abbreviation/ Declaration section: have been checked and revised

Response to reviewers’ reports:

We thank the three reviewers for their constructive comments. Please see our responses below.
Abigail J Hall, BSc, MSc (Reviewer 1): Thank you for asking me to review this article. I think this is a very important topic and is little understood, so such research is vital to help understand the factors which may affect the outcomes of people after hip fracture. It also adds vital evidence to support the fact that people with depression and cognitive difficulties can still be rehabilitated after hip fracture.

I have a few small comments regarding the paper which I think would benefit from being clarified.

Title - the title pre-supposes that it does worsen outcomes, I would re-word

Authors’ response: The study indeed builds on the hypothesis that not only cognitive impairment but also affective impairment may reduce functional recovery, and that the impact of combined impairment might be greater. We therefore did not reword the title.

Page 2, Line 27… not sure of the use of "mental impairment", would stick to cognitive impairment. It has been used interchangeably throughout the paper so I would alter all of these personally.

Authors’ response: Mental impairment was meant to include affective as well as cognitive. The sentence was modified for sake of clarity.

Line 6 - slightly strange wording… perhaps just "Overall, one in four hip fracture patients will have permanent lower-body disability that is a result of the fracture"

Authors’ response: The sentence was modified according to your suggestion.

Page 5, Line 50 onwards - Was this also assessed within 48 hours of admission? Is this admission with the hip fracture or admission to the rehab ward? Were there any assessments relating to
delirium? I would be concerned that people may be experiencing delirium, or a medical reason for the fall and fracture (such as UTI) which may have affected the MMSE scores. Was this repeated at any other stage?

Authors’ response: The sentence now indicates that cognitive assessment was performed within 48h of admission to rehabilitation, after discharge from the acute care ward (mean length of stay in acute care (13 days) has also been added in the first paragraph of the methods). We therefore think that any delirium related to the fall and/or fracture is likely to be in a recovery stage.

Screening for delirium was not systematic, but any abnormal MMSE did lead to further assessment, including neuropsychological assessment. A previous study in the same rehabilitation center showed that 4% of the patients had diagnosed delirium (Ferretti M, (J Am Med Dir Assoc 2010; 11: 371–376).

Page 7 - Line 42. I would like more information about the ethical issues around this study. It states that verbal consent was gained later in the manuscript, but a large proportion of these people had cognitive issues which may have affected their capacity to consent to taking part in the study. What measures were put in place to overcome these issues?

Authors’ response: More precisely, as it is now mentioned in the declaration section (page, line), patients did give their consent to the use of a set of clinical data collected throughout the stay, anonymized and for research purposes. In case of cognitive impairment, a proxy was asked for consent to use these data.

Page 8 - Line 10. Would it be useful to give mean values of characteristics rather than a typical patient?
Authors’ response: Table 1 presents the distribution of patient’s characteristics using mean values and proportions. This sentence was a way to summarize this table.

Benjamin Bücking (Reviewer 2): I am pleased to have the opportunity to review the manuscript "How much do combined affective and cognitive impairments worsen rehabilitation outcomes after hip fracture?" for BMC Geriatrics.

The manuscript presents some complementary data about the influence of affective and cognitive impairments on rehabilitation after hip fracture. Therefore the study is valuable although it has many limitations.

Remarks:

Abstract:

Methods: Please add some information: What was the study design? Which measurements were used? How was "functional improvement" defined?

Authors’ response: Information about the study design and the definition of functional improvement was added.

Conclusion: This should be written with more caution due to the fact that no follow up data where available and only patients who were send to rehab were investigated.

Authors’ response: The sentence has been modified to address the reviewers’ comments

Main document:

Background: OK
Methods:

- Please describe the setting of rehabilitation briefly. What kind of therapy was used and how frequent?

Authors’ response: A sentence was added to provide some indication about the usual type and frequency of therapy delivered in this setting.

- I should be explained/emphasized how functional improvement was defined. Otherwise one could say that for example only a gain of at least 10 or 15 points in the BI was defined as an improvement.

Authors’ response: The paragraph, page, lines indicates that functional improvement was defined as any gain (i.e., at least a 5-point difference) on the BI.

- I wonder about the costs per day. Was it really $736? This seems to be very expensive.

Authors’ response: Yes, this was the 2016 daily cost in our hospital.

- Please describe the multivariate models in more detail.

Authors’ response: This paragraph has been modified to describe the statistical models in more detail.

- p 7 L 42: I would transfer this at the beginning of the methods (e.g. at the end of the first paragraph).

Authors’ response: We did move it as suggested.
Results:

- In general: In my opinion using decimals in variables such as age or BI is not useful. Consider deleting the decimals.

Authors’ response: I do agree, decimals have been removed from the text.

- p8, L 10f: This sentence should be omitted.

Authors’ response: This sentence was a way to summarize the Table 1 that presents the distribution of patient’s characteristics.

- p10, L 31ff: I should be emphasised (there or somewhere else in the manuscript) that not the real costs for treatment but the reimbursements were measured.

Authors’ response: The sentence now indicates that not real costs, but bills to the insurance are used. This is also described in the methods section, page, line

Discussion: This is well structured. I have only two remarks:

- p12, L 54ff: Since only the daily "costs" (not the real costs) where multiplied with days in rehab I would NOT describe this as one of the strengths of the study.

Authors’ response: Of course this is an approximation of real costs, but it is a useful one to give an idea of the magnitude of difference across the four groups which are compared in this work, depending on affective and cognitive status.

- It must be added as limitation that no follow up data were available.

Authors’ response: This has been added to the limitations
Christopher Poulos (Reviewer 3): This paper is quite well written and adds important data to the issue of the benefit of rehabilitation in patients with cognitive / affective impairment post hip fracture. I have relatively few comments on the paper:

- The conclusion in the abstract does not fully match the conclusion in the paper itself. There are two key finding from this work in my view. The first is that patients with cognitive/affective impairments do less well than those without these impairments. The second is that, despite this finding, patients with cognitive / affective impairment "still achieved significant functional gain, even though its magnitude was reduced". The call is then for better adapted rehabilitation strategies for this group. The conclusion in the abstract needs to cover all these issues.

  The conclusion has been modified accordingly.

- In Figure 2, the key repeats the categories "Home, functionally independent' twice (one should be different)

Authors’ response: This mistake has been corrected.

- In the Discussion, I do not follow what the authors are saying in the second sentence in the second paragraph (beginning, "indeed, results of analyses ......."). The paper itself does not talk about the 'dose of therapy'. There is no reference to support this statement. In fact, variations in therapy 'dose' between the patients with / without cognitive/affective could have affected the outcomes presented in the paper.

Authors’ response: This sentence does not refer to the dose of therapy, but to the dose response effect observed in the strength of the association between the explanatory variable (i.e., across patients without any impairment, with affective or cognitive impairment, and with combined affective and cognitive impairment) and the “functional improvement” outcome.