Author's response to reviews

Title: Fall risk-increasing drugs and falls: A cross-sectional study among elderly patients in primary care

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Author's response to reviews: see over
Malmö January 24th, 2014

Dear Editor,

Thank you for providing us an opportunity to revise our manuscript. The reviewers’ and your comments were very useful and our manuscript is now improved. All changes suggested by you and the reviewers have been incorporated in the manuscript.

Our responses to the comments are listed below, following the questions.

Editor’s comments:

I agree with the reviewer that fall risk is very different between home-dwelling older persons and nursing home residents, so are risk factors. Therefore, you need to report data for each sub sample, and also do analysis for both subgroups, even if only 25 % were home-dwelling. If this is not done, I am not willing to consider the manuscript for publication. If the results show that there are no differences between the sub-samples, results can be presented for the whole group, but then you have to say that this analysis has been performed.

Answer: We analysed the two subgroups, community dwelling and nursing home patients and found no differences regarding number of drugs. This has been clarified by adding Table 4 and following sentence in the results part: “There were no significant differences between total number of drugs, number of FRIDs, number of ODs or blood pressure between community dwelling and nursing home patients when performing a Student’s t-test (Table 4).

Background:

There is lack of coherence in the statements below, presented in the background. Please improve.

"Today, there is a consensus definition of falls [8] and several risk assessment tools are available to assess a hospitalised [9, 10] or community-dwelling [11, 12] patient's risk of falling, using different clinical characteristics, including confusion, dizziness, cognitive impairment or administered drugs. Although the causes of falls are multi-factorial, medications are a significant risk factor. Fall risk-increasing drugs (FRIDs) are drugs considered to increase the risk of falling."
Answer: The statements have been improved and the last sentence is now removed from the paper.

Background: please report number of drugs for home-dwelling older persons and for nursing home residents separately, if given in the reported paper.
"Community-dwelling elderly individuals and nursing home residents in Sweden use on average 8-10 different drugs. [1]"

Answer: The reference that we used is reporting the same number of drugs for both groups in Swedish people 75 years old and older, therefore we are unable to provide separate numbers.

Background: Please describe as aim: This study aimed to....
In this study, we chose to explore data for prescribed FRIDs and ODs as presented of NBWH and their correlation with reported falls in Swedish elderly community-dwelling and nursing home patients.

Answer: We changed the sentence as suggested to “This study aimed to… We also replaced sentence 21 and placed it as sentence 29 (the last sentence in Background section) with the text suggested by reviewer 1.

Data collection and statistical analysis: remove "in the RCT" from the sentence below The patients were included in the RCT between September 1 and December 16 2011.

Answer: We removed “in the RCT” as suggested.

Data collection and statistical analysis: "was" should be "were"

Answer: It has been changed.

During revision of the manuscript, English grammar has become poorer. The authors therefore need to carefully check the whole manuscript.

Answer: We have checked the whole manuscript.
Reviewer 1: Allen Huang

Reviewer's report:

The following are extensive editing comments to improve the English readability. All are considered minor essential edits. Please carefully read the final text to ensure no change in meaning has occurred.

Abstract Sentence 3: “…Swedish National Board of Health and Welfare has created a list of fall risk increasing drugs (FRIDs) and drugs that may cause / worsen orthostatic hypotension (ODs).”

*Answer: We improved the text as suggested.*

S4: “…cross-sectional study was aimed to assess…patients aged 75-years and older and who were using a multi-dose drug dispensing system.”

*Answer: We improved the text as suggested.*

S7: “…outcome measures were the number of FRIDs… as well as age, sex, number of drugs and place of living….proportion of the study population…”

*Answer: We improved the text as suggested.*

S8: “…secondary outcome measure was the distribution…”

*Answer: We improved the text as suggested.*

S9: “The patients were dispensed a mean…”

*Answer: We improved the text as suggested.*

S12: “…more common in nursing home patients.”

*Answer: We improved the text as suggested.*

S14: “…female sex…” S17: “…most frequently dispensed FRIDs.”

*Answer: We improved the text as suggested.*

S18: “…total number of drugs dispensed.”

*Answer: We improved the text as suggested.*

S19: “…no association with the number of ODs.”

*Answer: We improved the text as suggested.*
S20: “Interventions to reduce falls in the elderly by focusing…might improve the quality and safety of drug treatment…”

Answer: We improved the text as suggested.

Background
S1: “…patients aged 75-years and older… in Sweden between (?) 1990-2010…”

Answer: We improved the text as suggested.

S4: “…inappropriate drug use could potentially be prevented.”

Answer: We improved the text as suggested.

S5: “…among patients older than 65-years.”

Answer: We improved the text as suggested.

S6: “…patients older than 65-years…”

Answer: We improved the text as suggested.

S8: “…(FRIDs) was very common (93%)…”

Answer: We improved the text as suggested.

S11: DELETE “Fall risk…increase the risk of falling.” –redundant sentence

Answer: The sentence has been removed.

S12: “…medications which can cause sedation…”

Answer: We improved the text as suggested.

S14: “Due to age-related physiologic changes…may cause or worsen…”

Answer: We improved the text as suggested.

S15: “…causing or worsening orthostatic…”

Answer: We improved the text as suggested.

S16: “…urologic spasmolytics may affect…”

Answer: We improved the text as suggested.

S17-18: “Polypharmacy and the use of psychotropic drugs, especially when combined with cardiovascular medications or present as therapeutic duplications have been shown to increase falls risk [16-19].”

Answer: We improved the text as suggested.

S20: “…significantly reduced the risk of falling.”

Answer: We improved the text as suggested.
S21: I have no idea what the authors are trying to say

Answer: We have removed the sentence.

S22: “…Sweden has produced a list of FRIDs…worsening orthostatic hypotension…”

Answer: In order to be consistent, we chose to use “causing or worsening orthostatic...”.

S23: “…population 75-years or older…”

Answer: We improved the text as suggested.

S24: “Community-dwelling older adults…”

We changed the terms as suggested.

S25: “…of them use the multi-dose drug dispensing (MDD) system.”

Answer: We improved the text as suggested.

S26-27: “This system involves machine-packaging all the medications that the patient should take at any particular time together in small labelled plastic bags. This packaging is done at a regional pharmacy dispensing centre and means that nurses are not involved in drug dosage preparation.”

Answer: We inserted the suggested sentence instead of the one we used.

S28: “The use of the MDD system ensures a more reliable source of a patient’s active medication list.”

Answer: We inserted the suggested sentence instead of the one we used.

S29: “The objective of this study was to explore the association between the drugs on the NBWH list of FRIDs and ODs and reported falls in…”

Answer: We replaced sentence 21 and placed it as sentence 29 (the last sentence in Background section) with the suggested text and the aim of the study as suggested by the editor.

Methods

S1: “…system aged 75-years and older… in nursing homes or in their own homes…”

Answer: We changed the text as suggested.

S2: “…collected from a separate randomised controlled trial (RCT)…”

Answer: We changed the text as suggested.

S3: “…nurses completed a symptom checklist…”

Answer: We changed the text as suggested.
S4: “…is designed to identify drug-related symptoms.”

Answer: We changed the text as suggested.

S5: “For this study…”

Answer: We changed the text as suggested.

S6: “such as age, sex, residency…”

Answer: We changed the text as suggested.

Please supply an English translation of the PHASE-20 tool if possible.

Answer: There is no English translation of the PHASE-20 tool.

Data collection S1: “The patients were recruited to the RCT…”

Answer: We changed the text as suggested.

S3: “Baseline drug lists were screened…”

Answer: We changed the text as suggested.

S7: “…from certain ATC groups appear on both FRID and OD lists.”

Answer: We changed the text as suggested.

S8: “Data on hospital admissions and emergency department visits relating to falls during the year prior to inclusion… collected from the patient’s hospital electronic medical records.”

Answer: We changed the text as suggested.

S9: “…reported falls were collected and analysed.”

Answer: We changed the text as suggested.

S10: “Mild falls were defined as falls identified on questioning patients for events which happened during the three months before the date of the PHASE-20 checklist evaluation.”

Answer: We changed the text as suggested.

S12: “…age, sex, total number of dispensed drugs and place of living…of the study population…”

Answer: We changed the text as suggested
Results

S5: “Only 13% of the study population had no drugs prescribed form the FRID or OD lists.”

*Answer: We changed the sentence as suggested.*

S6: “Data collected from the PHASE-20 symptom checklist…”

*Answer: We changed the sentence as suggested.*

S8: “…data about historical (mild) falls from the PHASE-20 assessment were available only…”

*Answer: We changed the sentence as suggested.*

S9: “Twenty-nine percent of the study patients… in the three months prior to the PHASE-20 evaluation.”

*Answer: It is important to understand that the result refer to 29% of the patients with available data on mild falls which is not all the study population. We prefer therefore the term “these” instead of “the study population”. The second suggestion is adopted.*

S10: “More men reported historical (mild) falls.”

*Answer: We changed the sentence as suggested.*

S11: “There were no differences between patients who reported mild falls and those who did not with regard to age, total number of prescribed drugs and place of living.”

*Answer: We changed the sentence as suggested.*

S12: “…collected from the patients’ EHR…”

*Answer: We changed the sentence as suggested.*

S14: “…nursing home patients as compared…”

*Answer: We changed the sentence as suggested.*

S16: “…multiple linear analyses…”

*Answer: We changed the sentence as suggested.*

S17: “…positive associations between the number of FRIDs with the total number of prescribed drugs…”
Answer: We changed the sentence as suggested.

S18: Being female was associated with…”

Answer: We changed the sentence as suggested.

S19: “Associations were found between the number of ODs and both the total number of prescribed drugs…”

Answer: We changed the sentence as suggested.

S20: “…between the number of ODs and the occurrence of severe falls.”

Answer: We changed the sentence as suggested.

S21: “…different drugs were prescribed to patients among the total…”

Answer: We changed the sentence as suggested.

S24: “The five most frequently prescribed…”

Answer: We changed the sentence as suggested.

Discussion

S2:”A significant proportion (87%) of the study population were taking FRIDs and ODs, as in other studies…”

Answer: We changed the sentence as suggested.

Delete S3

Answer: The sentence is now deleted.

S4: “More men reported historical (mild) falls…”

Answer: We changed the sentence as suggested.

S5: “The study population…”

Answer: We changed the sentence as suggested.

S6: “These results are similar to previously published…”

Answer: We changed the sentence as suggested.

S7:“Fallers used a higher…”

Answer: We changed the sentence as suggested.

S8: “It is difficult…”

Answer: We changed the sentence as suggested.

S9: “Other international…include analgesics…”

Answer: We changed the sentence as suggested.
S10: “Since drugs from these classes were not included in the Swedish NBHW lists our
results may seem inflated.”

Answer: We believe that the results are modest compared to studies using more extensive
FRIDs lists. Therefore, the sentence is changed as followed:

“Since drugs from these classes were not included in the Swedish NBHW lists our results may
differ from studies using more extensive FRIDs and ODs lists.”

S12: “Female sex…”

Answer: We changed the word as suggested.

S13: “…low bone mass, the presence of osteoporosis and low muscle strength, females are
more likely than males…”

Answer: We changed the sentence as suggested.

S15: “…multiple illnesses and the use of a high number of drugs.”

Answer: We changed the sentence as suggested.

S19-20. Delete since there is no supporting data presented.

Answer: The sentences are deleted.

S21-22. Move to limitations section.

Answer: The sentences are moved to the Limitations section.

S24: “…in the study population…”

Answer: The sentence is changed.

S26: “…drugs such as the commonly prescribed diuretic furosemide can cause or worsen
orthostatic hypotension.”

Answer: We changed the sentences as suggested.

S29: “…third of patients complaining of moderate to severe symptoms of
dizziness…reported falling in the three months prior to the study, compared to less than 10%
in those who had no complaints.”

Answer: We changed the sentence according to the suggestion.
S30: “This suggests…the PHASE-20 symptom checklist might be a useful tool to predict falls among elderly patients.” (authors should comment in the future research section that psychometric properties of this tool should be investigated)

*Answer: We changed the sentence as suggested. PHASE-20 evaluation tool was found to possess an acceptable consistency, test-retest reliability, and internal validity as shown in reference 25. We added this sentence in the Discussion part.*

S31: “…due to the use of the MDD system.”

*Answer: We changed the sentence as suggested.*

S32: “The reliability of the data is high since it was collected in a standardized manner by a single individual.”

*Answer: We changed the sentence as suggested.*

S34: “The study population was from several different geographic regions in Skane, Sweden…”

*Answer: We changed the sentence as suggested.*

S35: “…the symptom checklist…had direct contact…which ensured more accurate description of their symptoms.”

*Answer: We changed the sentence as suggested.*

Limitations S2-4 delete.

*Answer: The sentences are removed.*

S5: “Since no fall risk assessment tool was used we are unable to stratify patients into low and high risk for falls.” Move S21-22 from above section to here.

*Answer: We changed the sentences as suggested and moved here S 21-22.*

S6: “Another limitation…lack of geriatric assessment. The identification of cognitive impairment, comorbidity and functional disability would clarify the presence of other potential factors in increased falls risk.”

*Answer: We changed the sentences as suggested.*

S7: “…regardless of the defined daily dosage of each drug.”
Answer: We changed the sentence as suggested.

S8: “More detailed drug information might have allowed a better understanding of whether drug dosage affects falls risk.”

Answer: We changed the sentence as suggested.

S9: “…even though some of them were not…”

Answer: We changed the sentence as suggested.

S10: “and were possibly less prone to falling.”

Answer: We changed the sentences as suggested.

S11: “…retrospective it is unknown what each study patient’s drug profile was during the period prior to the PHASE-20 evaluation.”

Answer: We changed the sentence as suggested.

Future research

S1: “…assessment tool including FRIDs to be able to stratify the patients into low…”

Answer: We changed the sentence as suggested.

S2: “…would also improve the strength of the association of exposure to FRIDs and subsequent falls.”

Answer: We changed the sentence as suggested.

S3: “…used the MDD system.”

Answer: We changed the sentence as suggested.

S4: “Although this system was originally developed to improve patient safety and drug compliance especially among those with multiple chronic co-morbidities, studies indicate that the use of the MDD system may be associated…”

Answer: We changed the sentence as suggested.

S5 delete.

Answer: The sentence is deleted.

S6: “…assess the possible effect of medication reviews …”
Conclusions

S1: “…common in this study population.”

Answer: We changed the sentence as suggested.

S2: “…women had higher rates of falls requiring emergency room visits or hospitalizations.”

Answer: We changed the sentence as suggested.

S3: “The number of FRIDs…”

Answer: We changed the sentence as suggested.

List of abbreviations ODs=…worsen orthostatic hypotension

See comment for S 22.

Table 2 title: “…study population”

Answer: We changed the term as suggested.

Table 3 title: “…age, sex, place of living…”

Answer: We changed the term as suggested.

Table 3 footnote OD=…worsen orthostatic hypotension

See comment for S 22.

Table 4, column 1: change “gender” to “Female sex”; change “Living form” to “Community living”

Answer: We changed the terms as suggested. Table 4 has become Table 5.

Supply an English translation of the PHASE-20 questionnaire if possible.

Level of interest: An article of importance in its field

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

Answer: We have checked the whole manuscript.

Statistical review: No, the manuscript does not need to be seen by a statistician.
Reviewer 2: Mikael Denkinger

Reviewer's report

Most points have been adequately addressed. Limitations still somewhat override the strengths of the study which, on the other hand, could still be of limited interest to a very specialised research community.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

We have not addressed these comments.

We hope our manuscript is now acceptable for publication.

Sincerely,

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