Author’s response to reviews

Title: Drug use differs by care level. A cross-sectional comparison between older people living at home or in a nursing home in Oslo, Norway

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Author’s response to reviews:

Dear Editor,

Thank you for giving us the opportunity to revise and improve the manuscript. Please find below a point-by-point response to the comments received.

We enclose also the manuscript with all revisions indicated by track changes.

We hope that the revised manuscript is now acceptable for publication in BMC Geriatrics.

Yours sincerely,

Amura Francesca Fog, on behalf of the authors

Technical Comments:

(1) Please include email address of all authors in the title page.

Answer: We included the e-mail addresses of all authors in the title page.
Reviewer reports:

Carole Parsons (Reviewer 1): This is an interesting study comparing medication use by older people residing at home with older people residing in nursing homes. It is well written, and the rationale for the study and the methods used are well defined and appropriate. The results are presented clearly and discussed in the context of the literature in the area. In my opinion this manuscript is acceptable for publication with minimal revisions required as detailed below:

1. Please explain why you selected 70 years and older when most literature defined older people as 65 years and older.

   Answer: Although older people are commonly defined as 65 years and above, we did not include people younger than 70 years because there were very few nursing home residents aged <70 years.

2. Please indicate in the results in the abstract and in the body of the manuscript whether the differences you observed in the two groups in terms of prescribing of the various medications reached statistical significance.

   Answer: We have reported relative risk ratio (RR) with 95% confidence interval and therefore, we have not included also the p-values to show statistical significance. We interpreted the findings on the assumption that differences reach clinical significance when the RR was ≤ 0.5 or ≥ 2.

   We added this information in the Methods section, lines 154 – 156.

3. Please use "older people" rather than "elderly" throughout

   Answer: We changed elderly to older people throughout the manuscript.
4. Please comment as to whether the 41 nursing homes from which you obtained data on drug use are representative of nursing homes in Oslo/Norway

Answer: The nursing homes were representative of nursing homes in Oslo because we included most of the institutions in the municipality (41 out of 51). We have added information about the nursing homes as being representative for nursing homes in Oslo/Norway in the Methods section, lines 124 – 125.

5. In the discussion, please comment on the gender difference between the likelihood of using anti-dementia drugs

Answer: The finding that the likelihood of using anti-dementia drugs was higher for men than for women was unexpected and we can only speculate that it might be due to the presence of more severe neuropsychiatric symptoms in men with dementia.

We have now commented that this finding should be investigated in further research, in the Discussion section, lines 232 – 233.

Reviewer 2 (Reviewer 2):

REQUESTED REVISIONS: There are many issues I find with this article:

1. The issue with the idea and scientific use: People living in nursing homes and at home, even at the same age, are very different types of population. Nursing home patients - and this is proven - are older and have a higher disease burden. Hence, comparing drug use between these two population and NOT taking in consideration the diagnoses and morbidity difference is useless.

It's like comparing patients from oncology dept and surgical dept, and concluding that surgical dept patients use more gauzes. It's true but not really scientifically significant, like comparing apples with oranges.
Answer: As we designed and conducted the present study, we knew well that the two populations would be different (i.e., “apples and oranges”) because nursing home residents have a higher disease burden. However, in Norway, both groups are commonly treated according to the same national clinical guidelines for various diseases. In our opinion, describing the patterns of drug use between the two settings is therefore still relevant because this may inform how future quality improvement interventions like e.g., medication reviews, can be better tailored to fit with the challenges in each setting. This was in fact the main objective of our study. We have now made this more explicit in the manuscript. Another objective was to disclose areas of potentially inappropriate medication use that have to be addressed in future research.

We are also well aware of the important limitation that we did not have access to the clinical diagnoses indicating the drug use. Neither did we have access to data allowing us to record relevant measures like e.g., the Charleston morbidity score. However, we have interpreted drug use as a proxy for clinical diagnoses which is commonly done in pharmacoepidemiological studies.

We have addressed the reviewer’s comment by revising the Introduction section, lines 102 – 110 and the Discussion section under limitations, lines 298 – 308.

2. What this study adds globally: Secondly, the main depth of the issue has already been shown in different studies, so basically, all this study adds is such information in Oslo.

Answer: We agree that we have not presented in a clear way what our study adds to the existing literature, mainly that we performed a comprehensive comparison of the drug prescription in the populations and report data on drug groups/individual drugs not commonly addressed in other studies.

Our findings reveal in more details the different prescribing practices by care-level. We believe that our findings can be generalized to older people living elsewhere in comparable settings.

We have addressed the reviewer’s comments by revising the Discussion section, lines 219 – 221 and lines 290 – 292, including the Textbox on page 33.
3. The purpose is lacking: although the authors state their aim they do not clarify what is the purpose and whether they have hypotheses; in other words - why do they want to do what they embarked on doing? What are the implications? What is the use of such study?

Answer: We agree that we should have presented in a more clear way the study objectives.

Due to the differences in morbidity, disability and drug use between older people residing in nursing homes or at home, measures to improve drug prescription practice for older people needs to be tailored for the care-level setting in question. We believe that it is of importance to analyze both differences and similarities in drug use between older people in these two settings to ensure that the most important problems in each setting are addressed. Describing drug use patterns for older people residing in the two settings may identify areas of concern as well as in need for quality improvement, and it may guide the focus for further research in the field.

We have addressed the reviewer’s comments by revising the Abstract, lines 25 – 27 and the Introduction section, lines 111 – 113.

4. The methodology is dubious: Comparing medication that is being bought every 3 months compared to medication used is dubious whether it is correct representation. Additional problem: the authors considered regular and PRN drugs as one prescription! This is unacceptable as some drugs could be 90% used as needed, and hence do not represent the accurate usage of drugs!

Answer: We agree that at the first glance it may seem dubious to compare point-prevalence data (nursing homes) with one year registry data (elderly patients living in own homes). However, knowing the peculiarities of Norwegian drug prescription practice, the method in our study might not be that dubious. For Norwegians not residing in long–term care facilities, drugs for chronic use are not issued for more than 3 months each time because of national regulations. When a prescription is refilled several times a year, it is likely that the drug is for continuous use. As medical records for out-patients are inaccessible, medication dispensed at the pharmacies (i.e. the data included in the Norwegian Prescription database (NorPD)) give the best available measure for drugs in use. From the NorPD we calculated drug prevalence rates based on purchase data for both 3 months and 12 months. Because these prevalence rates were almost identical, we have used the annual drug prevalence rates for the statistical analyses for reasons of feasibility.
With regard to the comment regarding regular and PRN drugs, we collected information about the drug use from two sources. In the out-patient setting, reimbursed drugs are drugs for regular use while not-reimbursed drugs are intended for shorter courses or as needed. However, they may sometimes be used regularly like e.g. hypnotics. For people living in a nursing home, we had information on whether the drug was prescribed for regular or as needed (prn) use. If the same drug was listed both for regular and prn use in the same patient, we merged the two into one prescription.

However, in the analyses we did not differentiate between regular or prn drug use. This is in line with most pharmacoepidemiological studies based on registry data.

We have now tried to explain this better in the Methods section, lines 136 – 148 and in the Discussion section under limitations, lines 301 – 303.

5. Grammatics: it's not minor opioids but weak opioids.

Answer: Thank you, we made this correction throughout the manuscript.

6. The conclusion is not accurate completely: they conclude that the difference in drug use is indicative of more symptomatic and palliative approach in the nursing home which could be a hypothesis, but not a conclusion. Additionally, you cannot conclude with anything including quality of life as you have not measured it!

Answer: We have removed from the conclusion the reference to palliative care or quality of life.

We revised the conclusion in the abstract, lines 50 – 54 and in the body of the manuscript, lines 325 – 331.

7. What I think should be the focus of such study: the idea of deprescription and possible useless drugs based on some guidelines!
Answer: Our aim was to compare the drug use of older people living at home or in nursing homes to prepare the ground for future educational interventions to make them fit better to the pharmacological challenges in each setting. We have identified areas in probable need for further research and quality improvement.

In addition to the revisions performed in the Introduction to address the reviewer’s critique on the study purpose (comment 3), we have revised the Discussion focusing on the possible use of our findings in regard to potentially successful de-prescribing/therapy guidelines, lines 290 – 294 and the Textbox on page 33.

As mentioned: objective is dubious as it is comparing apples and oranges - they should compare it by diagnosis or Charleston morbidity score.

Design + execution: you cannot take PRN drugs and regular drugs as one type.

Interpretation: you cannot talk about quality of life if you haven't taken it in consideration. Lack of addition to scientific data.

Answer: We have tried our best to address all comments, please see above.

During the revision process, we have made few other revisions throughout the text to improve the language; we changed the order of some paragraph and consequently changed the numbering of several references in the Reference list. All changes are shown with tracked-changes in the resubmitted manuscript.