Reviewer’s report

Title: Potentially inappropriate Medication Use in Nursing Homes. An observational study using the NORCEP-NH Criteria

Version: 0 Date: 16 Mar 2017

Reviewer: Emily Reeve

Reviewer’s report:

This manuscript describes cross-sectional analysis of medication data of nursing home residents. Participants were those who were enrolled in a study on use of antibiotics and IV fluids. The study appears well done and is important, although it is not clear what this adds to what is currently known on this topic.

While the overall quality of the writing is good - there are parts where the language chosen makes the sentence unclear. I have highlighted a few examples in my comments below.

Introduction

'have over the last decades become increasingly frail and ill' - This first sentence is rather vague - have the patients become frail and ill over time or has the population of older adults become more frail - 'ill' also seems like a vague term.

'While medication use is crucial for symptom relief, polypharmacy also involve adverse reactions (ADRs)' - suggest revising this sentence, medications can be appropriate for more reasons than just symptom relief, additionally the second part should perhaps say - polypharmacy is associated with ADRs?

'Due to dementia and other conditions, nursing home residents may have problems expressing their opinion and experience regarding medication use.' - patient values and preferences are a very important part of appropriate medication use, but this sentence doesn't really fit in with the rest of the paragraph (nor is this mentioned anywhere else in the manuscript).

Aim - 'predictors for PIM use in nursing home residents' - please clarify what this means, identify factors associated with PIM use? Or outcomes of PIM use?

Methods

Suggest providing a short description of the interventional study - i.e. was it about rationale use of medications? Might the intervention have influenced overall medication use in any way? What was the significance level? e.g. p=<0.05?
Results

Table 1 - consider adding if there was a statistical difference between those included and excluded (i.e. those without a medication list)

Regarding the word 'average' - I suggest using the term more commonly employed in statistics - 'mean' (if this is correct, as opposed to the median)

'Hits per person' - this is unusual terminology to me - is there more descriptive term that could be used?

Is there a reason why 2 of the tables are at the end of the manuscript while the others are in place? Are these intended to be supplementary data?

'deprescribing criteria', parts A and B are first mentioned in table 2 - I would suggest introducing these in the introduction/methods - also 'special attention' category?

Table 2: The numbers in the last 2 columns are unclear - what do they represent? According to the heading row 'Freq., regular med. only (%)' for the first row - how can the frequency be 0, but 8 for regular meds - is the % missing? - or is the number after the ',' the % - in which case how can the frequency be 0, but 8%? I may be missing something obvious, but I suggest making it as clear as possible for the readers.

Several of the results in the 'factors associated with potentially inappropriate medication' section were unclear to me - for example:

'When including only residents living in either long-time or dementia wards, odds for PIMs was approximately the same as for all residents as a whole (OR 1.63, p=0.04) but for 3+ psychotropic drugs increased even more (OR 2.91, 95% C.I. 1.36-6.23, p=0.006).'- if the odds of being in a long-term or dementia ward were similar to all residents, why is the OR significant (or did you have a different p value for significance - suggest including 95% CI for all ORs, even if non-significant?

'The odds of receiving PIMs were higher for the group with the highest ADL score. This was even more evident for those using 3+ psychotropic drugs, where the odds for the best functioning tertile was 2.16 times higher than for the tertile with the lowest ADL score (p=0.006).'- does this mean when you looked at PIM use in just those who were on 3+ psychotropic drugs , or when you used 3+ psychotropic drugs as a marker for PIMs use instead of the NORGEP-criteria. In the following sentences you say 'long-term and dementia wards' and then just 'long term care' - does this include the dementia wards?

The phrase is used again later 'analysing residents receiving 3+ psychotropic drugs' - please clarify if this was a sub-group analysis or when using 3+ psyc drugs as a marker for PIM use (I suspect it is the later, but the wording is unclear)
Discussion: Overall the discussion lacks a clear message and I suggest a revision of the overall structure. e.g. summary of results and comparison to previous literature, strengths and limitations then implications for future research and practice.

'the clinical information provided gave an opportunity to study some clinical predictors related to PIM use' does this mean predictors of PIM use, or things that PIM use predicts

'Importantly, the study design opened up for a chance to study how PIMs may affect the frail elderly when they encounter acute illness.' - your study also excluded those with serious illness requiring hospitalization so may have excluded the most frail - also I would caution using the term frail without any actual validated measure of frailty.

Conclusion - I would suggest revising the conclusion - it reads more like a part of the discussion

'We found a high prevalence of PIMs, showing the relevance of the criteria in this population.' - how does a high prevalence show the relevance of the criteria? A list of any drugs could be found to be high prevalence in a NH population - relevance in what sense?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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