Reviewer's report

Title: Co-morbidity and drug treatment in Alzheimer's disease. A cross sectional study of participants in the Dementia Study in Northern Norway.

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Reviewer: francesco lapi

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General comments
This paper deals with inappropriate prescribing issue among patients affected by Alzheimer’s Disease (AD). In general, the paper is well written and offer new data about AD pharmacotherapy and some hints on how to improve a more correct use of some medications. However, there are some remarks and suggestions which could clarify some paper aspects.

Introduction
In this statement “Particularly, anxiolytic-hypnotic agents, antidepressants and antihistamines which often exhibit anticholinergic effects are associated with increased cognitive impairment, sedation and confusion. Consequently, multiple drug prescriptions are leaving elderly vulnerable to adverse reactions [10-12] and interactions, often classified as inappropriate drug prescriptions [13].” What did the authors mean with drug-drug interactions? Do they referred to those among CNS drugs or among these medications and others?

Methods
Could the authors describe the data collection of self-reported diseases a little bit more? The issue of recall bias among AD individuals could be relevant. To this purpose, the revision of patients’ medical records has been already performed and/or validated earlier? A descriptive analysis of the diseases and medications prevalence among the AD enrollees could be useful.

The authors defined inappropriateness according to the Beers criteria. However, STOPP and START criteria (see Ryan et al., BJCP 2009, especially the paper Appendix) has been recently implemented. Could the authors apply this last criteria and conduct a direct comparison with the Beers’ lists? Moreover, the calculation of a co-morbidity score should aid in controlling for confounding by indication and severity. Indeed this variable could be used in multivariable analysis.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

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

Declaration of competing interests:
I declare that I have no competing interests.