

## Reviewer's report

**Title:** Association between pain, neuropsychiatric symptoms, and physical function in dementia: a systematic review and meta-analysis

**Version:2****Date:**24 December 2014

**Reviewer:**Elena Lucchi

### Reviewer's report:

#### Comments

1. The question posed by the authors is well defined; however, while adequate attention has been paid to the evaluation of the association between pain and NPS and Physical function, the description of the tools and methods used for pain detection (as proposed in the Background) seems to be less structured. I suggest the authors to improve it..
2. The methods are appropriate and well described; some points should be better specified (see revisions).
3. The data sound well, but there are some terms used in this article (i.e. article/study), that cause contextual misunderstanding.
4. The figures appear to be genuine, without evidence of manipulation. Data are described objectively.
5. The relevant standards for reporting and data deposition are satisfied.
6. The discussion and conclusions are adequately supported by the data, but the importance of pain assessment tools validated for the population under study should be further stressed. For example, row 406 "Therefore, the results of the present review cannot fully support the hypothesis of a better reflection of the relationship between pain and NPS when validated rating scales are used by professionals ", but the importance of detection of pain in patients with moderate / severe dementia has not been sufficiently stressed. Pain detection is important because it could be the cause of other disorders (as your study wanted to prove), but primarily because it is a disturbing symptom for the patient and as such should be recognized, measured and treated. Pain detection is important because it could be the cause of other disorders (as your study wanted to prove), but primarily because it is a disturbing symptom for the patient and for this reason it should be well recognized, measured and treated.
7. The limitations of the work are clearly stated; a further important limitation would be not to have considered Delirium as a related issue, potentially interfering with the variables under study (pain, NPS and physical function). The prevalence of delirium in patients with moderate and severe dementia is high, and the causal relationship between pain and delirium in these patients is well known. Furthermore delirium is a syndrome that includes both symptoms, NPS

and alterations of the physical function. In your review I found no trace of delirium: why did you exclude it from your analysis? If you considered it, can you explain in which terms?

8. In the text it is not specified if the authors must have any published or unpublished work upon which they are writing for.

9. The title and abstract convey with what I found in the text.

10. The writing seems acceptable, but my language skills do not allow me to express an appropriate judgment.

### Major Compulsory Revisions

None.

### Minor Essential Revisions

Some minor revisions should be made to clarify the text:

1. In which range of time did you make the selection of the articles (it does not seem to be specified in the text)? Why are there no studies selected before the year 2002? Are there no studies, or is the quality of these studies not so high to be included in your review?

2. The cut-offs for the high quality studies are specified, but not those for moderate and low quality of the studies. Would you mind doing it? (rows 154-160).

3. In "Scoring items" (rows 162-177) you selected the items used for the evaluation of the quality of the studies. Could you please enter more clearly how many articles and which articles have been used and what are the scores given for both types of studies?

4. In Additional file 2 you cite 19 articles, but in the text you mention only 15 articles (rows 239-245). Could you please clarify the mismatch?

5. In the table 2 it can be deduced that in 3 out of 22 articles the rating scales are not used to measure pain. It would be useful to specify the data and to comment it in the text (row 245).

6. In Measurement of NPS (rows 236-245) you should, first of all, emphasize those studies in which the rating scales for NPS are not used and which are these studies; then you should indicate if in some studies more instruments to measure NPS were used simultaneously and which they are.

7. Table 2 lists 11 articles, while studies that describe the physical function are only 10 (row 264). Using interchangeably the terms 'articles' or 'studies' may create misunderstandings (see also rows 197, 328, and others). Could you please specify which are the studies and which are the articles in the Methods, as well as in the Abstract.

8. In the Results section, where you describe associations, would you mind specifying in how many articles you do not have correlation coefficients, ORs or SOORs?

9. Add "(see Figure 2)" in the row 292.
10. Add "(see Figure 3)" in the row 309.
11. Add "(see Figure 4)" in the row 340.
12. Table 6 lists 11 articles, while in the text you only cite 10 studies (see row 328): would you please clarify like at point 7 above?

#### Discretionary Revisions

1. Why did you not include patients with Parkinson's disease? (see Methods, row 139).
2. The comparison between text and tables would be easier if you could insert a column in the tables referring to the numerical reference citations.
3. It would be useful to specify further what you mean by "intentionally selected population" and "unintentional selected population" (rows 215-216).
4. You ought to specify the reference of the studies that used rating scales "which are validate to assess behaviour in patients with dementia" (see row 253).
5. Could you specify how many studies used the MDS-ADL and which they are (see row 268)?
6. Please could you specify the range of prevalence for specific NPS, ie depression (row 284), agitation (row 296), and other NPS?

**Level of interest:**An article of importance in its field

**Quality of written English:**Acceptable

**Statistical review:**Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.