Reviewer's report

Title: Validation of exposure assessment for a prospective cohort study of mobile phone users (COSMOS) in Finland

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Reviewer: Maria Blettner

Reviewer's report:

This study reports a validation study in which information of mobile phone use was collected from operators (recompanies) and self reported answers. Here are my comments:

1. There may be some doubt whether a cohort study is needed to further investigate health effects of mobile phone use. As the authors state (page 3) no biological mechanism has been identified for RS-Fields. So it remains unclear whether a large cohort study is needed. However, this is not the scope of this paper. Overall, the introduction can be shortened and should emphasize on what is the scope of the paper.

2. Methods: First paragraph is not needed. It should be made clear, how the main study and the validation study are associated.

3. It is not clear how the persons were selected for this validation study.

4. The statistical analysis should be described in the method section.

5. Results: Response rates and participation rates are unclear. At one point authors talk about 17% of persons that responded to the invitation while 2.4% refuse to participate. This is confusing.

6. I also do not understand what the “overall participation proportion” is.

7. Results: Percentages all in the text and in the tables are given without any confidence intervals. The analysis is based on correlation coefficient. If two measurements are compared, this is not a valid statistical method. Bland Altman methods should be used. Neither Spearman rank correlation nor mean difference of the two values are sufficient to evaluate the validation of the answers of the persons.

8. The last paragraph (Based on…) is not a part of the study and is not belongs to the result section.

9. The discussion is quite extensive but did not in taken to consideration the problem of low response rate and measurement errors for the cohort study.

10. The conclusion “a prospective cohort study seems to be feasible is not justified by the results of this paper: response rate is low, measurement error is high, nothing is said about the power of the study (the author state “internal comparisons will be made”), however, selection bias may still be a problem.
Level of interest: An article of limited interest

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.