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: Peter D Inskip

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1. The stated aim of this study is the evaluation of the validity of exposure information in the context of a pilot study assessing the feasibility of a cohort study on mobile phone use. The content of the paper is broader than implied by the title and stated aim, as it addresses other aspects of feasibility as well. Indeed, of the three tables and one figure, only the figure addresses the comparison of self-reported and operator-derived exposure information. The authors might consider providing more detail concerning the validation objective.

2. I assume the planned cohort study will collect exposure information both prospectively and retrospectively with respect to the date of enrollment. Do the authors know about the availability of historical records from the operators (e.g., 10+ years in the past)?

3. The use of mobile phones registered under corporate accounts strikes me as an important issue. The authors acknowledge this as a challenging issue in the second-to-last paragraph of the background section, but it is not clear how they propose to address it. Did the questionnaire try to collect information for personal phones and business phones separately? If not, might this be a reason for the apparent overestimation for self-reported use? As the authors note in the discussion, failure to account for use of company phones might lead to serious under-ascertainment of use for heavy business users.

4. The time interval for which operator data were obtained systematically preceded the interval for which interview data were collected. For this to be a true validation study requires an assumption of stability in use over time.

5. Do the authors anticipate a one-time questionnaire or periodic updates regarding manner of use of mobile phones? How confident are the authors that questions concerning manner of use will adequately get at the issue of intensity of exposure, to be used as an adjunct to operator data concerning frequency/duration of use?

6. The first paragraph of the results states that the subscriber could be assumed to also be the user of the phone since age and sex as defined by the operator matched that on the consent form. Could this be a self-fulfilling result; i.e., if the subscriber assumed that he or she was the person of concern?

7. In the full cohort study, how will the matter of changes in network operator/mobile phone numbers be handled?
8. The authors conclude that a prospective cohort study of mobile phone users and health appears to be feasible in Finland based on the pilot study, but there are additional questions I would want answered before I would be confident in this conclusion.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**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.