

Reviewer's report

Title: Mobile phone exposure assessed using personal dosimetry and well-being in children and adolescents - design, methods, non-response-analysis and descriptive data of the German MobilEe-study

Version: 1 **Date:** 9 September 2008

Reviewer: Joachim Schüz

Reviewer's report:

Thomas et al. describe design and methods of a cross-sectional study on RFR and well-being in children and adolescents and provide first descriptive results. As this is a very comprehensive study and also the first study on environmental RFR exposures in children which will result in quite a number of articles, it is a good idea to give a more detailed description of the methodology in a separate paper that can be used as a reference for all follow up articles.

Major compulsory comments:

1. The self-reported distance to the near base station is a major concern, as it appears that the authors plan to use it for a number of analyses (page 10). However, as shown in reference 16, the agreement between self-reported distance and true distance is abysmal. There is also some concern that persons concerned about health effects from base stations perceive them to be closer than they are. If the authors plan to use distance as one of their exposure variables (which is also not a very good choice, as distance to a base stations only weakly predicts exposure (see reference 33)), it is surprising why they don't attempt to calculate the distance based on geographical coordinates. This is not a huge effort, as they have the addresses of all participants and coordinates of base stations can be obtained from the network operators. The authors need to add self-reported distance as a limitation in their discussion and should also justify why they plan to use it and why they do not attempt to assess the true distance.
2. Even though participation rates of 50% were to be expected, they pose a major problem as participation is related to many factors, like better education or higher level of concern. Hence, the non-responder analysis is very useful, but also comprises only half of the non-responders. This has to be more clearly stated in the discussion of limitations, together with a more critical assessment of what potential biases are to be expected.
3. The choice of exposure quartiles for the main analysis needs to be more justified. As illustrated in figure 2, the exposure variable appears to be highly skewed, i.e. the range of exposures within the highest quartile seems to be larger than differences between quartiles. The secondary type of analysis, i.e. the dichotomization at the 90% percentile, seems to be more appropriate. The

authors should give the absolute values of both the categorizations and add a justification for their statistical approach.

Minor essential revisions:

1. Whole article. The term “high frequency” should be replaced by “radio frequency”. The frequency range should be defined in the beginning of the article.
2. Page 3, 2nd paragraph. Reference 3 is from 1998 and only a preliminary report. More up-to-date references should be used or even a good review on this topic.
3. Page 3, 3rd paragraph. It should be mentioned that recent studies also indicate a higher SAR in children compared to adults.
4. Page 3, 4th paragraph. The Danish replication of the TNO study (Riddervold et al, 2008) should be added.
5. Page 5. Add some information on how long an average interview lasted.
6. Page 7, bottom. Describe in more detail on how distance to the nearby base station was assessed. Give the phrasing of the question and the reply options, i.e. whether it was an open question or you provided reply categories?
7. Page 8, 2nd paragraph. For readers not so familiar with these technologies, please define “uplink” and “downlink” and give the exact frequency ranges for GSM, UMTS, DECT and WLAN.
8. Page 8, 4th paragraph. It is not entirely clear, whether the values below the detection limit were set to 0.025 V/m after or before the summation. If the latter, this should be justified in the text, as the exposures from GSM 900 are higher than from the other technologies. It should also be mentioned of what proportion of measurement values was below the detection limit, preferably by technology. As not all participants may have had the respective technology, there may have been a true zero for, let's say, DECT?
9. Page 11, 1st paragraph. The statement that participating parents could better declare the distance is not substantiated. It is only shown that they more often declared the distance to the next base station. This should be phrased accordingly.
10. Page 11, Objective exposure. It would be very interesting to see these results for uplink and downlink separately. According to fewer base stations in rural areas, uplink exposures are assumed to be higher in rural areas, as APC is less effective (see e.g. Lönn et al.). Downlink may be lower in rural areas, as there is less communication traffic. The authors also need to comment on this.
11. Table 3. The absolute values of the exposure quartiles should be added to the table. Please add to the text of the average agreement would be for the dichotomization at the 90% percentile.

12. Figure 2. Please add the boxplot for the combined data for children and adolescents.

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.