Reviewer’s report

Title: Mobile phone use, school electromagnetic field levels and related symptoms: A cross-sectional survey among 2150 high school students in Izmir

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Reviewer: Fabio Presaghi

Reviewer's report:

I read with much interest the paper titled "Mobile phone use, school electromagnetic field levels and related symptoms: A cross-sectional survey among 2150 high school students in Izmir" and I appreciated the accuracy and the attention posed by author for sampling a representative sample of adolescents. I convene with authors that one of the strengths of their paper is the dose-response approach. However in reading the paper I found some critical issues that I think authors should address before the Editorial office consider the paper for publication.

Major issues:

1) The comparison between the mobile non-user (N = 129, 6%) with mobile users (N = 2021, 94%) is unfair. The sub-sample of mobile non-user are not representative of mobile non-user population and it is less variable than the sample of mobile users. Moreover we don't know the reasons why mobile non-user do not use mobile. This limit notably conclusions that can be drawn from results.

2) I understand that nowadays it is difficult to find a sample of adolescents not using mobile, however I think authors should compare the distribution of general symptoms complained by "high" mobile users with a sample of "low" mobile users to find out whether the high use of mobile increase (significantly) also the frequency of symptoms.

3) Concerning the multivariate logistic regression analysis, it is not clear whether authors introduced one predictor at times (along the variables concerning the baseline) or whether all predictors entered the same logistic regression equation and hence table 3 shows results of a single logistic regression analysis for each symptom or whether for each symptom authors performed a different logistic regression analysis considering one predictor at time. The two strategies differ in terms of results as there is a high likelihood of high correlations among predictors.

4) As well there is a further source of unaccounted dependability within data. Participants are school students and data were collected within schools in classrooms. So it could be expected that students within the same classroom tend to be more similar in their use of mobile phone
than students in other classes or other schools. This is particularly true for the dose-response relationships that authors hypothesize. Let me explain hat I mean with an example: if there is a systematic relationship between exposure to EMF and complained symptoms then I would expect to find more symptoms in a school with higher levels of EMF (i.e. that is located near a base station) than in a school with lower or zero EMF. I made the example with the school, but the same holds as well in the case of a student living in a home with high levels of EMF (i.e. near a base station). Following this line of reasoning the greater the time spent by a students in places with high levels of EMF and the higher the frequencies of symptoms. So a student living in a home near a base station and studying in a school near a base station should complain more symptoms than a student living in a home far away from a base station and studying in a school far away from a base station (giving that the two students have the same frequency and duration of use of mobile phone). So authors should consider a multilevel approach to analyze their data.

5) In case of a categorical predictor with more than 2 categories, the p trend in table 3 refers to the effect of predictor as a whole or to the effect of a single category of the categorical variable on the symptom? In this last case to which category? Reading text and/or the table caption it is not clear which of the two options is true.

6) pp. 12 (line 19): authors state that mobile users show a significant increase in a series of symptoms when increase the number and duration of calls with respect to mobile non-users. However at line 29 of the same page they report that students wearing regularly earphone during calls do not show more symptoms than mobile non-users. I have some difficulties in putting together these two results. Among the students who show the relationships among increasing frequency/duration of general symptoms and increasing frequencies and duration of calls are included also those students that use regularly earphone? Or these last students are excluded? In case these students were not excluded, these relationships may have not a unique interpretation. Authors should better specify the which of the two interpretations holds.

7) The same issue may be raised for all other Odd Ratio discussed in table 3. It is not clear whether the effect of each predictor on each outcome includes also the effect of rest of predictors or not.

8) pp. 13 (line 1): authors state that they found a relationship among general symptoms and the position and status of phone at night. Among students showing these relationships are also included those student who sleep with the mobile switched off at night. However if the objective is to investigate whether sleeping with the mobile "switched on" increase (significantly) the frequencies of general symptoms authors should compare these students with all those students sleeping with the mobile switched off and not with those that are classified as mobile non-users. The same issue holds for the variable "Makes calls while charging".
9) pp. 13: concerning the relationships between general symptoms and the questions "Position of the phone during daytime" and "Phone status while studying" I think that the relationships are less interesting as from table 3 it emerges that for these variables too few students responding respectively that "does not carry " or "mobile switched off".

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