Reviewer’s report

Title: Methodological limitations in experimental studies on symptom development in individuals with idiopathic environmental intolerance attributed to electromagnetic fields (IEI-EMF) – A systematic review

Version: 0 Date: 06 May 2019

Reviewer: Stacy Eltiti

Reviewer's report:

In this systematic review the authors investigated whether differences in methodologies, in particular risk of bias and impression, could account for differing statistical results. The introduction provided a good overview of the previous research and was balanced in presenting methodological limitation for studies reporting positive and negative effects. The methods used to select studies and extract data were robust and clearly described. The description of the statistical analyses needs further details and the conclusions could be expanded.

P. 9 section 2.6: Please clarify the nature of the data and explain why Mann-Whitney U tests were used to analyze the data. For example, did the data consist of number of key issues per study by type of result or number of studies with a given key issue?

P. 9 section 2.6: Please provide the estimated power for the statistical analyses. If the power is less than .80 please describe in the discussion section how this affects the interpretation of the obtained results. Specifically, if you have low power then this will limit your ability to detect difference between the groups if in reality differences exist.

P. 13 lines 7 - 12: statistical notation is missing for the following sentence, "Also, high imprecision in data analysis was not more common among studies indicating no effect of exposure than among studies suggesting an effect of exposure (Figure 3)."

Section 4.1.3 is missing citations

P. 21 lines 47 - 54 states "Nonetheless, in consideration of the fact that we identified a limited number of methodically sound studies, and even though their findings mainly indicate no effect of exposure, attempts could be made to add studies designed to detect potential weak reactions or to identify a few hypersensitive individuals." In this recommendation it would be important to address that if a study is designed to detect a weak reaction 1) what is the clinical utility of this and 2) such a study would need a large sample size to detect a weak effect. Also, if a study only includes a few hypersensitive individuals, such a study may suffer from 1) low power and 2) low
external validity. In this paragraph it would be good to include information regarding how difficult it is to recruit IEI-EMF participants.

P. 22 lines 38 - 50: It would be helpful to note in this paragraph that studies using homogeneous samples of IEI-EMF participants have been unable to find any relationship between EMF exposure and well-being (e.g., Furubayashi et al., 2009; Kwon et al., 2012; Nam et al., 2009; Oftedal et al., 2007; Wilén et al., 2006).

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