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## Letter

### Letter to the Study by Hyvönen et al. on Moisture Damage and MCS

#### Keywords:

Epidemiology  
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Symptoms

#### A B S T R A C T

Due to the significant methodological problems in the empirical part of the paper and the very selective literature review, the conclusions of the paper are mostly unsupported.

#### To the editor,

The article by Hyvönen et al. [1] attempt to address the association of exposure to moisture and microbes at their workplace in a hospital with the risk of neurological symptoms and multiple chemical sensitivity. Unfortunately, the empirical part has several major problems and unclear methods, and therefore provides little evidence. Despite of this, in the discussion exaggerated conclusions are drawn from the results.

Authors were able to contact only 13% of the personnel working at the hospital. All of them were symptomatic and most reported several illnesses, e.g. 69% reported to have asthma. The hospital in question has attracted a lot of attention in the national media, and there are also ongoing litigations, which is likely to affect the self-reported symptoms. There were no objective markers of health status and little, if any, exposure assessment (duration, amount or quality of personal exposure).

There are also many problems with the statistical analyses. All persons from the hospitals were female, but only half of the control group. The methods promise a test for the confounding effect of gender, but it is not reported in the results. In addition, other statistical methods are unclear, e.g. the methods speak of Mantel-Hanzel, the result about logistic regression and the table misses the crucial footnote, which might have explained what was really carried out.

Taken together, the low response rate, likely high selection bias and reporting bias, missing exposure assessment and unclear and missing statistical adjustments make the empirical results of the article quite unreliable.

In their review of literature, the article completely neglects the majority of the literature on multiple chemical sensitivity and only concentrates on articles supporting the authors' unidirectional toxicological interpretations. Current knowledge supports the biopsychosocial origin of environmental intolerance, e.g. multiple chemical sensitivity, which is not due to exposure [2–5], but relate to negative expectations and prior beliefs [6]. Thus, multiple chemical sensitivity, other environmental intolerances and functional disorders share common manifestations and nocebo-related mechanisms [6–9]. In Finland, an excess of building-related

environmental intolerance is seen, likely due to the raised alertness on dampness-related health risks [10]. Thus, the relationship between microbes and nonspecific symptoms presented in this article should be interpreted with considerable caution.

Based on these very weak cross-sectional data and their biased review of the literature, the authors in their conclusion still propose causality between mould exposure and multiple chemical sensitivity.

Owing to the significant methodological problems in the empirical parts of the article and the very selective literature review, the conclusions of this article are mostly unsupported and it contributes little to current scientific literature.

#### Conflict of interest

None of the authors have conflict of interest with this letter.

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