Letter

Response to the Critics by Pekkanen et al

Our original study entitled “Moist and mold exposure is associated with high prevalence of neurological symptoms and multiple chemical sensitivity (MCS) in a Finnish hospital workers cohort” has raised a lot of interest. It has been criticized by our Finnish colleagues [1]. In fact, this criticism toward our work depicts the current situation in Finland. Opinions different from the official guidance have been censored during the recent years.

Here, we defend our results and conclusions. The claims of Pekkanen et al are cited in italics and ours are in the following paragraphs.

Authors were able to contact only 13% of the personnel working at the hospital.

Pekkanen et al are right. The management of the hospital responded negatively to our request to study symptoms of the Obstetric hospital personnel. Therefore, we were able to contact only a small fraction of the exposed cohort. The first author of the article (S.H.) recommended authorities to do the study based on severe adverse health problems reported by the occupants, but this request was denied.

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.

No, it is quite the opposite. Hospital personnel experienced symptoms, but their symptoms were ignored and the exposure to dampness microbiota persisted. In Finland, symptoms and diseases caused by moist and mold are explained by a nocebo effect making prevention almost impossible. The hospital was shut down after the long exposure due to serious mold and moisture damage and the pressure form the media.

All persons from the hospitals were female, but only half of the control group.

Correct, a male midwife is a rarity. Recruitment of the control group was very difficult. Finally, we were able to recruit office workers of both genders. This control group was used in two studies. Our article describing morbidity in the Finnish policemen ended up with similar results [2]. The comparison of the risk ratios (RRs) in predominantly female and male cohorts is shown in Table 1. The table shows that the risks are not gender related. We also have data on children from a mold infested school, and the symptoms of the school children are similar.

Logistic regression may overestimate risk estimates when the prevalence of the condition in question is high (>10%). The prevalences of primary symptoms were as high as 40–80% among nurses and midwives. The log-binomial regression analysis was a valid method to estimate the adjusted RRs. However, the Mantel–Haenszel method was chosen because it is much easier to understand. The log-binomial regression method is still very rarely mentioned in the basic textbooks. In the Mantel–Haenszel method, the participants were divided into two strata (0–1 diagnoses and >2 diagnoses). And, as described earlier, the same procedure with gender was not possible. Section 2.4 Data analysis describes what was really carried out.

Incorrect text of logistic regression

The results are presented in Table 1. The logistic regression analysis shows a significant difference between the cohorts in the prevalence of central nervous system (CNS) symptoms RRs: 4.94 (95% confidence interval (CI): 2.72–6.91, p < 0.001), autonomous nervous system, that is, numbness of limbs, tongue, or face; tetanus; or weakness of muscles RRs: 4.36 (p < 0.001), arrhythmia RRs: 19.75 (p < 0.001), fatigue RRs: 3.05 (p < 0.001), and MCS RRs: 3.44 (p < 0.01).
Table 1
Symptoms reported by predominantly female and male cohorts of occupants in workplaces infested by dampness microbiota

| Symptom/disease                  | symptom prevalence midwives/policemen | prevalence controls | RR midwives/policemen | 95% CI | p-value |
|----------------------------------|---------------------------------------|---------------------|-----------------------|--------|---------|
| CNS symptoms                     | 56/90 (62%)                           | 5/44 (11%)          | 4.94                  | 2.72-6.91 | <0.001  |
| Symptoms of autonomous nervous/   | 45/90 (50%)                           | 4/44 (20%)          | 4.36                  | 1.90-7.41 | 0.001   |
| peripheral nervous system         | 23/115 (20%)                          | 2.57                | 0.95-6.95             |        | 0.06    |
| Asthma                           | 51/90 (57%)                           | 9/45 (20%)          | 1.86                  | 0.86-3.13 | 0.11    |
| Multiple chemical sensitivity     | 36/90 (40%)                           | 4/43 (9%)           | 3.44                  | 1.39-6.44 | 0.01    |
| Fatigue                          | 69/90 (77%)                           | 10/42 (24%)         | 3.05                  | 2.19-3.64 | <0.001  |
| Muscle or joint pain             | 46/90 (51%)                           | 9/41 (22%)          | 2.02                  | 1.11-3.02 | 0.02    |
| Respiratory symptoms             | 72/90 (80%)                           | 12/42 (29%)         | 2.56                  | 1.84-3.04 | <0.001  |
| Cardiac arrhythmia               | 51/90 (57%)                           | 1/41 (2%)           | 19.75                 | 4.47-36.30 | <0.001  |

RR = risk ratio. The comparison was carried out to the same control healthy cohort.

Pekkanen et al cite the publications they have selected. These articles do not deal with health effects caused by moist and mold milieu. Using this selection, Pekkanen et al try to convince the readers about the biopsychological nature of the symptoms. However, irreversible symptoms were not relieved by psychological treatment [3], thus undermining the proposed hypothesis of Pekkanen et al. We, being the authors of the original article, have full rights to cite any article that supports our findings.

Thus, the relationship between microbes and nonspecific symptoms presented in this paper should be interpreted with considerable caution.

We admit that it might have been too strong to mention causality. Nonetheless, from study to study, we obtain similar results (refer Table 1) of higher morbidity in toxic compared with healthy environment. These observations allowed us to apply deduction: when the same phenomenon is reproduced, the chance for a pure incidence becomes improbable.

We are thankful to the Editor for providing the platform of this journal to make a debate and hope that the readers will make their own conclusions whether our arguments are convincing. Pekkanen et al being representatives of the Finnish health authorities should be concerned about public health in moist environments and do their best to prevent health damage instead of downplaying the problem. Our endeavor to investigate how to diagnose mold-related illness will continue without any prejudices.

Conflict of interest

The authors declare no conflict of interests.

References

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