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Int. J. Hyg. Environ.-Health 208 (2005) 271–278
International Journal of Hygiene and Environmental Health
www.elsevier.de/ijheh

Self-reported chemical sensitivity in Germany: A population-based survey

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Received 7 April 2003; received in revised form 5 March 2005; accepted 20 March 2005

Abstract

Objectives: Environmental clinics are frequented by patients with fears and complaints related to environmental triggers. A dose-independent overreaction to small doses of widely used and generally non-toxic chemicals is referred to as multiple chemical sensitivity (MCS), but no clearly defined clinical syndrome with objective physical findings has been delineated so far. We aimed to obtain information about symptoms, supposed environmental triggers, the frequency of self-reported chemical sensitivity, and of the diagnosis MCS in Germany.

Methods: We conducted a representative survey among 2032 adult Germans.

Results: We found self-reported chemical sensitivity in 9% and physician-diagnosed MCS in 0.5% of our representative sample. Physical complaints were common in the whole study population and in chemically sensitive individuals, but there was no clear-cut symptom constellation among the latter. The most common complaints were headache, fatigue, sleep disturbances, joint pain, mood changes and nervousness. A subjective connection between complaints and environmental triggers was denied by 67% of the whole group and by 35% of the self-reported chemically sensitive. Factor analysis of environmental triggers suggested that a specific exposure situation rather than chemical similarity is the basis for individual trigger combinations.

Conclusions: The prevalence of subjective sensitivity towards chemicals is similar to such rates reported from other countries. There is a relatively low awareness of the MCS-concept, and it appears to be diagnosed less frequently than, e.g., in the USA. Since symptoms and triggers in chemically sensitive individuals did not differ from the general population, our data do not suggest the existence of a widespread new syndrome related to chemical sensitivities in Germany. We outline the limitations of self-reported chemical sensitivity as the major criterion for such a contentious diagnosis as MCS.

Keywords: Multiple chemical sensitivity; MCS; Idiopathic environmental intolerances; IEI; Epidemiology; Self-reported sensitivity; Population-based survey

Introduction

The phenomenon of an individual growing sensitive to many unrelated chemicals, and suffering from

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doi:10.1016/j.ijheh.2005.03.006

numerous, mostly subjective symptoms in almost all organ systems appears relatively new for European care providers. The condition of multiple chemical sensitivity (MCS) has first been described by M.R. Cullen in the US in 1986 (Cullen, 1987) and then appears to have traveled east. In the last decade there have been case reports and review articles from a number of European countries, but notion of the syndrome seems to vary from a high interest in Scandinavian countries to very few reports from southern and eastern Europe. Advocates of a somatic origin propose processes of sensitization and/or amplification towards common chemical exposures (Bell et al., 1997).

MCS is not widely accepted as a diagnosable illness (AMA (American Medical Association), 1992), there are no objective criteria, but only recommendations for a working case definition (IPCS, 1996): MCS (also referred to as idiopathic environmental intolerances, IEI) is (1) an acquired disorder with multiple recurrent symptoms which are (2) associated with diverse environmental factors tolerated by the majority of people, and which is (3) not explained by any known medical or psychiatric or psychological disorder (IPCS, 1996). Obviously, the prevalence of a syndrome defined by subjective symptoms and exclusion criteria is nearly impossible to estimate: Especially the third criterion has turned out problematic, since there is a high psychiatric morbidity in samples complaining of chemical sensitivity (Stewart and Raskin, 1985; Terr, 1989; Black et al., 1990; Bornschein et al., 2000, 2002).

As a first step to gather epidemiological data on subjective chemical sensitivity and MCS in Germany, this study addresses the following points:

1. the prevalence of self-reported complaints in the adult German population,
2. their attribution to chemicals,
3. self-reported chemical sensitivity,
4. recognition and prevalence of the diagnosis MCS.

Materials and methods

On behalf of our environmental clinic the German Allensbach Institute for Public Opinion Research interviewed 2032 Germans older than 15 years, selected by representative quota sampling. Data were gathered in a face-to-face setting as part of a multi-subject-poll by 495 interviewers of the institute between October and November 2000. To guarantee best possible comparability of interview situations, the interviewers were trained to read all questions of the standardized interview following the exact wording and mark the answers correctly. They had no further instructions or information about the subject. The interviews took place in the participants' normal surrounding, i.e. usually at home. Age, sex, marital status, professional and residential characteristics in the weighted sample resembled those of the adult population in Germany, according to the data given by governmental statistics (German State Department for Statistics, 1999). An overview on sociodemographic characteristics of our sample has already been published (Hausteiner et al., 2004). Questions covered a list of common complaints and their attribution to commonly used chemicals. The list of complaints included the most frequent symptoms, the list of substances the most frequent agents reported by patients from our environmental clinic (Bornschein et al., 2002). Then we offered a statement (''When I am exposed to chemicals my body reacts immediately'') and a question (''Have you ever heard about a condition called multiple chemical sensitivity or MCS?'') concerning chemical sensitivity and the recognition of the diagnosis MCS. When a person affirmed to know the term MCS, he or she was asked ''Have you ever been diagnosed of multiple chemical sensitivity or MCS by a physician?'' Statistics were carried out using SPSS; the homogeneity of subgroups was tested with χ^2-tests. For group comparisons on non-dichotomous variables we used the 1-sample t-test with 95% and 99% confidence intervals. Factor analyses were carried out to identify patterns of coincidences. In this first representative analysis we preferred the descriptive factor analysis to hypothesis-driven tests for logistic regression or odds ratio.

Results

Prevalence of self-reported complaints

Eighty-four percent of all persons from this representative sample reported at least one complaint, only 16% denied any symptom (Table 1). Twenty-four percent complained of one or two symptoms, 26% of three or four, 34% had five or more complaints. The mean number of complaints in our population was 3.9 with a predominance of women (4.4 versus 3.3 among men), the elderly over 60 years (4.7 versus 2.8 among persons under 30), and persons in lower or lower middle class professions (non-specialized workers 4.6 versus specialized workers 3.8). The most common complaints were headache (40%), fatigue (37%), sleep disturbances (35%), joint pain (33%), mood changes (25%), nervousness (25%), and difficulties concentrating (22%). Factor analysis revealed seven dimensions of complaints, shown in Table 2 (ordered by loading). Fears or anxieties had weak loadings on factor A (.33) and E (.32).