

Does “electromagnetic pollution” cause illness? An inquiry among Austrian general practitioners

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Macht Elektrosmog krank? Eine Umfrage unter Österreichs Allgemeinmedizinern

Zusammenfassung. Immer mehr von ihrer elektromagnetischen Überempfindlichkeit überzeugte Patienten suchen ärztliche Hilfe. Um das Vorkommen dieser Fälle und die Meinung der österreichischen Ärzte über die potentielle Gesundheitsrelevanz elektromagnetischer Felder im Alltag (Elektrosmog) zu erfassen, wurde eine statistische Untersuchung unter den Allgemeinmedizinern Österreichs durchgeführt, die zu überraschenden Ergebnissen geführt hat.

Nur ein Drittel der befragten Ärzte berichtet, niemals von Patienten über die gesundheitliche Bedeutung von Elektrosmog befragt zu werden, zwei Drittel geben an, gelegentlich oder häufig von Patienten konsultiert zu werden, die von ihrer elektromagnetischen Überempfindlichkeit überzeugt sind. Ein überwältigender Prozentsatz von bis zu 96 % schließt einen gesundheitsrelevanten Einfluss von Elektrosmog nicht aus und nur 39 % diagnostizieren niemals einen Zusammenhang zwischen Gesundheitsbeschwerden und Elektrosmog. Allerdings scheint ein großer Informationsmangel zu herrschen. Das Wissen über Elektrosmog, die bestehenden Grenzwerte und die Größe der elektromagnetischen Umgebungsfelder im Vergleich zu ihnen ist gering, und 99 % der Ärzte empfinden die Informationen über elektromagnetische Überempfindlichkeit als nicht ausreichend. Es ist bemerkenswert, dass die Behörden eine marginale Rolle bei der Information spielen. Nur 4 % der Ärzte geben an, von ihnen Informationen über Elektrosmog zu erhalten.

Es ist eher einzigartig, dass es einen derartig weit verbreiteten Widerspruch zwischen den Meinungen von Ärzten und der anerkannten nationalen und internationalen Risikobewertung gibt. Angesichts der Häufigkeit der Be-

gegnung mit dieser Thematik zeigen die Ergebnisse einen dringenden Handlungsbedarf auf.

Schlüsselwörter: Elektromagnetische Überempfindlichkeit, Prävalenz, Befragung, Ärzte.

Summary. More and more self-declared electromagnetic hypersensitive patients are entering physicians' practices seeking help. To assess the prevalence of cases and the opinion of Austrian physicians regarding the potential health-relevance of environmental electromagnetic fields (“electromagnetic pollution”), a statistical investigation among general practitioners was undertaken, with surprising results.

Only one-third report on never having been asked about the health impact of electromagnetic pollution by patients. An overwhelming percentage of general practitioners (up to 96 %) to some degree, or totally, believe in a health-relevant role of environmental electromagnetic fields, and only 39 % have never associated health symptoms with “electromagnetic pollution”. Two-thirds are consulted occasionally or even frequently by self-declared electromagnetic hypersensitive patients. However, sound information seems to be lacking. Knowledge on existing electromagnetic exposure limits and on environmental field levels in relation to them is poor. It is remarkable that authorities play a marginal role in informing physicians. Only 4 % mention having received information on “electromagnetic pollution” from such a source.

It is rather remarkable that there is such a widespread contradiction between physicians' opinions and established national and international health risk assessment. With respect to the frequency with which doctors are confronted with this issue, the results demonstrate an urgent need for action.

Key words: Electromagnetic hypersensitivity, prevalence, inquiry, physicians.

Introduction

In the event of health disorders of unclear origin, in particular non-specific health symptoms such as headache,

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sleep disturbance, nervousness, skin arousal etc., it has become more and more popular to take refuge in the hypothesis that external sources might be causal factors. Thus, terms have been coined such as idiopathic environmental incompatibility (IEI), environmental incompatibility syndrome (EIS), sick building syndrome (SBS), and multichemical sensitivity (MCS).

During the last decades, the general population, the media and physicians have become suspicious of environmental electromagnetic fields ("electromagnetic pollution") and they have been added to the list of potential sources of adverse health effects. The fact that field levels are well below the existing exposure limits has been explained by hypothesized hypersensitive reactions to these fields. Meanwhile, more and more patients with self-declared electromagnetic hypersensitivity are entering physicians' practices asking for advice and seeking help.

Although scientifically investigated for two decades, it has not yet been possible to prove a causal link between environmental electromagnetic fields and adverse health effects. However, there are people who really suffer, join self-aid groups and in some cases even become unable to continue working or live in urban areas [1]. While some epidemiological studies have reported on increasing risks of developing non-specific health symptoms the nearer to broadcasting antennas or power lines one is [2, 3, 4], double-blind provocation studies have failed to prove a causal relationship [5, 6, 7]. Patients have reacted statistically significantly just to their belief in the presence of fields rather than to their real existence.

Electromagnetic hypersensitivity (EHS) has become an issue. Initially, the term was coined by the media. Meanwhile, it has entered scientific and medical terminology. However, the use of the same term for quite different meanings has resulted in considerable confusion. It is used [8]:

- a) to name a medical syndrome without necessarily proven causal relationship;
- b) to describe the increased ability to perceive electromagnetic exposure without necessarily developing health symptoms;
- c) to describe the development of even severe health symptoms following the awareness of electromagnetic field sources;
- d) to describe a (hypothesized) causal health-relevant interaction of weak environmental electromagnetic fields with the human body.

To assess to which extent Austrian general practitioners are faced with this problem and their belief in the causal role of electromagnetic fields to initiate or promote adverse health effects, a statistically-based inquiry was performed.

Method

As target group, general practitioners were chosen since they usually are the first who are faced with EHS. Of the potential demoscopic tools such as personal interviews, telephone interviews and mailed questionnaires, the latter was chosen [9]. A random sample of 400 physicians (284 male, 116 female) was generated from a downloadable list of all the 5,643 Austrian general practitioners (69 % male, 31 % female) as of Febru-

ary 2003. A comprehensive two-page questionnaire was developed comprising 14 questions with one in addition to ascertain the age of the responding person.

To assure the highest return rate possible, this sample was again randomly divided into three sub-samples. To the first 100 participants (sub-sample 1), the questionnaire was mailed together with an accompanying letter explaining the reason for this study and asking for the filled-out questionnaire to be returned with the attached, already stamped, envelope.

The second 100 participants (sub-sample 2) were contacted prior to mailing by phone, told about the questionnaire and asked to participate. Since 12 participants could not be reached by phone, they got the mail without pre-information and were added to sub-sample 1. Of the remaining 88 physicians, 56 % could be contacted directly, in the other cases, his or her assistant was informed.

The most intensive effort was undertaken in the case of the remaining 200 individuals (sub-sample 3). They got a pre-information call prior to the mailing and a reminder call around 2 - 3 weeks afterwards. In the pre-call, 47 % physicians could be spoken to, in the reminder-call none of them, thus in these cases, the reminder-call information was passed on to the assisting staff.

Results

An overall response rate of 49 % could be reached, which can be considered a good result for such an inquiry and target group. The response rate of sub-sample 1 was 36 %, the pre-call increased the rate to 57 %. Surprisingly, the reminder call could not improve the result, the response rate for the third sub-sample was 53 %. A possible explanation for this could be vacation time and a one-week medical conference held during the investigation period.

It turned out that knowledge of EHS was distributed very inhomogeneously. 15 % of the general physicians had never dealt with electromagnetic hypersensitivity while

Diagnostic association of health symptoms with "electromagnetic pollution"

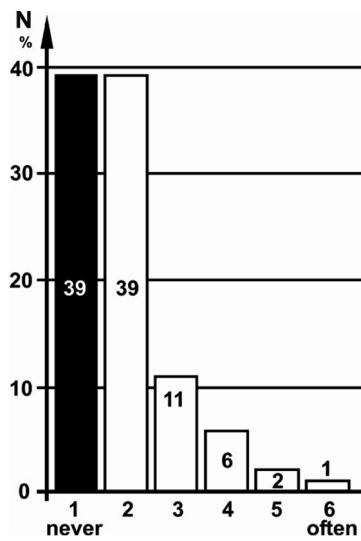


Fig. 1. Answers to the question: "How frequently do you associate health complaints with the impact of »electromagnetic pollution«?"

5 % did so very intensively. There was no common understanding of EHS. The term "electromagnetic hypersensitivity" was defined quite differently, the highest ratings going to "ability to perceive without symptoms" (56 %), "enhanced symptom development" (31 %) and "subjective conviction of patients" (13 %).

It turned out that general practitioners were not seldom faced with questions about a possible adverse health impact of environmental electromagnetic fields. Two-thirds of the physicians (68 %) had been asked by their patients, among them 49 % occasionally, and 2 % even frequently, while 32 % had never been asked such a question. Even more interesting is the fact that almost two-thirds of the general practitioners (61 %) diagnostically associated electromagnetic pollution with health symptoms (Fig. 1).

The diagnostic meaning of EHS differed greatly among the physicians. While only 9 % were convinced that EHS is primarily a psychosomatic problem, 13 % did not assume this at all. Concerning the potential role of environmental electromagnetic fields, an overwhelming percentage (95 %) agreed to some degree or even completely that "electromagnetic pollution" can cause illness (Fig. 2). One-third of the physicians (33 %) were convinced of this. A high percentage (88 %) believed to some degree, among them 17 % were even convinced that "electromagnetic pollution" can impair the immune system; 87 % did not exclude that environmental electromagnetic fields can worsen existing illness or allergies, among them 23 % were convinced of this. An overwhelming majority of 96 % did not exclude that "electromagnetic pollution" together with other environmental factors can cause health problems (Fig. 3).

A similar high percentage (96 %) did not exclude that electromagnetic pollution together with other environmental factors could impair health. While there was no statistical difference between whether the physician was located in a city or in the country, physicians applying

Position on worsened illness by synergistic influence of electromagnetic pollution with other environmental factors

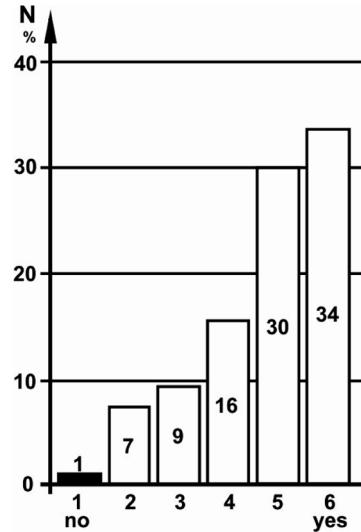


Fig. 3. Answers to the question: "Do you think, »electromagnetic pollution« together with other environmental factors can cause health problems?"

complementary medicine believed more frequently in a causal role of EMF than physicians' predominantly practising school medicine.

Physicians' most frequently named health-associated field sources are power lines (80 %), mobile phones (76 %), mobile telecommunication basestations (72 %) and cordless telephones (60 %) (Fig. 4).

Beliefs in a health-relevant role of environmental electromagnetic fields were also widespread among pa-

Ranking of electromagnetic field sources with attributed health-relevance

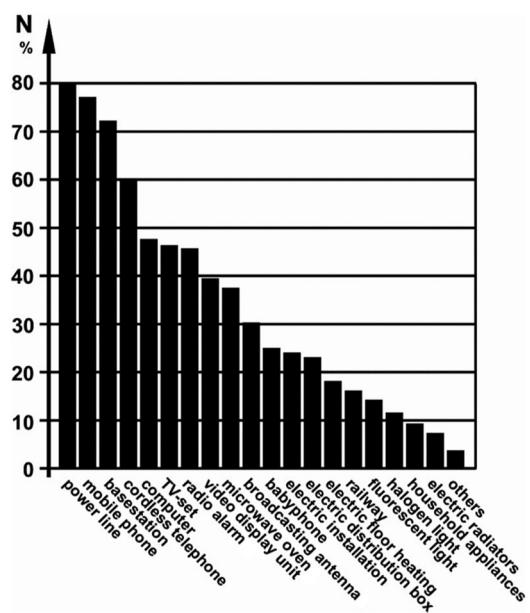


Fig. 4. Scores in response to the question: "Which sources of »electromagnetic pollution« do you consider responsible for health complaints?"

Position on electromagnetic pollution-induced illness

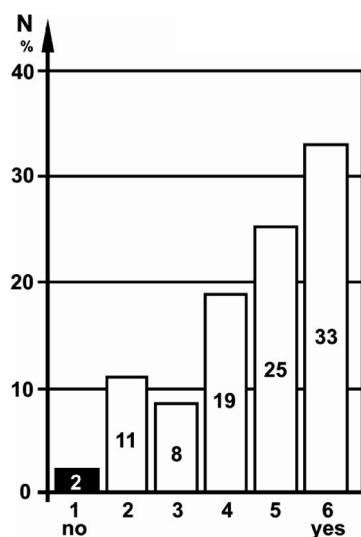


Fig. 2. Answers to the question: "Do you think »electromagnetic pollution« can cause illness?"

Ranking of general practitioners' information sources

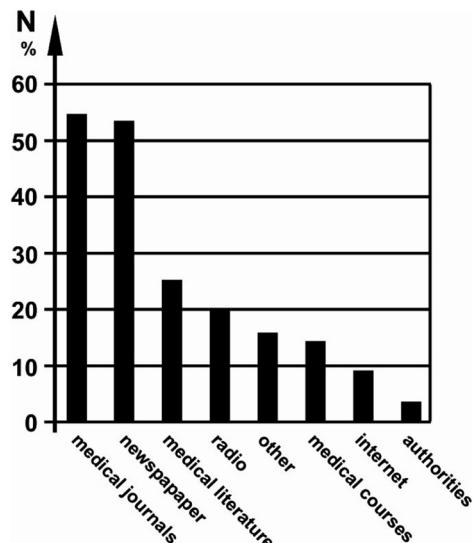


Fig. 5. Scores in response to the question: "From which sources do you derive your knowledge on »electromagnetic pollution«?"

tients. While a majority of them (59 %) seldom, occasionally or even frequently associated their health problems with environmental electromagnetic fields, only 39 % never did so.

For medical practitioners, the most frequently used information source on electromagnetic pollution were medical journals (54 %) and newspapers (53 %). Only 25 % got their information from scientific literature. It needs to be stressed that the role of the authorities in informing physicians is marginal. Only 4 % got their information from this source (Fig. 5).

Discussion

It is well known that electromagnetic fields, if strong enough, can cause adverse health effects. This is the reason why recommendations have been given to limit environmental field levels, the most important by the International Committee of Non-Ionising Radiation Protection (ICNIRP) with the mandate of the World Health Organization (WHO). These limits were set so as to prevent potential health hazards but were also based on already established adverse health effects [10].

There is little controversy about these limits within the scientific community. Meanwhile these recommendations have been adopted by the European Commission [11] and by many national committees worldwide such as the Australian (ARPANSA), the British (NRPB), and the German radiation protection board (SSK). Austria, in 1992, already accepted the recommended limits for the radio frequency range [12] and in 1994 for the extremely low frequency range [13].

¹Comprehensive information on ICNIRP's recommendations on EMF limits can be downloaded free of charge from www.icnirp.de. They are available in various languages such as German, French, Italian, Spanish and Japanese.

Measurements show that environmental fields usually stay several magnitudes below these exposure limits. According to 24-hour- measurements in 1,715 homes in Germany [14], in 98.6 % of the homes the median environmental magnetic field levels remained below 0.2 µT, which is 500-fold below the limit for the general population (100 µT). Since this limit value has already been set a factor 50 below first health-relevant stimulatory effects in the central nervous system [15], ambient field levels therefore are 25,000-fold below this excitation threshold.

Estimates on the prevalence of electromagnetic hypersensitivity among the general population show that the percentage of EMF- affected persons is low. If they really exist, electromagnetic pollution-affected people constitute a minority, which could lie between 1.5 % and 3.5 % [16, 17, 18].

However, in spite of these data, the results of this inquiry show that the beliefs and convictions of the overwhelming majority of the general practitioners are in clear contradiction to the established knowledge [15]. This may partly be explained by the fact that adequate information about electromagnetic fields and their health relevance is lacking. The majority (53 %) of the physicians consider the available information insufficient, only 2 % are content with it. The knowledge on existing exposure limits is also poor. More than two-thirds (69 %) cannot comment on the limits, 4 % consider them as far too high, and only 10 % agree with the limits¹.

It seems remarkable that there is such a widespread contradiction between the individual physician's opinions and established national and international health risk assessment on electromagnetic fields. This clearly indicates the need for information and for adequate action by physicians' associations as well as by the authorities responsible.

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