



Effects of Radiofrequency Electromagnetic Fields on Health – Polish Physicians' Perspective

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Abstract

Due to the ubiquity of electronic devices generating radiofrequency electromagnetic fields (RF EMF), some patients express concerns to their physicians regarding their potential negative influence on health. In order to acquire insight into this phenomenon, assess experience of Polish physicians with patients complaining of symptoms attributed to the influence of RF EMF, as well as their opinions on the issue, we conducted an 18-question survey distributed in two forms: paper questionnaire and online form. We managed to reach 284 practicing physicians of 43 different clinical specialties. A significant percentage (46.49%, 132) of respondents encountered patients complaining of symptoms they associated with the influence of RF EMF. Most commonly pointed to symptoms were: headache (115), impaired ability to concentrate (69) and fatigue (67), while most common devices hinted at as a source were: mobile phones (90), power lines (60) and mobile phone base stations (60). Interestingly, 42.96% (122) of surveyed physicians believe that RF EMF of intensity meeting the generally agreed norms does not have a negative effect on health and 47.54% (135) believe that such symptoms have psychosomatic background. Additionally, 56.33% (160) expressed interest in participating in seminars on this topic. Findings of our study show that the influence of RF EMF is associated with a variety of negative symptoms by patients and a significant percentage of Polish physicians encounter patients complaining of such issues, suggesting potential benefit of broadening medical education on this topic.

1. Introduction

Most of electronic devices in everyday use generate radiofrequency electromagnetic fields (RF EMF), which causes concern regarding their potential negative effects on health and well-being. Some patients express such concerns to their physicians and attribute certain symptoms to the influence of RF EMF. In order to provide insight into this issue, several studies have been conducted among certain groups of physicians in countries such as Austria [1], Netherlands [2], or Germany [3]. However, this phenomenon has not been assessed in Poland before.

2. Materials and Methods

The survey was conducted among physicians actively practicing in various parts of Poland. The questionnaire was distributed online using Google Forms and in paper form. Our survey consisted of 18 questions regarding demographic information, clinical specialty, as well as opinions on the effects of RF EMF on health and experience with patients attributing their negative symptoms to the influence of RF EMF. The study protocol was approved by the Jagiellonian University Bioethics Committee. Statistical analysis was conducted using STATISTICA 13.3 (StatSoft, Tulsa, OK, USA).

3. Results

3.1 Respondent Characteristics

In our study, we managed to acquire 284 responses (55 (19.37%) from online questionnaire and 229 (80.63%) in paper form) over a period of 11 months. Average respondent age was 43.46 ± 13.40 years old (age range 26-85). Among surveyed physicians were 172 (60.56%) women and 110 (38.73%) men.

Respondents varied significantly in terms of work experience. We acquired responses from 6 (2.11%) physicians without specialty, 14 (4.93%) interns, 100 (35.21%) physicians undergoing specialization, 14 (4.93%) specialists with less than 5 years experience, 15 (5.28%) specialists with 5-10 years of experience, 22 (7.75%) physicians with 10-15 years of experience and 113 (39.79%) physicians with more than 15 years of experience. Additionally, we collected data regarding respondents' scientific titles - 57 (20.07%) participants of this study had at least doctorate degree. Moreover, we reached physicians of 43 different clinical specialties with 5 most common being: family medicine (90, 31.69%), internal medicine (55, 19.36%), neurology (19, 6.69%), endocrinology (17, 5.99%) and pediatrics (14, 4.93%).

We also collected data regarding the place of practice. Notably, the majority (154, 54.23%) of respondents work in cities with more than 500 thousand inhabitants. Additionally, 42 (14.79%) participants practice in cities

with 20-100 thousand inhabitants, 37 (13.03%) in cities with 100-500 thousand inhabitants, 22 (7.75%) in cities with less than 20 thousand inhabitants and 19 (6.69%) in villages. 10 (3.52%) of respondents have more than one place of practice.

3.2 Opinions on Radiofrequency Electromagnetic Fields and Health

Surveyed physicians differ significantly in their perception of their knowledge on the influence RF EMF on health, with 34.15% (97) agreeing with the statement that their knowledge on the topic is sufficient, 32.75% (93) disagreeing and 33.10% (94) finding it hard to assess. Participants were also asked to provide an opinion, whether they believe that RF EMF of intensity that meets generally accepted norms has a negative effect on health (Figure 1.). 9.51% (27) of respondents strongly agreed with this statement, 23.94% (68) somewhat agreed, 23.59% (67) found it hard to tell, 31.69% (90) somewhat disagreed and 11.27% (32) strongly disagreed.

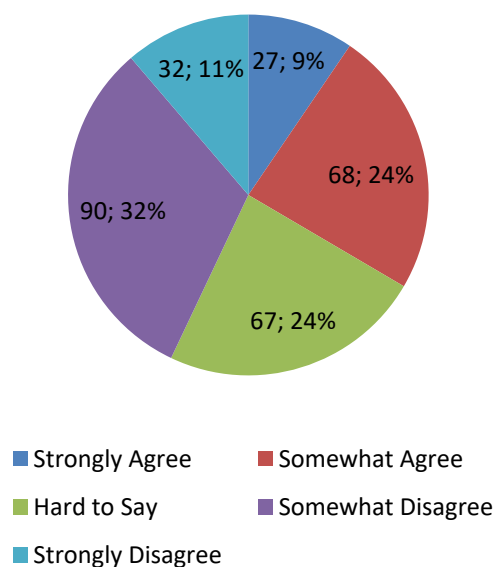


Figure 1. Graph showing participants' rating of the statement "Radiofrequency electromagnetic fields (used for example by mobile phones, radios, WiFi routers) of intensity meeting the generally accepted norms have a negative effect on health".

Among respondents of this survey, 47.54% (135) believe that symptoms attributed by patients to the influence of RF EMF have psychosomatic background, while 23.59% (67) disagree and 28.87% (82) find it hard to assess. Interestingly, majority (160, 56.34%) of participants expressed interest in participating in seminars on the topic and another 21.13% (60) of respondents expressing they may be willing to participate.

3.3 Experience with Electrosensitive Patients

According to this study, a significant percentage (46.48%, 132) of respondents encountered patients that complained of symptoms they attribute to the influence of RF EMF (Figure 2.), with 27.11% (77) encountering such patients on average less than once a year, 8.10% (23) approximately once a year, 8.80% (25) several times a year and 2.46% (7) several times a month or more often.

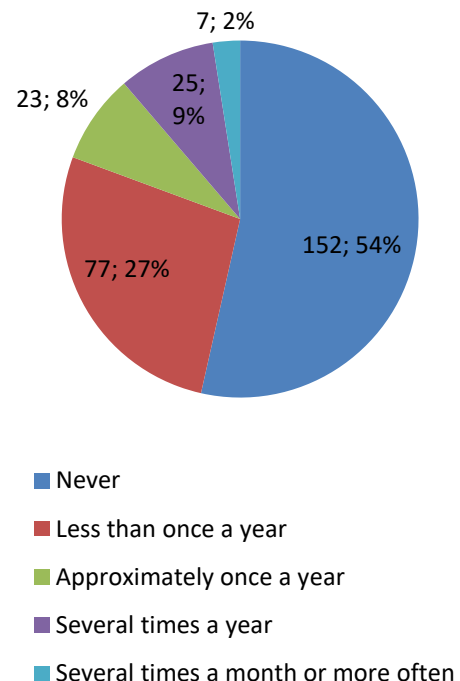


Figure 2. Graph depicting responses to the question "How often do you encounter patients complaining of symptoms they attribute to the influence of electromagnetic fields?"

Symptoms that were most often pointed to by respondents as effects associated by patients with the influence of RF EMF included: headache (reported by 115 respondents, 40.49%), impaired ability to concentrate (69, 24.30%), fatigue (67, 23.59%), irritability (59, 20.77%), insomnia (53, 18.66%), anxiety (48, 16.90%), difficulty with falling asleep (26, 9.15%), unpleasant hearing sensations (23, 8.10%), waking up at night (19, 6.69%), memory impairment (18, 6.34%). Notably, devices that were most often hinted at as the sources of RF EMF associated with such effects were: mobile phones (90, 31.69%), power lines (60, 21.13%), mobile phone base stations (60, 21.13%), WiFi routers (47, 16.55%), television receivers (34, 11.97%), microwaves (29, 10.21%), and laptops (29, 10.21%).

4. Discussion

This study provides insight into perspective of Polish physicians regarding the effects of RF EMF on health, as well as more detailed information about symptoms the general population associates with the effects of RF EMF

and devices that cause most concern among patients. Interestingly, it demonstrates that a significant number of physicians in Poland encounter patients that complain of such symptoms and express willingness to participate in seminars on the topic. These findings show potential benefit of seminars or new accessible literature addressing the issue.

This study is a part of a project aiming to assess public perception of RF EMF and find possible solutions of related public health and medical education issues.

References

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