

## The Internet as a source of health-related information among Internet users in the Lodz region, Poland

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**Summary Background.** The Internet is a widely used medium and a popular source of health-related information for patients. Currently, 59% of European Union citizens use it for such purpose. Due to the disputable quality of medical information found on-line, physicians may face problems with the doctor–patient relationship.

**Objectives.** To find the scale of searching for medical information on-line among Internet users in the Lodz region, Poland, study their opinions concerning this medium and identify the most frequent health-related searches.

**Material and methods.** The study involved 301 patients attending family practice in Lodz – 204 women (67.8%) and 97 men (32.2%), median of age 34 years – with access to the Internet. The research was carried out using the authors' questionnaire in a primary care clinic and on-line.

**Results.** Out of 301 participants, 93.3% (281) confirmed searching for health-related information on-line. A correlation between age and such habit was found, with the median age of those who do so being 33 years. A positive rating of Internet medical information (71.5%, 201) correlated with age ( $p < 0.001$ ) and was more common among respondents around the age of 35 years. 53.4% (150) of “e-patients” claimed to search the Internet for a possible diagnosis, and 41.3% (116) for other patients' experience with the same disease.

**Conclusions.** Younger Internet users are more likely to search for medical knowledge on-line, but this group is more critical of this kind of information. Patients of the Lodz region are most likely to search on-line for information about OTC drugs and chronic diseases. Many of them search for possible diagnoses on their own, along with the experiences of other people with the same conditions they have.

**Key words:** Internet, information, e-health, e-patient, on-line.

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### Background

People who seek medical advice are likely to use the Internet as a source of information. This fact seems to be well known among doctors around the world in modern societies, where access to the Internet is common.

According to the Central Statistical Office of Poland (GUS), in September 2016, 80.4% of Polish households had access to the Internet [1], whereas in 2015, the European Union (EU) average was 83% [2]. The data provided by the European Commission shows that currently 59% of citizens of the EU use the Internet as a source of medical information. They consider the medical information from the Web useful (80%), easy to understand (77%) and easy to find (74%). However, only 60% claim that the Internet is a trustworthy place to search for health-related topics [3].

Due to the fact that the quality and credibility of on-line medical information is disputable and depends on the source of this information [4], this may result in problems in compliance and the doctor–patient relationship. Researchers indicate that websites with medical content tend to be difficult to read [5, 6] and may lack authorship or references [7]. This is due to the fact that the Internet is a platform of free speech, where one can publish opinions and thoughts on a certain subject, often without a proper scientific background. Thus, patients encounter

health-related articles on different types of pages – both professional and amateur. As a result, doctors must deal with patients' doubts and concerns about what was found on the Internet.

It is important to recognize the profile of an Internet user who searches for health-related information on-line. Some empirical studies have shown that the “e-patient” tends to be a young (18–45 years) and middle or high-educated person. Although some studies have found that women are more likely to search the Internet for health-related information, most studies have found no gender differences in this aspect [8, 9]. A patient who uses the Internet for such purpose is less satisfied with the quality of the healthcare system in general and appears to be a high user of GP services [9]. Many patients search on-line for drugs prices, information on civilization-related diseases or healthy lifestyle. Others, however, search for much more sophisticated data, such as vaccinations before travelling abroad, pregnancy or treatment of infertility [10, 11].

Regardless of the doctor's attitude towards the information found on-line by patients, the trend of searching for health-related knowledge on-line is inevitable. It is thus important for physicians to know how many of their patients search for medical knowledge, what kind of information they seek and whether they trust the professionals or prefer to verify on-line the information received at a consultation. Perhaps the most important question is whether patients prefer to make diagnoses on their own or trust the physicians.



## Objectives

The aim of the study was to determine the scale of searching for medical information on-line by a group of Internet users in the Lodz region, study their opinions about this medium and identify the main medical topics they research on-line.

## Material and methods

The examined group consisted of 301 adults (204 women, 97 men) who confirmed having access to the Internet. The median age in the analyzed group was 34 years (range 18–77). 77.4% (233) of the participants lived in a city larger than 500,000 inhabitants, 13.3% (40) in smaller cities and 9.3% (28) in rural areas. 56.1% (169) had university education, 37.9% (114) high school education and 6% (18) basic education.

The study was performed using a questionnaire in February and March 2017. It was completed either during a medical consultation at a General Practitioner's practice or on-line. Respondents who confirmed the use of the Internet as a source of health-related information were asked further questions about their opinions and habits concerning on-line medical searches. The study was approved by the Ethics Committee of the Medical University of Lodz.

The collected data was statistically analyzed with STATISTICA 10.0 (StatSoft Inc., USA). The compatibility of data (age) with normal distribution was checked by the Shapiro–Wilk test. Analysis of the interdependence of variables was performed with the Mann–Whitney U test. All tests were considered significant where the  $p$ -value was  $< 0.05$ .

## Results

The vast majority of participants (93.3%; 281) reported searching for health-related information on the Internet. No statistically significant correlation between gender or level of education and such a habit was found. The distribution of age in this group was abnormal. The analysis revealed that the median age of those who use the Web for this purpose is significantly smaller than that of those who do not do so (33.0 vs 51.5 years;  $p < 0.001$ ). There was no statistically significant correlation between gender or education and the habit of searching for health-related information on-line. Further analysis concerned patients who reported searching the Internet for health-related information ( $n = 281$ ).

77.6% (218) of this group claimed to use medical information from the Internet in everyday life. 71.5% (201) of "e-patients" rated the credibility of such information positively. A correlation between age and such assessment was found (35 years – positive vs 26 years – negative;  $p < 0.001$ ). We also found a correlation between age and seeking medical information on-line prior to a medical consultation. The median age of those who did so was 31 years and those who did not was 39 ( $p < 0.01$ ).

22.4% (63) confirmed having treated themselves or a family member using the methods described on the Internet without medical consultation. The median age of those who ever did so was 25 years and of those who did not was 36 years ( $p < 0.001$ ). 10.7% (30) stated that they had discontinued pharmacological treatment ordered by a doctor after finding certain information on-line.

Participants were asked about the types of drugs they read about on-line and some practical aspects of buying the drug. Figure 1 shows the prevalence of on-line searches for specific drugs, while Figure 2 shows what aspects of a drug patients look for on the Internet. Many patients (58.7%; 165) stated that they look on-line for more information about a drug after reading the patient information leaflets.

In the study, we also asked about the types of diseases the participants read about on-line (Figure 3) and what other health-related topics they looked for on the Internet (Figure 4).

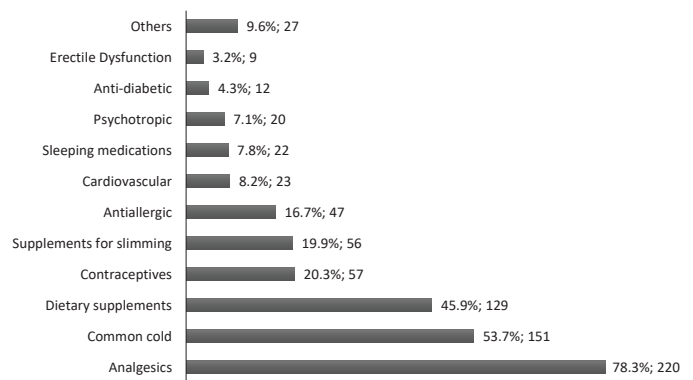


Figure 1. Prevalence of on-line search for specific types of drugs,  $n = 281$

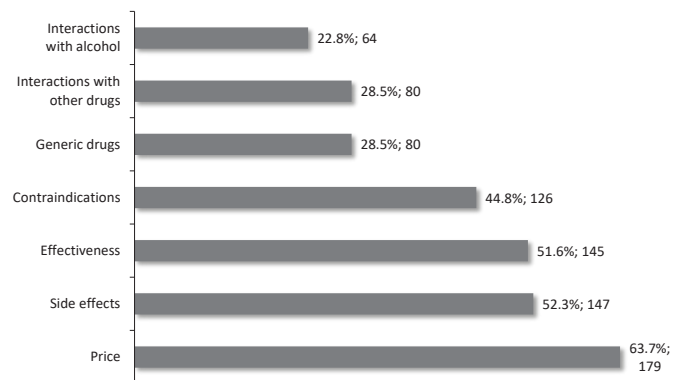


Figure 2. Prevalence of on-line search regarding specific aspects of a drug,  $n = 281$

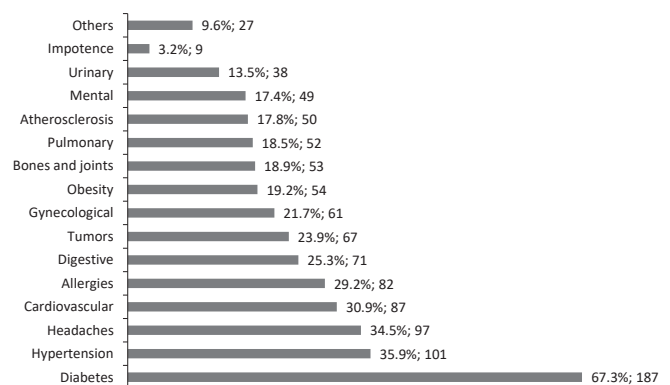


Figure 3. Prevalence of on-line search for specific conditions,  $n = 281$

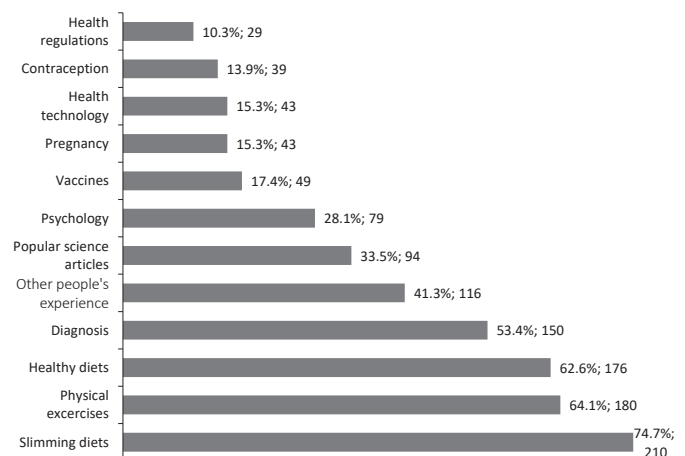


Figure 4. Prevalence of on-line search for specific health-related topics,  $n = 281$

**Table 1. Patients' opinions on on-line health-related information**

Is your own diagnosis based on the Internet information the same as the one given by your doctor?	Do the medications suggested on the Internet match those prescribed by your doctor?	Did finding information on-line about specific symptoms ever motivate you to visit your doctor?	Did finding information on-line about specific symptoms ever motivate you to use medication without a medical consultation?
<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
17.1% (48)	14.6% (41)	35.6% (100)	9.6% (27)
<b>Mostly yes</b>	<b>Mostly yes</b>	<b>Mostly yes</b>	<b>Mostly yes</b>
32% (90)	42.7% (120)	28.5% (80)	10.7% (30)
<b>Mostly no</b>	<b>Mostly no</b>	<b>Mostly no</b>	<b>Mostly no</b>
12.8% (36)	21.4% (60)	19.9% (56)	30.2% (85)
<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
4.3% (12)	12.8% (36)	14.2% (40)	48.4% (136)
<b>"I do not diagnose myself without medical consultation" or no answer</b>	<b>"I do not search for suggested drugs" or no answer</b>	<b>No answer</b>	<b>No answer</b>
33.8% (95)	8.5% (24)	1.8% (5)	1.1% (3)

49.1% (138) claimed that a self-diagnosis based on on-line information was compatible with the one provided by a doctor. 57.3% (161) agreed that the drugs suggested on the Internet matched those prescribed by a physician. For 64.1% (180), Internet-based medical information was motivation for a medical consultation when experiencing certain symptoms. For 20.3% (57), it was also motivation to take medication without consulting a doctor (Table 1). For 53.4% (150), the Internet is where they seek a possible diagnosis. For 41.3% (116), it is also a source of information about other people's experience with the same condition.

## Discussion

Our study revealed a high percentage of Lodz region patients with Internet access that search for medical information on-line (93.3%). The obtained result is similar to the previously reported data for Poland. In 2008, Doroszewska found that almost 90% of Polish Internet users ( $n = 5,350$ ) search for health-related information on-line. Almost a decade after this study, the Internet is still a very popular source of medical knowledge [12].

Some data shows that patients recognize both the positive and negative aspects of this habit. The Internet may provide an opportunity to make a "self-diagnosis" and offer help until the time of consultation. Patients obtaining medical knowledge from the Web may feel more confident and prepared during their consultation. They may extend their knowledge and find answers to the questions they forgot to ask the doctor. However, some are aware that finding disturbing health-related content on-line may trigger fear and anxiety, resulting in unnecessary medical consultations [13]. Other data shows that some patients are not willing to discuss what they found on-line, which causes barriers in the doctor-patient relationship [14, 15].

In our study group, younger patients were statistically more likely to search for medical information on-line, but were more critical of it. Our study shows that health-related information may sometimes be the cause of problems with compliance, as because of this, some patients discontinue taking a prescribed drug or provide "self-treatment".

The most often searched medications were OTC drugs. Patients were likely to read about drug prices, side effects, ef-

fectiveness and contraindications. In our sample, the most frequently searched diseases were chronic, such as diabetes and hypertension. It was also common for Internet users to read about healthy lifestyle: slimming, healthy diets and physical exercise.

A certain limitation of our study was that we performed it in a convenience sample. The only inclusion criteria were age (18+) and Internet access, and the study group consisted of primary care patients from the Lodz region. Therefore, it may not be representative for the entire Polish population. Despite this fact, we have obtained statistically significant results concerning the correlation between age and the fact of using the Internet as a source of medical information and the rating of its credibility. We also defined the most popular health-related problems that patients research on-line. Our intention was to explore the main topics searched by patients on-line and to make family physicians more aware of some potential problems in communication and patient compliance due to information obtained on the Internet.

The Internet, as a widely accessible source of all kinds of knowledge, has become an integral part of life in modern societies. The World Wide Web provides instant communication and immeasurable resources of data and indeed has a great impact on scientific and economic development. It is where both patients and doctors may find important medical information and reliable science-based solutions to health-related problems. However, both of these groups should be aware that the credibility of this information may be limited.

## Conclusions

1. The Internet is a source of medical information for the vast majority of adult patients in the Lodz region, Poland.
2. Younger Internet users of this region are more likely to search for medical knowledge on-line, but this group is more critical of this kind of information.
3. Patients of the Lodz region are most likely to search on-line for information about OTC drugs and chronic diseases. Many of them search for possible diagnoses on their own and the experiences of other people with the same conditions they have.

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