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Patients clinically diagnosed with asthma search the Internet less often for information about the reputation of health care institutions: the results of a Polish survey study

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ABSTRACT

Introduction: Physicians and representatives of health care institutions are only the second source of information on health, after the Internet, which is disturbing.

Aim: The aim of the study was to demonstrate the relation between the occurrence of allergic diseases and searching for information about health and disease on the Internet.

Material and methods: The study group was composed of inhabitants of Poland aged 20–44 years (n = 1728). The research tool was a questionnaire developed by the researchers, completed individually by each respondent.

Results and discussion: Statistically relevant relations have been noticed between the frequency of searching for information about health and disease on the Internet, and the occurrence of the symptoms of allergic diseases at any time ($P < 0.001$), as well as the occurrence of declaring any allergic diseases of the upper respiratory track ($P < 0.01$). Those clinically diagnosed with asthma less often search the Internet for information about the reputation of health care institutions ($P < 0.05$). A statistically relevant relation has been observed between searching for information on the Internet related to the health of the respondent or the health of a family member during the last month, and declaring asthma ($P < 0.05$).

Conclusions: The occurrence of allergy symptoms influences the frequency of searching the Internet for information about health and disease of a respondent or a family member, about health protection or medical services.

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1. INTRODUCTION

Owing to universal almost unlimited access to the Internet, it seems justified to evaluate the scale of the phenomenon of searching for information on the Internet for health purposes. Until now only a few studies have been conducted in the world on the issue of e-health and social/marketing media, and each of them differs in objective and methodology. In the case of e-health, studies analysing the following aspects have been carried out:

- the level of trust in the general population of Internet-based information about health;[1]
- factors influencing the practical use of information about health available on the Internet by the general population;[2]
- the use of information about health available on the Internet by patients treated psychiatrically;[3]
- the efficiency of using an online e-health application in pharmacological treatment of patients with generalised anxiety disorders;[4]
- online health interventions in the group of persons abusing alcohol;[5]
- the use of information about health available on the Internet by the elderly.[6]

Liang et al. have been working on the Internet platform Multiple Profile Manager (MPM), to enable users to create and manage an integrated profile, which can be shared on many of the social networking services.[7] The platform will make it easier to collect data related to the health of users, which will then facilitate online contact between the patients and physicians. Currently works have also been carried out on implementation of e-health in health care system.[8,9] Scientists have been working on research results related to factors influencing the implementation of e-health in health care institutions in four countries: Finland, Norway, Scotland and Sweden.[8,9]

Research studies on social/marketing media in connection with allergies that are available in world literature, analyse issues related to:

a) social networking services, such as Facebook or Twitter;[10]
b) the contact between a patient and a physician with the help of instant messenger and electronic mail;[10–13]
c) media campaigns (posters, billboards, TV).[14,15]

Those studies refer mainly to the use of social networking services or e-mail by patients suffering from allergies in contacting a physician. None of the studies published to date have analysed the correlation between the information published on websites dedicated to health, and the quality of life of patients suffering from asthma and/or allergies.

As a result of the progress of civilization and the development of information and communication technologies, 63% of adult Poles use the Internet regularly, i.e. at least once a week. According to data from the Centre for Public Opinion Research, the number of Internet users has increased three fold since 2002. Those youngest 18–24 years and those with tertiary education are among the largest groups – over 94%.[16] With such a numerous group of Internet users as many as 88% use services dedicated to health when trying to acquire information on health, diseases or methods of treatment. The physicians and representatives of health care institutions are only a second source of information on health after the Internet, which is disturbing.[17]

2. AIM

The main objective of the study was to evaluate the relation between the occurrence of allergic diseases and searching for information about health and disease on the Internet. The influence of gender and economic status was also evaluated.

3. MATERIAL AND METHODS

The study was carried out in the Masovian voivodeship of Poland as a form of fully anonymous questionnaire. The respondents were identified based on an ID number allocated for the purpose of the study.

The research tool questionnaire contained 45 questions developed by the researchers to be completed individually by each respondent. Most of the questions had a multiple choice format. The questionnaire included questions on: the frequency and purposefulness of using the Internet, the types of information on health or disease searched on the Internet, the attitude towards the possibilities of Internet use, the use of medical services or solutions related to disease prevention, the use of medicines, health status of the respondent. Some fragments of the questionnaire of International Study of Asthma and Allergies in Childhood as well as European Community Respiratory Health Survey II (ISAAC and ECRHS II) have been used to develop the research tool.

The target group comprised inhabitants of the Masovian voivodeship of Poland aged between 20–44 years. The sampling was based on the availability of respondents. As many as 1728 questionnaires were collected and 1720 were accepted for analysis (average age 28.14 years, median 26 years). Women accounted for 60% of the study group. Also people with higher education accounted for more than 60% of the study group. Over 80% of respondents use the Internet every day. The characteristics of the study group are presented in Table 1.

Statistical analysis was carried out with the following tests: odds ratio (OR), Pearson's 2 test. A difference $P < 0.05$ was considered statistically relevant.

4. RESULTS

4.1. Allergic diseases

In the group of nearly 5% of the respondents declared that they currently have asthma. Nearly 7% of people reported that they have ever suffered from asthma. In this group, 84% had asthma confirmed by a physician (Table 2).

Table 1. Characteristics of the study group.

	n	Percentage
Sex		
Men	683	39.7
Women	1037	60.3
Age groups		
20–24	661	38.3
25–29	495	28.6
39–34	246	14.2
35–39	178	10.3
40–44	148	8.6
Education		
Primary	9	0.5
Lower secondary	8	0.5
Basic vocational	56	3.2
Secondary	602	34.9
Tertiary	1049	60.8
Self-assessment of financial status		
Affluent, no need to save up, even for higher expenditures	59	3.5
Enough money for all expenditures, some can be saved	746	43.8
Enough money for everyday expenditures, but cannot afford higher expenditures	767	45.1
Must deny many things to have enough money for everyday expenditures	110	6.5
Not enough money even for immediate needs	20	1.2
The frequency of using the Internet (websites, electronic mail, instant messenger, etc.)		
Everyday	1419	82.1
Several times a week	163	9.4
Several times a month	62	3.6
Once a month	13	0.8
Less than once a month	39	2.3
Not at all	30	1.7

Table 2. The frequency of allergic diseases occurrence in the study group (n = 1720).

Positive responses to the question:	Percentage	*n*
Do you suffer from any chronic condition? Asthma.	4.5	1710
Have you taken any medicine for shortness of breath or respiratory problems?	13.4	1699
Have you experienced wheezes or whistles in the chest at any time during last 12 months?	12.5	1704
Have you ever suffered from asthma?	6.7	1699
Has the asthma been confirmed by a physician?	84*	112*
Have you experienced at any time problems with sneezing, running or congested nose while not having a cold, fever or flu?	44	1682
Have you suffered from any nasal allergic diseases, including nasal congestion caused by an allergy to the pollen of plants (allergic rhinitis)?	26.6	1685

* From those declaring they have suffered from asthma.

Table 3. The relation between searching the Internet for information about the health of a respondent or a family member, health protection or medical services, and the occurrence of allergy symptoms (in percentages)

The frequency of using the Internet to search for information about the health of a respondent or a family member, health protection or medical services	Respondent experienced at any time problems with sneezing, running or congested nose while not having a cold, fever or flu n = 1682		Respondent suffered from any nasal allergic disease, including nasal congestion caused by an allergy to the pollen of plants (allergic rhinitis) n = 1685	
	YES	NO	YES	NO
Everyday	2.9	1.6	3.8	1.6
Several times a week	5.3	8.8	5.6	8.0
Several times a month	29.3	25.4	30.6	25.5
Once a month	17.9	15.3	16.3	16.5
Less than once a month	39.6	40.8	38.8	40.8
Not at all	4.9	8.1	4.9	7.6

A statistically significant relation was observed between the frequency of searching the Internet for information about the health of a respondent or a family member, health protection or medical services, and the occurrence of allergy symptoms (P = 0.001), and the occurrence of declaring having suffered from any nasal allergic disease (P = 0.005) (Table 3).

Persons clinically diagnosed with asthma statistically significantly less often searched the Internet for an opinion about healthcare institutions than those declaring asthma that had not been confirmed by a physician (respectively: 25% and 52.9%; P = 0.02).

A statistically significant relation between searching the Internet during the last month for information related to the health of a respondent or a family member, and those declaring asthma was found (68.4% vs. 56.1%; P = 0.031). No such relationship was found in the case of those clinically diagnosed with asthma ($P > 0.05$).

No statistically significant relation was found between the frequency of using the internet to search for information about the health of a respondent or a family member, health protection or medical services, and: declaring asthma (P = 0.072), taking medicines for shortness of breath or respiratory problems (P = 0.072), experiencing wheezes or whistles in the chest at any time during the last 12 months (P = 0.059), or asthma diagnosed by a physician (P = 0.515). No statistically significant relation was found between declaring asthma and searching the Internet for information about health or diseases ($P > 0.05$).

4.2. Gender

Women used the Internet significantly more often than men to search for the information about their health or the health of a family member, about health protection or medical services ($P < 0.001$) (Figure 1).

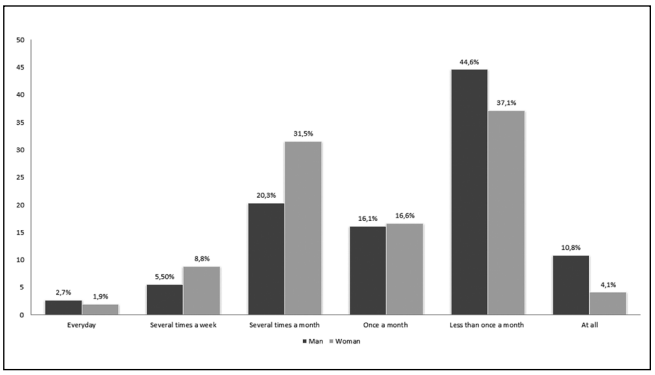

Figure 1. The frequency of using the Internet to search for information about the health of a respondent or family member, about health protection or medical services, depending upon gender (in percentage), $n = 1702$

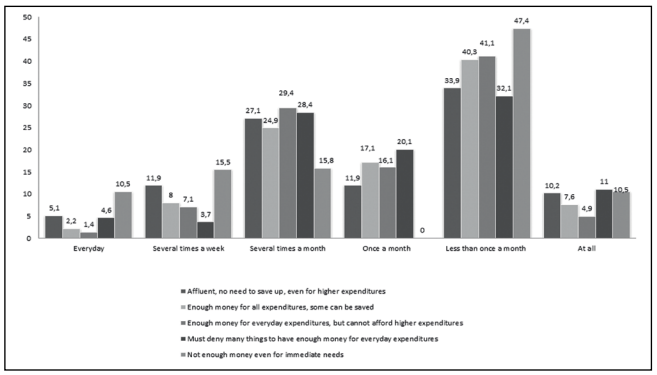

Figure 2. Searching in the Internet for information about the health of a respondent or a family member, health protection or medical services depending on economic status of the family (in percentage), $n = 1685$

Women searched the Internet significantly more often than men for information on: physicians' opinion (46.3% vs. 30.9%, $P < 0.001$), reputation of health care institutions (27.4% vs. 21.9%, $P = 0.011$), interpretation of test results (38.5% vs. 23.1%, $P < 0.001$), specific diagnostic test (26.7% vs. 20.6%, $P = 0.004$), specific medicines, effects, uses and side effects (50.6% vs. 39.3%, $P < 0.001$), different methods of treatment of the same disease (41.5% vs. 36.4%, $P = 0.036$), specific diseases (70.4% vs. 58.8%, $P < 0.001$), methods that other persons use to cope with the same health problems (31.8% vs. 20.7%, $P < 0.001$), making a doctor's appointment (35.1% vs. 29.4%, $P = 0.017$).

Women also significantly more often than men verified diagnoses made by a physician and recommendations on websites dedicated to health (77.7% vs. 66.4%, $P < 0.001$), as well as Internet forums (59% vs. 48.9%, $P < 0.001$). A statistically significant relation was found between searching the Internet for information about the health of a respondent or a family member and gender (women – 62.9%, men – 47.1%; $P < 0.001$). Women significantly more often than men agreed with the statement that they frequently: search the Internet for information about health when they are not feeling well or suffer from a disease ($P < 0.001$), compare doctor's recommendations with opinions presented on the Internet ($P = 0.004$), search for opinions on physicians they plan to visit ($P < 0.001$), search for information on health or disorders when they do not want to or cannot see the doctor ($P < 0.001$), find most of the information published on the Internet credible ($P = 0.025$).

4.3. Economic status

Persons that are in difficult material circumstances search for information about the health of a respondent or a family member, health protection or medical services more often during the week, whereas persons that are more wealthy do it more often per month ($P = 0.006$) (Figure 2).

5. DISCUSSION

The narrow range of age of the study groups and questionnaire nature both constitute a fundamental limitation in this study. The declarations of the respondents are the source of the obtained data and not the observation of their behaviour. In the case of questions on using the Internet to search for health-related information, there is a slight risk that the respondents could have hidden their true opinions. At present, searching for health-related information online and even self-diagnosis and self-treatment are not socially criticized. It could then be assumed that the data obtained within the study are not significantly affected.

This is the first study in Poland carried out on such a large study group to analyze the issue of the search for health information on the Web. The wide range of questions on the use of the Internet for health purposes should be considered a strength of the study, as they make it possible to analyse different aspects of this phenomenon.

The information provided by persons involved health care (e.g. physicians, nurses) is treated by the patients very seriously.[18] There is the pressing need to build an e-health infrastructure and make it an integral part of health care system. Therefore, there is a need of educating and training of nursing personnel to enable their involvement in the e-health implementation efforts.[19] People suffering from chronic diseases, and their guardians, are particularly active in searching the Internet for information about health. They are considered to be pioneers looking for new ways towards a healthy lifestyle.[18] The results of the present study show that persons showing allergy symptoms (in comparison to healthy individuals) more often search the Internet for the information about their health or the health of a family member. What's more, in our study, the results indicate that persons clinically diagnosed with asthma search the Internet half as often for opinions about healthcare institutions than those declaring asthma that had not been confirmed by a physician. This result suggests that those suffering from chronic asthma and not under constant medical care, need more a professional medical opinion than those

who are under medical supervision. It is worth underlining that Fox presents examples in which searching the Internet for information about health proved very helpful in difficult circumstances, when physicians did not try to find a method in a therapeutic process that would bring relief to suffering patients.[18] The use of social forums, where other patients share their experiences in similar situations, proved very useful. Access to medical advice on the Internet is regarded as a new model of contact between a patient and a physician, and which can be promising for improvements in health care.[18] However, Pías-Peleteiro et al. underline that the so-called information about health published on the Internet does not provide users with credible and reliable medical advice.[20] They analysed information published on the Internet about vaccinations against HPV and concluded that the information was incomplete, outdated, unreliable and unreasonable from a scientific point of view.[20] The results of the present study demonstrated that women declare confidence in the information about health issues available on the Internet, and that those suffering from asthma and/or allergic diseases search the Internet for health information, which was also confirmed by Duplaga (2013),[21] Heaivilin et al. (2011),[22] Moretti et al. (2012),[23] Bujnowska-Fedak (2015)[24] and Kisilowska and Jasiewicz (2013).[25] The results obtained in our study and by the cited authors are very important, bearing in mind that in 2009 MacNeily and his team analysed the credibility of information about health published on the Internet.[26] As many as 124 websites were analysed: only 35% of these websites dedicated to health issued were accredited by non-profit organisations, 77% did not provide any references to the information and 48% did not provide the names of the authors of the published texts.[26] These results are fundamental due to the scale of the phenomenon. Considering the results of MacNeily and the results of this study, which indicate that disease affects the frequency of use of the Internet, it appears advisable to create professional websites with medical information. Portals should reference the medical encyclopaedia and provide Internet users with reliable and accurate information about the interest of their health problem. The portals should be reviewed by independent experts in the field of medicine. Contemporary society has free unlimited access to the Internet, thus to information that can influence a diagnostic process.[27] Avery gives an example of a patient who, because of a self-diagnosis made with 'Dr Google,' had damaged his health by influencing the diagnostic process of the physician.[27] In our study, we obtained results that women seek information on the Internet about health or discomfort when they do not want or cannot go to the physician. Furthermore, people with a lower economic status are more likely to seek health information on the Internet. The results obtained in our study are different from the results of a systematic review conducted by Zschorlich et al., which showed that searching for health-related information on the internet – either on their own behalf or on behalf of others – consists of middle-aged women with a higher level of education and income.[28] The results are very disturbing, as a diagnosis made by a patient as well as a therapeutic process undertaken on their own are often dangerous for health and even the life of the patient.[3,27] Patients could verify the credibility of the information published online with their physician and, in any case, should not undertake a therapeutic process just based on data available on the Internet.[3] Therefore, women are in a risk group in this area.[28–30]

According to the results published by Hesse, 'Dr Google' is the most frequently used source of information about health in the USA.[31] While Hesse describes this trend as positive, he stresses that health care should aim at improving and making information published online credible, so that it does not mislead the patient.[31] The author underlines that health education of patients from websites can have a measurable impact on the health care system. However, these systems should endeavour to create a global collection of reliable and scientifically confirmed data on health that would be available online. Hesse thinks that the online involvement of patients in therapeutic and diagnostic processes can bring optimized economic benefits for the health care sector.[31] Considering the results of a systematic review carried out by a team of Morrison et al., this issue is promising. Morrison et al. showed that in patients with asthma digital interventions may be effective at improving knowledge, reducing activity limitation, improving markers of self-management, improving quality of life, and optimizing medication use in those less than 65 years of age.[32]

Owing to the growing number of persons searching the Internet for information on health and disease, it is crucial to verify the following issues:

(1) Does society indeed base its knowledge on health solely on the information found online?
(2) Are these data verified by a primary care physician or a specialist?
(3) Can this information positively influence the quality of life of a chronically ill person?

It should be emphasized that until now no studies have been carried out that would indicate how information on health obtained from the Internet can influence the quality of life of those suffering from asthma and/or allergies. This issue is of vital importance as it will indicate new environmental risks for public health that would influence epidemiology and the development of allergic diseases (e.g. medical advice published on the Internet by unqualified persons through social media, for instance). Therefore, this issue requires further studies from the perspective of public health.

6. CONCLUSIONS

The results of this study showed that persons clinically diagnosed with asthma search the Internet less often for information about the reputation of health care institutions. This suggests that those suffering from chronic diseases and not under constant medical care, particularly need more professional medical information. Persons who declare asthma search the Internet more often for infor-

mation about health and disease during the month. In addition, results of the survey showed that searching for information about health and disease on the Internet depends on gender, with more women searching than men. People with a lower economic status are more likely to seek health information on the Internet. These results suggest that issues discussed and searched via the Internet should be provided to physicians for appropriate commentary. Due to the high availability of incorrect medical content on the Internet, physicians should be subject to training, in the field of: how to talk to an Internet user, which questions or comments to expect, what content requires a strong reaction by the physician, etc.

Conflict of interest

We declare that there is no relevant conflict of interest.

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