How the Internet influences the relationship between outpatients and gastroenterologists: A multicenter study

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ABSTRACT

Background/Aims: The Internet offers a lot of non-filtered medical information which may interfere with the patient-doctor relationship. The aim of the present study was to assess the influence of the Internet on the classical doctor-patient relationship in gastroenterological outpatient settings.

Materials and Methods: A multicenter study was conducted, including a representative sample selected from five major regional medical centers throughout Romania. We designed a questionnaire which had two parts. One had to be filled out by adult patients on their first visit to a gastroenterology clinic and the other by physicians, stating the diagnosis and giving a doctor-patient collaboration score.

Results: From a total of 485 patients (49.9% females, mean age 50.42 years), 64.9% had Internet access, 75% out of whom searched for their symptoms online. University graduates searched for their symptoms online more often than secondary school graduates (80% vs. 31.1%, $p<0.05$). Most patients stated that they used the Internet to identify the most appropriate medical specialist for their condition. Internet users were less likely to visit a general practitioner (GP) before coming to a specialist (85.3% vs. 92.2%, odds ratio (OR) 0.491, 95% confidence interval (CI) 0.24-0.98, $p<0.05$). Patients who had searched for their symptoms online were less likely to follow the treatment prescribed by the GP (53.6% vs. 67.5%, $p=0.004$), but they received a better collaboration score (OR 1.12, 95% CI 1.05-1.36, $p<0.05$).

Conclusion: The Internet exerts a positive influence on specialist doctor-patient relationship, but it might burden the health system with the incorrect tendency to replace the role of the GP.

Keywords: Internet, online search, doctor-patient relationship, gastroenterology, gastrointestinal diseases

INTRODUCTION

The fast-paced evolution of the Internet has changed many aspects of our life at both individual and population levels. In addition, in recent years, the Internet has been gaining ground as a primary source of medical information (1). It is used by an ever-increasing number of patients. Romania is a country with many Internet users, with 58% of the general population (2) and >84% of youth (3). When considering the countries with the fastest Internet connection speed, Romania ranks in the top 10 worldwide (4). In Romania, in 2016, 4 out of the top 10 Internet inquiries included in the category "what is" were health-related (5). These important changes may have an impact on the doctor-patient relationship. Understanding how the Internet affects the patients is of interest for physicians and could require from the medical side, adaptive changes in the approach of the patients. Current data show an increasing tendency for Internet search of medical information before taking medical advice. A study published in 2006 revealed that >70% of the Internet users from European countries searched the Internet for health purposes (6).

The use of the Internet by the general population is increasing, spanning from 50% to 60% in Eastern Europe to nearly 90% in Northern and Western Europe (2). Patients are usually searching for differential diagnoses, treatment options, side effects of medication, or are

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looking for data about their own physicians. Nearly 40% of the population visits physicians rating sites (7). This information may have an impact on their perceptions on the physician's reputation and practice (8). Motivated by the needs of acknowledgment, of uncertainty reduction, and of perspective, patients may search for health information online to achieve the goals of preparing for meeting a doctor, complementing it, validating it, and/or challenging its outcome (9). Others may seek emotional support (1).

A considerable increase in the role of peer-to-peer support using online forums was noticed (10). These forums allow patients with similar diseases to advise each other and share medical information. Many would argue that sharing experiences with peers can positively affect one's health (1). The insufficient information provided by health professionals (verbal or written) may explain the patients' interest in Internet health information (1, 11).

The aim of the present study was to evaluate the impact of the Internet on gastroenterologist-patient relationship with focus on functional digestive disorders. Our study might be especially important for medical practitioners to explain the ongoing change in their patients' mentality due to the constantly increasing use of online medical information and also to improve patients' education and counseling.

MATERIALS AND METHODS

Protocol

A prospective multicenter study was conducted, including a representative sample selected from five major health-providing regional centers distributed throughout Romania.

Subjects

In Romania, patients are covered by the general national insurance system; thus, they first present to the general practitioner (GP) and are referred to a specialist if considered necessary. Otherwise, patients can present by themselves to a specialist, if they pay the consultation (not covered by insurance in this case).

Adult patients, aged 18-80 years, on their first visit to any of the gastroenterology clinics participating in the present study, in consecutive order, were included in the study. Asymptomatic patients or those returning for follow-up were excluded from the study.

Questionnaires

A structured questionnaire, validated on a pilot group, which had two parts, one to be filled out by patients on their first visit to a gastroenterology clinic and the other by physicians stating the diagnosis and giving a doctor-patient collaboration score, was designed. Demographic data were collected in addition to other information, such as having Internet access, if they performed an online search for medical data, if their search helped them to find out a potential diagnosis, if the Internet influenced them to select a medical specialty, and if the patients previously used a medication as a result of their search. If the patient had a prior GP appointment, if they followed the GP's treatment, or if they got a prior medical advice from a specialist doctor for the same problem were also investigated. They were also asked to quantify the extent to which the Internet had influenced them in this process ("low influence," "relative influence," or "high influence").

The second part was designed to be filled out by physicians, stating both the initial and the final diagnoses. The doctors evaluated subjectively, in one item question, the collaboration with the patient—more exactly, the understanding of doctor's questions and recommendations (scored from 1 to 10, with 1 being the worst and 10 being the best collaboration grade). The examining doctor also positively diagnosed the presence of gastroesophageal reflux disease according to the Montreal definition, dyspeptic syndrome/functional dyspepsia, or irritable bowel syndrome (IBS) (using the Rome III criteria).

Statistical analysis

Data were analyzed using PASW Statistics version 17.0 (SPSS Inc.; Chicago, IL, USA) for descriptive statistics. Pearson's correlation was used to analyze between characteristics of the sample. In addition, multivariate logistic regression analysis was used, considering demographic characteristics, previous visit to the GP, and online search for medical information as independent variables and collaboration score as outcome variable. A p value of <0.05 was considered as statistically significant.

Ethics

The study protocol was approved by the local ethics committee. Written informed consent was obtained from all the participants prior to study enrollment.

RESULTS

Description of responders

The sample consisted of 485 subjects from five regional centers. The demographic characteristics of the sample

are presented in Table 1. The mean age of the patients was 50.4±15.7 years. There were 49.9% female patients. Patients had different educational background, most of them being high school graduates or having university degrees. Of these 485 patients, 307 (64.8%) reported that they were Internet users.

Internet use

Of the 307 patients, 52.9% performed online search for medical information related to their symptoms prior to getting medical advice, 75.2% had Internet connection, and only 4.9% had no Internet connection (who used the Internet in public spaces) (p<0.001). When considering Internet search for medical information before getting medical advice, no significant difference was found between women and men (55.0% vs. 50.8%, p>0.05), but a strong, inverse correlation with age (r=-0.367, p<0.001).

Most of the patients stated that they used the Internet to identify the most appropriate medical specialist for their condition, and they also admitted that the Internet helped them to better understand their medical condition and the recommendations offered by the physician (Table 2).

Table 1. Demographic characteristics of the study sample.

	N (%)
Regional center	
Craiova	114 (23.5)
Bucharest	103 (21.2)
Brasov	76 (15.7)
Cluj	100 (20.6)
Iasi	92 (19.0)
Gender	
Female	242 (49.9)
Male	243 (50.1)
Education level	
Analphabet	2 (0.5)
Primary school	23 (5.7)
General school	63 (15.6)
Professional school	25 (6.2)
High school	148 (36.5)
Higher education	144 (35.6)

Table 2. Outcome of Internet search.

Outcome	N (%)
Decision on medical specialty for consultation	162 (63.03)
Patient's supposition on diagnosis	94 (36.56)
Following a treatment, including self-medication	37 (14.39)
Understanding of medical explanation	194 (75.7)

Internet use and medical visits

The majority of the patients visited the GP before getting medical advice from a specialist doctor (87.8%). Out of these patients, 39.1% did not follow the treatment recommended by the GP. Only 7.3% declared that they practiced self-medication based on Internet recommendations, and 58.2% of the patients admitted that they had visited at least one specialist doctor for the same condition before getting current medical advice.

Internet access was negatively correlated with previous visits to the GP (85.3% vs. 92.2%, p=0.041).

Patients who had searched for their symptoms online were less likely to follow the treatment prescribed by the GP (53.6% vs. 67.5%, p=0.004, odds ratio (OR) 0.369, 95% confidence interval (CI) 0.236-0.577), yet had a better collaboration with a specialist doctor (r=0.17, p=0.003).

Of the 485 patients, 50.3% were diagnosed with functional diseases (Figure 1).

Although patients with functional diseases searched the Internet in higher numbers than patients who did receive a diagnosis for an organic disease (62% vs. 49%, p=0.022), the former were not more frequently influenced by the information provided by the Internet, and their online search had no influence on their doctor-patient collaboration score (p>0.05).

The education level was positively correlated with the collaboration scores (r=0.26, p<0.001), and patients with

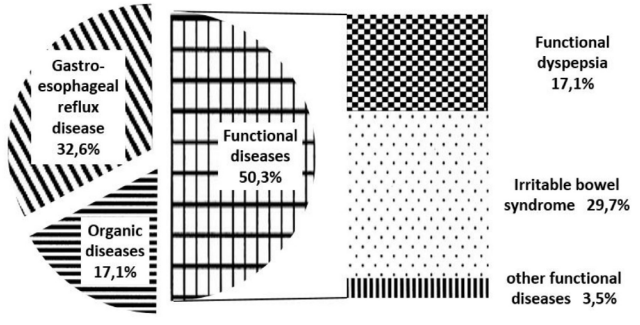

Figure 1. Final diagnosis in specialist doctor medical advice.

higher education were more likely to search for information on the Internet before meeting a specialist doctor (r=0.37, p<0.001).

Advanced age was negatively correlated with both education level and collaboration score (-0.34 and -0.20, respectively, p<0.001, Pearson two-tailed correlations).

Using a multivariate regression analysis, the best collaboration score (10 points) was inversely correlated with age (OR 0.79, 95% CI 0.65-0.96, p=0.017) and positively correlated with higher education level (OR 3.15, 95% CI 1.17-8.43, p=0.023), previous visit to the GP (OR 3.05, 95% CI 1.14-8.15, p=0.026), and online search for medical information (OR 2.38, 95% CI 1.01-5.65, p=0.049).

DISCUSSION

The relationship between medical doctor and patient is very important in gastroenterology, in both chronic organic and functional conditions (12). More and more patients (60%) use the Internet for personal information related to health issues and to their own concerns (13, 14). As the information on the Internet is not critically checked and can be provided by non-professionals or even charlatans, the opinions of the patients may be misled. Therefore, patients' beliefs may differ from the medical evidence (15, 16). Few data were published regarding the extent to which the Internet influences the doctor-patient relationship. There is no doubt though that the Internet is a major communication instrument of our era, and it is estimated that almost half of the world's population is connected to the Internet (2).

The present study shows that more than half of the gastrointestinal (GI) outpatients seeks online health information before visiting a doctor, with no gender differences, as other studies found in other countries (17). However, a strong correlation with younger age, similar to most studies, was also revealed in our study (18).

Functional patients have hypervigilance (19). Therefore, they pay more attention to own bodily symptoms than chronic organic sufferers. This behavior is supposed to explain the more frequent access of the Internet compared with other patients.

In a recent study, patients using the Internet were more likely to self-diagnose their condition (87% vs. 46% of non-users of the Internet), and this self-diagnosis can lead to anxiety until a medical expert confirms or disapproves it (13).

In our study, we noticed a negative influence of the Internet on patient-GP relationship and a tendency to use the information obtained through online search as an alternative to visiting the GP. This may happen not only in the specialization of gastroenterology but also in other medicine disciplines.

Romanian medical system allows the patient to be examined directly by a specialist doctor (especially in private clinics), without prior GP referral. The current tendency of bypassing the role of the GP is alarming, and it will have serious consequences resulting in overcrowding the health system unless no measures are taken. The present study could form the basis of further work looking at perhaps the need to implement this rule in Romania whereby referral was compulsory before a specialist is seen (as it is done in most other EU and Australasian countries) (20, 21). For this, we must estimate the cost/efficiency aspects, if it is harmful or it is useful and proven to save time and resources.

Another alarming sign is the increasing number of patients not following the treatment prescribed by the GP before getting advice from a specialist doctor. We believe that there is an urgent need to develop strategies regarding the use of the Internet in the family medicine practice. When taking in consideration that almost 65% of our patients are connected to the Internet and 75% of them already use the Internet for health purposes, the use of an online national health platform would make possible for patients to check for their symptoms, watch instructive videos on various diseases, check for urgent health messages, and request a video interview with their family doctor when appropriate.

The Internet can be a useful instrument in educating patients. In Japan, endoscopy live demonstrations is one of the most effective and attractive methods used for educating patients with pancreatic-biliary disorders and with other GI diseases (22). In the USA, the Internet is being used increasingly as a source of information for prescriptions, and clinicians guide their patients to specific websites (23). Although more than a half of the patients visited the recommended website, an email reminder increased the frequency of site visits and improved the patients' compliance (24, 25). In addition, in Europe, Internet-based cognitive behavior therapy has shown promising results in treating digestive disorders, including IBS, and was found to be more cost-effective than the waiting list, with an 87% chance of leading to both reduced societal costs and clinical effectiveness

(26). Although few studies explored the outcomes of Internet-based e-Health technology in gastroenterology, a systematic review showed that this promising instrument can be used to enhance and promote GI disease management and mental health (27). The Internet is a useful tool in prevention campaigns for spreading health information, especially those targeting young adults who consider the Internet as a valid source of advice on health matters and trust online information (18).

In conclusion, the Internet is a modern and popular source of health information. Although having access to the Internet negatively correlates with visiting the GP, the Internet search tends to improve the doctor-patient relationship. Being younger, more educated and having access to the Internet significantly correlates with obtaining a higher collaboration score given by the physician at the end of the meeting. The trend of Internet usage as a health source is unstoppable; thus, it is logical for health providers to be an online presence, read what their patients are exposed to, and recommend good sites to get informed from. Doctors should accommodate themselves to the new role of the Internet by being non-judgmental and by trying to promote good information while protecting their patients against misleading ones.

Ethics Committee Approval: Ethics committee approval for this study was received from the Ethics and Research Committee of University of Medicine and Pharmacy "Grigore T. Popa" - Iasi, Romania.

Informed Consent: Written informed consent was obtained from all patients who participated in this study.

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