



Use of internet resources by patients awaiting gastroenterology consultation

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ABSTRACT

Background/Aims: The purpose of this study is to understand how outpatients awaiting initial gastroenterology consultation seek medical information on the Internet and how wait times affect Internet usage.

Materials and Methods: A cross-sectional survey of 87 gastroenterology outpatients awaiting consultation was performed at a tertiary care center.

Results: Fifty-two patients (60%) utilized the Internet for medical information. The mean age of patients using the Internet was 41 years, whereas the mean age of those not using the Internet was 60 years ($p < 0.0001$). The Internet was used by 71% of females and 47% of males ($p < 0.05$). Regarding the educational level, the Internet was sought by 33% of the patients possessing less than secondary school education, 59% possessing secondary school education, 66% with an undergraduate degree, and 100% with a postgraduate degree ($p = 0.14$). The mean wait time for consultation for patients who utilized the Internet was 158 days, and for patients who did not was 147 days ($p = 0.60$). The most common websites searched were medical, 71%. The most common medical information sought was symptoms and diagnosis by 85% of patients. The reasons for Internet use were wait times for 36% of patients and recommendation by a physician for 10%. Eighty seven percent of the patients who utilized the Internet believed that they suffered from an unidentified disease, whereas 46% of patients who did not utilize the Internet believed the same ($p = 0.0001$).

Conclusion: Younger patients and females were more likely to use the Internet, but wait times did not affect Internet usage. The Internet is a powerful patient resource; however, further physician guidance is required to help patients identify reliable resources.

Keywords: Internet, web, gastrointestinal disease, gastroenterology patients, wait times

INTRODUCTION

Our dependence on the World Wide Web has grown tremendously since its inception. Global Internet usage has soared to a staggering two billion people over the last decade (1). A great proportion of Internet users seek medical information, thus making the Internet a significant source of medical education (2). However, most medical information on the Internet is unregulated, thus leading to many inaccuracies.

Gastrointestinal disease can place a heavy burden on patients and society (3). In some countries currently, wait times are excessive for gastroenterology consultation, and significant changes are unlikely to occur in

the near future (4-6). Patients might search for medical information while awaiting consultation, and the Internet serves as an easily accessible resource. Studies conducted on Internet usage by patients with gastrointestinal ailments have shown Internet usage rates ranging from 26% to 92%, with females, younger patients, and educated patients more likely to use the web (7-11). When searching the Internet, patients most frequently sought causes of disease and treatment options (7,12).

To date, however, studies have not addressed the effect of wait times on patients seeking medical information on the Internet. This study's purpose is to understand how outpatients awaiting initial gastroenterology con-

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sultation seek medical information on the Internet and how wait times affect Internet use.

MATERIALS AND METHODS

This study was conducted at an outpatient general gastroenterology clinic at London Health Sciences Centre, a tertiary care center, in London, Ontario, Canada. A questionnaire consisting of 16 multiple-choice questions was created to better understand patient use of web resources for medical information while awaiting gastroenterology consultation. The Western University Health Sciences Research Ethics Board approved the questionnaire and the study.

Abstracted information included patient demographics, level of education, reason for referral, preceding investigations, patient resources utilized, websites browsed, information obtained, reasons for seeking information on the Internet, patient self-diagnosis, and lifestyle changes instituted. To calculate patient wait times, the dates of referral and consultation were documented on the questionnaire. Patient participation in the survey was both anonymous and voluntary, prior to initial consultation with clinic staff between July 2009 and December 2009 (see appendix).

Data were inserted into Excel (Microsoft, Redmond, USA) spreadsheets, and InStat 3.0 (GraphPad Software, La Jolla, USA) was used for all data analysis. Chi-square was used for comparison of categorical variables, while t-tests were used for continuous variables. Statistical significance was set at p value <0.05 .

RESULTS

Participating in this study were 87 patients (34% male, 61% female, and 5% of unspecified gender). Patients' mean age was 48 (range: 17-89). In 7% of the patients, the educational level was less than secondary school; in 33%, secondary school; in 44%, college or university degree; in 6%, postgraduate education; and in 10%, no level was specified. The mean wait time from referral to consultation was 154 days (range 4-537 days). Of the patients surveyed, 52 (60%) used the Internet to seek medical information prior to consultation.

Figure 1 displays the primary reasons for patients' referrals. The majority of patients (86%) had at least one investigation performed prior to consultation. The investigations performed by consulting physicians included blood work for 56% of patients, abdominal ultrasound for 39%, colonoscopy for 33%, abdominal x-rays for 24%, upper gastrointestinal series for 24%, barium enema for 18%, abdominal computed tomography (CT) scan for 17%, upper endoscopy for 16%, small bowel follow-through for 8%, abdominal magnetic resonance imaging (MRI) for 4%, and other investigations (fecal occult blood tests, stool cultures, etc.) for 4%.

The mean age of patients using the Internet was 41 years, while the mean age of patients not using the Internet was 60 years

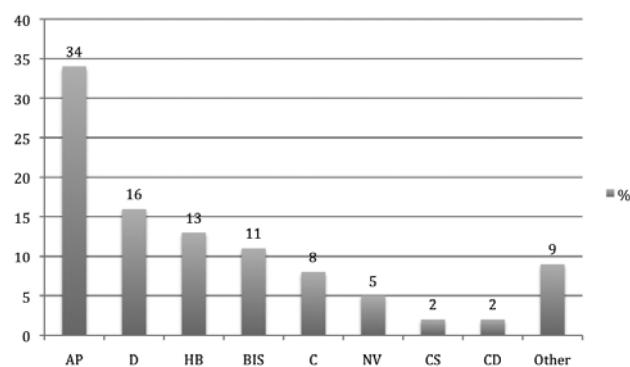


Figure 1. The primary reason for referral of patients to a gastroenterologist. AP=abdominal pain, D=diarrhea, HB=heartburn, BIS=blood in stool, C=constipation, NV=nausea and vomiting, CS=cancer screening, CD=Crohn's disease, and others, including dysphagia, hepatitis, peptic ulcer disease, weight loss, and back pain.

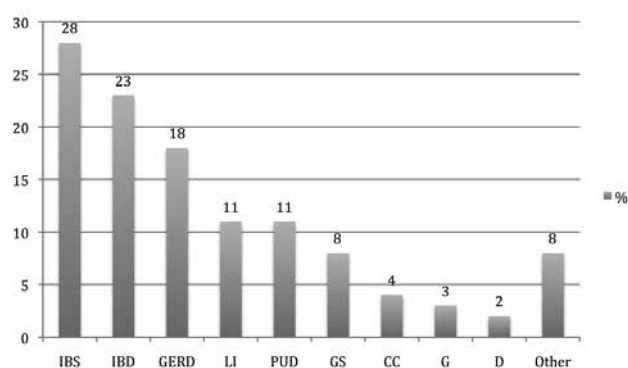


Figure 2. Gastrointestinal conditions patients believed they had while awaiting gastroenterology consultation. IBS=irritable bowel syndrome, IBD=inflammatory bowel disease, GERD=gastroesophageal reflux disease, LI=lactose intolerance, PUD=peptic ulcer disease, GS=gallstones, CC=colon cancer, G=gastitis, D=diverticulitis, and others, including pancreatitis, cirrhosis, and gastric cancer.

($p<0.0001$). Of female patients, 71% used the Internet; of males 47% ($p<0.05$). As for educational level, the Internet was sought by 33% with less than secondary school, 59% with secondary school, 66% with an undergraduate degree, and 100% with a postgraduate degree ($p=0.14$). The mean wait time for patients who used the Internet was 158 days, and for patients who did not, 147 days ($p=0.60$).

Table 1 shows the resources utilized by patients, the medical websites browsed by Internet users, and the medical information sought. Patients resorted to the Internet because of personal curiosity (75%), worsening symptoms (42%), wait times (36%), lack of confidence in physicians (13%), the recommendation of a physician (10%), and advice from others (8%). Figure 2 illustrates all the gastrointestinal diseases patients believed they had. In 29% of cases, patients felt that the Internet helped convince them that they had a medical condition. Indeed, 87% of patients using the Internet believed they had a gastrointestinal disease; in contrast, 46% of patients not using the Internet believed they had a gastrointestinal disease ($p=0.0001$).

Table 1. The major resources used, websites searched, and medical information sought on the Internet by patients awaiting initial gastroenterology consultation.

Patient resources	Patients (%)
Family physicians	80
Internet	60
Family or friends	38
Specialist physicians	18
Brochures and pamphlets	17
Books	9
Other (journals, magazines etc.)	4
Websites searched	Internet users (%)
Medical websites	71
Through search engines	63
Institutional or society websites	19
Blogs	6
Pharmaceutical company websites	6
Chatrooms	2
Medical information sought	Internet users (%)
Symptoms and diagnosis	85
Treatment	62
Disease causes	62
Coping	27
Prognosis	19
Gastroenterologist information	2

Anxiety levels did not change in 77% of patients using the Internet, but did increase in 21% and decrease in 2%. Of the patients using the Internet, 46% were influenced to undergo lifestyle changes. This included dietary changes in 36%, incorporating over-the-counter medications in 15%, and exercise in 6%. Internet users felt that the information they found would influence treatment by gastroenterologists in 39%, tests ordered in 33%, and diagnosis in 28%. Of Internet users, 71% would recommend the Internet to other patients awaiting consultation by a gastroenterologist.

DISCUSSION

This study evaluated use of the Internet for medical information by outpatients awaiting initial gastroenterology consultation. In the study, younger patients and females used the Internet more frequently than other groups. This was statistically significant and consistent with previous studies (7-9). Patients with higher levels of education showed a trend toward greater Internet use, but this trend did not achieve statistical significance. Preceding studies have shown that higher levels of education correlate with increased Internet use (7-9).

In our study, the percentage of patients using the Internet for medical information was 60%. This was higher than a study

conducted on a similar general gastroenterology outpatient population 13 years previously, in which the percentage of patients using the Internet for medical information was approximately 26% (7). This correlates with a global increase in Internet usage from 360 million in 2000, to 2 billion in 2011 (1). The evolution and availability of technology, as well as an increase in Internet usage rates among older generations, might account for this. No doubt, the rate of Internet use by patients will continue to grow.

The mean wait time for patients in our study was 154 days, longer than the provincial median wait time in Ontario, Canada, of 110 days in the PAGE study (5). Wait times are not likely to shrink in the near future. When we compared the wait times of patients who used the Internet to those of patients who did not use the Internet, we did not find a significant difference. The lack of a difference can potentially be explained by patients being triaged based on the urgency of their medical issue. Out of concern, patients with an urgent issue are just as likely to seek knowledge from the Internet, as are patients with less urgent ailments who have been waiting significantly longer.

Of the resources used by patients, the Internet was second only to family physicians. The top websites browsed were medical websites and websites located through search engines. Considerable variability exists in the quality of websites for various gastrointestinal diseases, and this makes finding consistently accurate information difficult. The superior websites tend to be institutional, associational, and society websites (13-17). These sites were specifically browsed only 19% of the time. While the quality of medical websites is generally good, websites located through search engines often contain unverifiable data that might falsely educate patients. Only 10% of patients seeking information from the web did so on their physicians' recommendation. Consequently, physicians should be more involved in educating their patients on medical Internet resources to help ensure reliable information is obtained.

The medical information most sought by patients was symptoms and diagnosis, causes of disease, and treatment; these results are consistent with previous studies (7,12). In general, patients using the Internet (71%) did not feel that the web convinced them that they had a medical condition. However, when all patients were asked to state a gastrointestinal condition they believed they had, 87% of Internet users stated a condition, compared to 46% of patients not using the Internet; this was statistically significant. Thus, patients using the Internet were more likely to self-diagnose. Self-diagnosis can lead to unnecessary worry among patients until a medical expert confirms or disproves their diagnosis.

Limitations to this study include the sample size. Additionally, the survey's nature might have caused inherent response and recall biases, because only patients who agreed to the survey answered questions; obviously, patients who declined the sur-

vey did not answer questions. However, this study still demonstrated some important associations.

In summary, the Internet was more widely used by younger patients and female patients awaiting initial gastroenterology consultation. Internet users and non-users experienced no significant difference in wait times. The Internet was second only to physicians as a resource to patients, and information sought was disease related. Internet users were more likely to believe that they had a medical condition than non-users. Since the Internet will continue to grow rapidly as a medical resource, physicians need to assist them in identifying the most reliable Internet resources.

Ethics Committee Approval: Ethics committee approval was received for this study.

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

Peer-review: Externally peer-reviewed.

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