Use of the Web for Medical Information by a Gastroenterology Clinic Population

J. Barry O’Connor, MD, MS
John F. Johanson, MD, MS

As of September 1999, there were an estimated 359 million people in the world online, including 157 million in the United States and Canada.¹ A survey by Louis Harris and Associates² showed that in 1998, 60 million Americans searched for health information online. A random telephone survey performed by Cyber Dialogue³ revealed that half of all online users would be interested in using a Web site operated by their physician’s office but only 4% are currently doing so. However, such surveys may be limited by nonresponse bias. In addition, whether these results apply to a clinical population is unknown. We surveyed patients in 2 gastroenterology clinics to determine their use of the Web to obtain medical information, to identify for what information patients search, and to determine how often physicians recommend that patients search the Web.

METHODS

A pretested questionnaire was distributed to outpatients attending a gastroenterology clinic at either of 2 sites in August 1999: Duke University Medical Center, a tertiary academic center in Durham, NC, and Rockford Gastroenterology Associates, an academically oriented private practice gastroenterology group in Rockford, Ill. All consecutive patients were asked to complete the self-administered questionnaire without assistance or prompting.

The 16-item, multiple-choice questionnaire was constructed and pretested by administration to a trial group of 30 patients. Although the respondents were gastroenterology outpatients, the content of their responses was not limited to gastroenterology. Unanswered questions were not included in the analysis.

Data recorded in the questionnaire included patient demographics: sex, year of birth, and education level (0 = no formal education, 1 = some high school, 2 = high school diploma, 3 = some college, 4 = college degree, and 5 = graduate school attendance). Patient Web access and use were determined by asking, “Do you have access to the World Wide Web?” and “How many times in the last year did you search the Web for medical information?” The information for which the patient was looking was categorized as general disease information, treatment options, alternative medicine information, diet or nutrition information, medication information, or other (free text space). Patients were asked to rate the ease or difficulty with which they performed the search on a 4-point scale, with

Context Surveys have shown that 60 million persons in the United States searched for health information online in 1998. However, lack of sampling from a clinic population limits the generalizability of these surveys to clinical practice.

Objectives To determine gastroenterology patients’ access to and use of the Web as a medical information resource, to identify for what information patients search, and to determine how often physicians recommend that patients search the Web.

Design, Setting, and Participants Cross-sectional survey of 1006 gastroenterology outpatients in Durham, NC, and Rockford, Ill, conducted in August 1999.

Main Outcome Measures Patient characteristics and education level, access to the Web, use of the Web as a medical information resource, search methods, and plans for future Web use.

Results A total of 924 patients (92%) completed the questionnaire. Median age was 53 years, 41% were men, and the median education level was having completed some college. Fifty percent (462/924) reported having access to the Web. Of the 462 with access, 235 (51%) had searched the Web for medical information within the previous 12 months. Therefore, 25.5% of all patients surveyed had searched the Web for medical information within the previous year. Sixty percent of patients intended to use the Web as a medical information resource in the future. Only 35 (4%) of 825 had ever been referred to the Web by a physician.

Conclusions In this clinic setting, more than one quarter of gastroenterology outpatients reported having obtained medical information from the Web within the previous year. More than two thirds of patients stated they would use the Web as a medical information resource in the future.


Author Affiliations: Division of Gastroenterology, Department of Medicine, Duke University Medical Center, Durham, NC (Dr O’Connor); and Rockford Gastroenterology Associates, Rockford, Ill (Dr Johanson).

Financial Disclosure: The authors received no financial support for this project.

Corresponding Author and Reprints: J. Barry O’Connor, MD, MS, Division of Gastroenterology, Department of Medicine, Box 3662, Duke University Medical Center, Durham, NC 27710 (e-mail: oconn003@mc.duke.edu).
Analysis by study site showed that in Durham, 166 (32%) of 520 patients searched the Web in the previous year vs 69 (18%) of 404 in Rockford ($P<.001$).

Patients sought online information in the following categories: general disease, 195 (31%) of 619; treatment options, 146 (23%); medications, 114 (18%); diet and nutrition, 87 (14%); and alternative medicine, 64 (10%). There were no differences by site ($P=.71$ by $\chi^2$ test). Most patients obtained medical information via Web search engines. Search engines used were Yahoo!, 31% (n=135); Infoseek, 15% (n=64); AltaVista, 13% (n=58); Excite, 13% (n=57); and Lycos, 11% (n=48); followed by HotBot, America Online, and Metasearch. Approximately 8% of respondents (19/235) used medical information–specific Web sites, including the National Institutes of Health; the American Cancer Society; medical school sites such as Mayo Clinic, Johns Hopkins University, and Harvard University; and commercial Web sites such as drkoop, WebMD, HealthNet, and Medscape.

Most patients found it very easy (63 [29%] of 215) or somewhat easy (114 [53%] of 215) to search the Web for health information. A minority found searching either somewhat difficult (34 [16%]) or very difficult (4 [2%]). Reported reasons for search difficulty included “insufficient user search expertise” (41 [57%] of 72) and “too much information on the Web” (19 [26%] of 72). In response to the question, “How certain were you that the medical information you got on the Web was of good quality?” most patients were very certain (36 [18%] of 202) or somewhat certain (137 [68%] of 202), while 23 (11%) were somewhat uncertain and 6 (3%) were very uncertain. No differences by site were noted ($P=.32$ by $\chi^2$ test). Of the 825 respondents to the question, “Has any doctor or nurse ever advised you to get medical information from the Web?” only 35 (4%) answered yes. Again, no differences by site were observed ($P=.56$ by $\chi^2$ test).

Of the 755 respondents to the question, “Would you search the Web for medical information in the future?” 456 (60%) answered yes (278 [67%] of 412 patients in Durham vs 178 [52%] of 343 in Rockford, $P<.001$). Compared with patients who did not intend to search

### Results

A total of 924 (92%) of 1006 patients completed the questionnaire (Table 1). The median age was 53 years (range, 18-90 years; interquartile range [IQR], 42-65 years) and 41% of respondents were men. Durham patients had a median age of 53 years (range, 18-90 years) compared with 56 years (range, 18-84 years) in Rockford (Table 1). The Durham group was slightly more educated, with a median education level of 3 (IQR, 2-4) vs 3 (IQR, 2-3) in Rockford ($P<.001$).

Overall, 462 (50%) of 924 patients had access to the Web. Of the 462 with Web access, 235 (51%) reported having obtained medical information within the previous 12 months. Therefore, 25.5% (51% of 50%) of all patients had searched the Web for medical information. Demographic factors associated with Web access and use are shown in Table 2. The number of searches per patient ranged from 0 to 100, with a median of 4 (IQR, 2-10).

#### Table 1. Survey Findings by Site*

<table>
<thead>
<tr>
<th></th>
<th>Durham, NC</th>
<th>Rockford, Ill</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of questionnaires administered</td>
<td>536</td>
<td>470</td>
<td></td>
</tr>
<tr>
<td>No. (%) of completed questionnaires</td>
<td>520 (97)</td>
<td>404 (86)</td>
<td>.22</td>
</tr>
<tr>
<td>Median patient age (IQR)</td>
<td>53 (42-64)</td>
<td>56 (42-67)</td>
<td>.03</td>
</tr>
<tr>
<td>Patient age range, y</td>
<td>18-90</td>
<td>18-84</td>
<td></td>
</tr>
<tr>
<td>Male sex, %</td>
<td>43</td>
<td>39</td>
<td>.24</td>
</tr>
<tr>
<td>Median education level (IQR)</td>
<td>3 (2-4)</td>
<td>3 (2-3)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>No. (%) of patients with access to Web</td>
<td>287 (55)</td>
<td>175 (43)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

*IQR indicates interquartile range.
†See “Methods” section of text for explanation of education levels.

#### Table 2. Patient Access to and Use of the Web Within the Previous 12 Months*

<table>
<thead>
<tr>
<th></th>
<th>Web Access</th>
<th>Did Not Have Web Access</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>462</td>
<td>462</td>
<td></td>
</tr>
<tr>
<td>Mean age (IQR or SD), y</td>
<td>49 (29-58)</td>
<td>59 (45-70)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Median education level (IQR)</td>
<td>4 (3-4)</td>
<td>2 (2-3)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Male sex, %</td>
<td>51</td>
<td>49</td>
<td>.53</td>
</tr>
</tbody>
</table>

*See “Methods” section of text for explanation of education levels.
the Web for medical information in the future, patients who did intend such use were younger (median age, 49 vs 61 years; \( P < .001 \)), more educated (median education level, 3 vs 2; \( P < .001 \)), more likely to be female (61% vs 53%; \( P = .046 \)), more likely to already have access to the Web (72% vs 20%; \( P < .001 \)), and more likely to have searched the Web in the past (66% vs 6%; \( P < .001 \)).

At the Durham site, 4 patients sought information about physicians, 1 about medical facilities, and 2 about insurance plans. No patients at the Rockford site sought information in these categories.

**COMMENT**

This study showed that in these clinics, more than one quarter of gastroenterology outpatients searched the Web for medical information in the previous 12 months. This is consistent with the findings of telephone surveys.4 The typical Web user seeking health information was a female in her early 50s with at least some college education.

Our finding that only 4% of patients were ever advised by a physician to get medical information from the Web is consistent with a telephone survey by Cyber Dialogue.3 Although 28% of our patients searched the Web within the past year, 60% stated that they would search the Web in the future. Furthermore, a large proportion of the medical information available on the Web is provided by commercial organizations, rather than medical professionals or professional medical organizations.2 Therefore, it appears that neither the growth in patient use of the Web as an information resource nor a significant volume of Web content is being driven by physicians.6

Because of the unregulated nature of the Web, the quality of its medical information is variable.5,7,8 Therefore, it is surprising that as few as 14% of patients were either somewhat uncertain or very uncertain about the quality of their search results.

This study is limited in the population sampled and the self-report nature of the survey.

The major findings of this study are that a significant minority of patients search the Web for medical information, that most patients feel confident in their search results, and that despite the fact that few physicians recommend the Web to patients, patient use of the Web as a medical information resource likely will increase significantly based on these patients’ reports. Medical professionals must acknowledge the growing importance of electronic health information by developing their own practice Web sites, using the Web as a patient education tool, and helping patients identify good vs poor health information available on the Web.9

Acknowledgment: We acknowledge the assistance of Jane Onken, MD, for her review of an early version of the manuscript.

**REFERENCES**

5. O’Connor JB, Katbamna BH, Mullen KD. Surfing the Net may be hazardous to your health: quality of GI information on the Internet [abstract]. *Am J Gastroenterol*. 1997;92:1721.