**Abstract**

Internet use has expanded globally over the last 10 years. The aim of this study was to determine the extent that cardiac patients researched their forthcoming procedures using the internet and to determine their perception of reliability. Sixty-eight consecutive cardiac patients (51 men, median age 67 years) were surveyed on their frequency of internet use, whether they used the internet to research their operation and how reliable they regarded the information found. Forty-two patients had access to the internet, 29 patients used the web on a regular basis but 33 reported that they never used the web. Fourteen patients used the internet to research their operation themselves. Patients < 65 years were over twice as likely to have internet access ($P<0.0001$). However, the use of the internet to do research is low irrespective of age ($P=0.28$). Forty-five patients felt that information found on the internet was reliable. Despite a general increase in internet access, there is still low usage amongst cardiac patients to research their operation. Patients do, however, have confidence in what is available on-line. Patient education by the multi-disciplinary team before surgery remains of paramount importance.

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**Keywords:** Internet; Patient education; Cardiac surgery

1. Introduction

Usage of the world wide web (WWW) has expanded enormously over the last 10 years. In 2008, it was estimated that 16 million households in the UK (65%) had internet access. Despite the abundance of medical information available on the WWW, previous studies have shown that only a small proportion of patients in any specialty use the web to research their disease or treatments $[1, 2]$. The quality and accuracy of information available to patients is variable, and such information, obtained from browsing the web before surgery, may either consolidate information already received or confuse patients at a crucial time $[3]$. We studied the use of the WWW by patients awaiting cardiac surgery to determine the value of this source of information.

2. Materials and methods

Sixty-eight consecutive patients admitted for elective cardiac surgery at the John Radcliffe Hospital (Oxford Radcliffe Hospitals NHS Trust, UK) over two months completed a standard questionnaire to study their usage of the world wide web. All patients had previously attended a pre-assessment clinic where each had received the British Heart Foundation guide to their planned procedure and a departmental guide to cardiac surgery, as well as a verbal explanation of the operation. The only website recommended in this literature is for the British Heart Foundation – www.bhf.org.uk.

The questionnaire examined patients' access to the Internet at home and work, use of the web to research their operation, and their opinion of the reliability and clarity of any information obtained. Statistical analysis with $\chi^2$ and Fisher’s exact tests was carried out by VassarStats.2

3. Results

Sixty-eight patients were interviewed, 51 men, with a median age of 67 years (inter-quartile range 58–76). Forty-two (61.8%) patients had access to the internet either at home or work. Twenty-nine (42.6%) patients used the web on a regular basis – either daily or weekly – but 33 (48.5%) reported that they never used the web (see Table 1). There were 32 patients (47.1%) under 65 years of age and they were twice more likely to have internet access than those aged 65 years or above ($\chi^2=16.95$, df = 1, $P<0.0001$). In the cohort of 42 patients with internet access, there was no difference in the frequency of access with respect to age: 19 of 28 patients under 65 years (67.9%) used the web daily or weekly compared with 10 of 14 patients aged 65 years or above (71.4%, Fisher’s exact test, $P=0.55$).

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**Table 1**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Internet access</th>
<th>Fisher’s exact test</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 65 years</td>
<td>32/42 (76.2%)</td>
<td><strong>0.0001</strong></td>
<td>16.95</td>
</tr>
<tr>
<td>65 years or above</td>
<td>10/14 (71.4%)</td>
<td>0.55</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**


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The rate of using the web to research procedures was low in both groups and did not differ between groups: only eight of 28 under 65s (28.6%) had researched their operation on-line compared with six of 14 of those aged 65 or above (42.9%, Fisher’s exact test, P=0.28).

Only 14 patients (20.6%) used the internet to research their operation themselves (nine were daily internet users, five were weekly internet users), with a further nine patients (13.2%) asking a friend or relative to research on their behalf (seven never used the internet, two were regular internet users). For the remaining group of 45 patients (66.2%) who had not accessed on-line sites to research their operation, the reasons given were varied and are summarised in Table 2.

Forty-five patients (66.2%) considered information on the internet to be either very reliable or quite reliable; 10 patients (14.7%) felt unable to comment on the accuracy of online information (see Table 3).

When questioned whether a patient would use a recommended web-site, 23 of 32 patients under 65 years (71.9%) stated they would use it compared with 17 of 36 patients aged 65 years or above (47.2%), so that patients under 65 years were 50% more likely to visit a recommended web-site ($\chi^2=4.25$, df=1, $P=0.039$, risk ratio 1.52).

4. Discussion

Despite the growth of the internet over the last 15 years, it remains infrequently used by patients to research their operations: in this study, we found that only 20.6% used online sources of information to learn more about their procedure, despite more than double that number using the internet regularly. Previous studies have demonstrated that younger patients are more likely to have internet access, and are more likely to use this to research their illness; [4] our study confirms these earlier findings.

Of the 29 patients using the internet on a regular basis, only 14 patients used it to research their illness. This proportion is similar to earlier results reported by Murero et al. [4] who found that 51.4% of internet users researched their cardiac procedure online in a US-based study published in 2001; 42.7% of patients in that study were internet users, closely matching the corresponding value of 42.6% in this current study.

Despite the large proportion of patients never using the internet, 33% of infrequent internet users (less than once a week) would appreciate websites to be recommended by the surgical department. There remains a great deal of confidence in the information available online: 66.2% of patients rated reliability at either very or quite reliable. Only 13 patients (19.1%) felt that they already had enough information, with a further five patients (7.35%) not wanting to know too much about their operation.

The low rate of internet usage by patients awaiting cardiac surgery, particularly in those aged 65 years and above, emphasises the importance of clear and accurate verbal and written information before surgery. Although helpful information is available via the internet, most cardiac patients do not use this resource to research their condition. Our study suggests that patients are neither ready nor particularly willing to use the internet as an information source, although the recommendation of relevant sites was judged to be beneficial and might prove to be helpful for patient education [2].

There is also the concern of difficulty in understanding the information available on web sites. Our findings also suggest more effort to educate patients through the pre-operative phase is required as only 19.1% of our cohort felt that they had been given adequate education. The internet should only be used as a source of supplementary information, to reinforce what the patient has already received. Verbal and written communication and explanation by the multi-disciplinary team before surgery remain of paramount importance.

References