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The impact of the internet on the practice of general practitioners and community pharmacists in Northern Ireland

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ABSTRACT

Objective The objective of this study was to gain an insight into the use of the internet for practice-related purposes by community pharmacists and general practitioners (GPs) in Northern Ireland, and to gather information about their experiences relating to patients and the internet.

Method A postal questionnaire survey of all community pharmacies (*n*=522) and all GPs practising in Northern Ireland (*n*=1081).

Results A total of 542 completed questionnaires were returned, giving an overall response rate of 34%. The majority of respondents had access to the internet in their workplace, and approximately 60% of respondents in each profession accessed health-related websites on up to five occasions per week. Of those who did not access health-related websites, lack of time was the main reason cited. The most popular sites for both professions were online journals. Significant differences were found in the activities undertaken by the two professions whilst online. Significantly more GPs than community pharmacists reported searching for disease-related (non-drug) information, using web-based disease management tools or reading online journal articles. Few respondents reported recommending websites to patients, although significantly more GPs than pharmacists did so. Significantly more pharmacists had been approached or felt challenged by patients who had downloaded information from the internet. GPs were more likely to communicate with colleagues about patients by email but neither profession reported frequent correspondence with patients by email.

Conclusions Both professions used the internet regularly as a source of health-related information and both had to deal with 'internet-informed', (or sometimes misinformed) patients. Community pharmacists were more likely to feel challenged by these patients and GPs sometimes had to deal with unnecessarily worried patients or patients with unrealistic expectations. Both professions will have to change working practices to accommodate the impact of the internet. This will have significant future training implications.

Keywords: community pharmacists, general practitioners, internet

Introduction

In common with the rest of the UK, almost all GPs and community pharmacists in Northern Ireland have access to computers within their place of work. GP practices use computers for clinical records and administration functions such as booking appointments, managing repeat prescribing and receiving electronic laboratory results. All community pharmacies use computers for stock control, prescription labelling and patient medication records.[1] However, these systems are generally not used to communicate care information; almost all communication with primary or secondary care is by telephone or paper.[1] The Continuous Household Survey is one of the largest continuous surveys of the general population carried out in Northern Ireland. Results from the 2005–06 survey indicate that 54% of the population over the age of 16 years has access to the internet, an increase of 19% since the 2001–02 survey.[2] It is estimated that 32% of Europeans search the internet for health information[3] and the 10th Graphic, Visualization & Usability Center's World Wide Web user survey reported that 19.2% of internet users accessed medical information at least weekly.[4] Widespread access to internet services among the general public has therefore outpaced the development of the internet as a tool for healthcare professionals in their practice.

The Northern Ireland Department of Health, Social Services and Public Safety's (DHSSPS) *Information and Communications Technology Strategy*, published in March 2005, proposed a shift in focus, away from the computer as an administration tool, towards its use in managing and sharing care data, supporting care delivery and facilitating communication between healthcare professionals.[1] The *Strategy* intended that all general practices in Northern Ireland would be connected to the internet via the HSSnet network by 2007, and suggested that GPs would increasingly access online medical information databases and use email for communication both within and outside the Health and Personal Social Services.[1]

Although there is little evidence to suggest that GPs and community pharmacists routinely use the internet in their healthcare practice at present, there is no doubt that easy access to healthcare information by the general public has had an impact on the interaction between patients and healthcare professionals in primary care. A survey of primary care staff in Glasgow reported that 58% of GPs had been approached by patients with information obtained from the internet about their condition.[5] More recent studies have indicated that the consequences of patients obtaining healthcare information from the internet can vary. Potts and Wyatt reported that doctors viewed the benefits of patients accessing healthcare information via the internet as outweighing the problems; the internet was found to be a valuable source of information and advice for patients; however, 26% of doctors reported that patients who had obtained information from the internet were misinformed about their condition.[6] Taking the time to correct misinformation has an impact on consultation time; indeed, in the Glasgow study, Wilson reported that 77.3% of GPs indicated that the duration of the consultation was increased with patients who were in possession of information obtained from the internet.[5]

Healthcare professionals faced with increasing use of the internet by the general public and the introduction of the internet into the workplace must consider how to incorporate this new tool into their healthcare practice without affecting the quality or efficiency of existing practices. The aim of this study was to gain an insight into the current impact of the internet on the practice of GPs and community pharmacists in Northern Ireland.

Method

An anonymous self-completion questionnaire was designed to gather information relating to demographics, access to the internet, activities in relation to health-related websites, types of sites accessed, use of email, and experiences relating to patients and the internet. Minor modifications were made following an initial pilot, and the final questionnaire contained a combination of open and closed questions. Five-point Likert scales were used to categorise responses where appropriate. To survey community pharmacists, an information letter and questionnaire was addressed to 'The Pharmacist' and mailed to all 522 community pharmacy premises on the Pharmaceutical Society of Northern Ireland's register of premises. A similar personalised mailing was sent to all 1081 GPs registered with the Central Services Agency in Northern Ireland. The initial mailing took place in March 2005 and was followed by a second mailing four weeks later. Completed questionnaires were returned via prepaid business-reply envelopes. Responses were scanned using an optical mark reader and transferred electronically on to a Microsoft Excel™ spreadsheet. Manual verification was carried out prior to importing into SPSS 13.0 for analysis. Ethics approval was obtained prior to commencement of the survey.

Statistical analyses

The survey included demographic data which enabled analysis of internet use by sex, age, profession and

location. Chi-squared tests were used to test for relationships within each profession and Mann-Whitney U tests were used to test for differences between the two professions, the null hypothesis being that there are no differences between the two professions in terms of the impact of the internet on their practice or their experiences relating to patients and the internet. Significance was considered at the $P<0.05$ level.

Results

A response rate of 34% (542 completed questionnaires in total) was identical for both professional groups, with 178 out of 522 community pharmacists and 364 out of 1081 GPs replying. There was an approximately 50:50 ratio of male to female community pharmacist respondents, with the majority (77.5%) under the age of 40 years. By comparison, in the GP group, the male to female ratio was approximately 67:33, and 26.1% of respondents were under the age of 40 years. The majority of community pharmacist respondents (52.5%) reported that they were located in urban areas; this is unsurprising as the retail nature of community pharmacy dictates that premises are primarily to be found in towns and cities. Approximately equal numbers of GP respondents reported that they were located in mainly urban (38.9%) or mixed urban and rural locations (36.1%). The majority of respondents had access to the internet, with 53.9% of community pharmacists and 58.5% of GPs having access at their workplace; this difference was not significant (z statistic (Mann-Whitney U test) = –1.45, $P>0.05$, two-tailed). A small number (5.1% of community pharmacists and 4.4% of GPs) reported that they did not have access to the internet either at home or at work.

Use of health-related websites

Approximately 60% of both community pharmacist and GP respondents estimated that they access health-related websites on between one and five occasions per week. This was not significantly influenced by sex or age group in either the community pharmacist or GP respondents ($P>0.05$). There was a significant difference between the proportions of community pharmacists and GPs who do not visit health-related websites (z statistic (Mann-Whitney U test) = –3.32, $P=0.001$, two-tailed). One third (33.1%) of community pharmacists and one quarter (23.8%) of GPs reported that they never accessed health-related websites. This group was asked to indicate one or more reasons for this (see Table 1). The most popular sites for community pharmacists were online journals (9.6% reported access more than once per week) and professional bodies (6.2% reported access more than once per week). The least popular sites for community pharmacists were evidence-based medicine sites such as *Cochrane* and *Bandolier* (1.1% reported access more than once per week) and pharmaceutical companies (1.7% reported access more than once per week). The most popular sites for GPs were online journals (12.4% reported access more than once per week) and drug databases, such as *e*BNF (8.7% reported access more than once per week). The least popular sites for GPs were pharmaceutical companies (0.3% reported access more than once per week) and patient-support organisations (3.4% reported access more than once per week).

Table 1 Reasons indicated by community pharmacists (n=59) and general practitioners (n=86) for not accessing health-related websites

	Community pharmacists n (%)	General practitioners n (%)	P value	z value *
I do not have access to the internet	26 (44.1)	18 (20.9)	0.003	–2.97
I do not trust information on the internet	7 (11.9)	8 (9.3)	0.620	–0.50
I have access to other sources that I prefer	20 (33.9)	35 (40.7)	0.409	–0.83
I am not familiar with the technology	22 (37.3)	30 (34.9)	0.768	–0.30
I do not have sufficient time	36 (61.0)	58 (67.4)	0.428	–0.79

* Mann-Whitney U test, 2-tailed

Online healthcare-related activities

Table 2 compares the activities undertaken by community pharmacists and GPs whilst accessing health-related websites.

Views on the internet as a source of health-related information

Both groups believed that health-related websites are a useful source of health-related information for health professionals (75.7% of pharmacists vs. 70.0% of GPs). Further, no significant difference existed between pharmacists and GPs in their belief that health-related websites are a useful source of health-related information for patients (68.2% of pharmacists vs. 66.0% of GPs). A significant difference was demonstrated between community pharmacists and GPs when asked to respond to the statement 'health-related websites have made an impact in my practice' with 42.6% of GPs and only 28.4% of community pharmacists agreeing (z statistic (Mann-Whitney U test) = –3.15, P=0.002, two-tailed). Box 1 indicates common examples provided by respondents to illustrate the internet's impact as an information source.

Views and experiences relating to patients and the internet

Questions were included inquiring about respondents' experiences of patients who use the internet. Few respondents recommended websites to patients, although significantly more GPs than community pharmacists did so (3.9% vs. 1.1%) (z statistic (Mann-Whitney U test) = –2.76, P=0.006, two-tailed). Significantly more community pharmacists had occasionally been shown information obtained by patients from the internet (7.3% vs. 5.9%) (z statistic (Mann-Whitney U test) = –4.30, P<0.001, two-tailed) or been challenged by patients with information obtained from the internet (6.3% vs. 3.4%) (z statistic (Mann-Whitney U test) = –2.92, P=0.003, two-tailed). No significant difference was found in the frequency of patients enquiring about a drug mentioned on a website or a drug obtained from a website. Box 2 lists common examples provided to illustrate the impact of health-related use of the internet by patients.

Use of email

Significantly more GPs than community pharmacists reported that they correspond with colleagues about

Table 2 Reported frequencies of activities undertaken more than once per week while visiting health-related websites

	Community pharmacists *n* (%)	General practitioners *n* (%)	*P* value	*z* value *
Searching for disease-related information (other than drug information)	17 (9.6)	75 (20.8)	0.001	–3.18
Searching for general healthcare information	18 (10.1)	58 (16.3)	0.067	–1.83
Searching for drug information	15 (8.5)	30 (8.4)	0.144	–1.46
Using web-based disease management tools	3 (1.7)	21 (5.8)	0.001	–3.21
Reading online journal articles	16 (9.0)	56 (15.6)	< 0.001	–4.20
Undertaking CPD/CME activity	18 (10.2)	37 (10.3)	0.199	–1.28
Contributing to online discussion forums on health topics	1 (0.6)	3 (0.8)	0.133	–1.50
Looking for sites to recommend to patients	9 (5.1)	18 (5.0)	0.141	–1.47

*Mann-Whitney U test, 2-tailed

patients by email on an occasional basis (20.3% vs. 11.3%) (z statistic (Mann-Whitney U test) = –2.71, P=0.007, two-tailed). Neither profession reported frequent correspondence with patients by email; however, more community pharmacist than GP respondents reported that they correspond with patients by email on an occasional basis (6.8% vs. 5.2%). This difference was not significant (z statistic (Mann-Whitney U test) = –0.67, P>0.05).

Discussion and conclusions

The response rate of 34% in each profession is low, but compares favourably to similar surveys,[7] therefore caution should be exercised when extrapolating the findings of this study to both the community pharmacist and GP professions in general. However, the study does highlight that the internet is having an impact on primary care health professionals and that there is variation among members of these two professions in their experiences with it. There was an approximate 50:50 ratio of male to female community pharmacist respondents, with the majority (77.5%) under the age of 40 years. Data from the Pharmaceutical Society of Northern Ireland indicates an approximate 46:54 ratio of male to female pharmacists registered at the time of the survey, with approximately 60% younger than 40 years of age. The community pharmacist respondents therefore had a slight male bias and an age bias towards younger pharmacists. In the general practitioner group, the male to female ratio was approximately 67:33 and only 26.1% of respondents were under the age of 40 years. This closely reflects data from the Central Services Agency which indicates that, at the time of the survey, 64% of GP principals were male and 24% were under the age of 40 years. The anonymous nature of the survey meant that it was not possible to follow up non-responders, making it difficult to assess the potential for bias due to different levels of IT literacy or interest between respondents and non-respondents.

Most respondents in each group had access to the internet and believed that it provides a useful source of health-related information for health professionals. A slightly smaller proportion, but still in excess of two-thirds in each group, believed that the internet provides a useful source of health-related information for the general public. This is encouraging, given that a large section of the general population uses the internet to source health information.[3,4] Significantly more GPs than community pharmacists reported that they use the internet to access health-related websites. This could be due to the fact that almost all GPs have internet access from their personal consulting room computer, whereas community pharmacy computers tend to be shared by the dispensary staff and are used almost exclusively for dispensing purposes. Indeed, the GP modernisation project in Northern Ireland, carried out since this study, has resulted in 100% access to the internet by GPs. Of those who do not use the internet to access health-related information, lack of time was cited as the prime reason. Increasing the GP access level to 100% will therefore not necessarily result in 100% of GPs making use of it. Approximately one-third of those who do not use the internet to access health-related websites indicated that they were not familiar with the technology and therefore presumably did not use the internet at all. This indicates a potential training issue for both professions. Among internet users, both groups used the internet to access health-related information to a similar extent, with approximately 60% of respondents in each profession estimating that they access health-related websites on up to five occasions per week. Both professions identified the same types of sites in their top three: online journals were the most popular, while professional bodies and drug databases were in second and third place, although not in the same order in each profession. This provides a useful insight into the internet sources that primary healthcare professionals trust and use regularly. Interestingly, pharmaceutical company websites did not fare well with either profession – indeed they were at the bottom of the list for GPs. This has implications for pharmaceutical companies who invest in the development of websites targeted specifically at primary healthcare professionals.

Little difference was found between the two professions in the frequency of searching for drug information or undertaking CPD/CME activity. However, significantly more GPs reported that they searched for disease-related (non-drug) information, used web-based disease management tools, and read online journal articles. In addition, more GPs than community pharmacists reported that they searched for general healthcare information, although the difference was not significant. A possible explanation for these differences is that community pharmacists are most likely to be interested in drug-orientated information compared with the broader range of health information that might be of interest to the typical GP.

Significantly more GPs than community pharmacists reported that the internet had made an impact on their practice, with 42% reporting an impact compared with 28% of pharmacists. Examples that were provided to illustrate the impact of the internet indicated two broad themes: its use as an information source, and 'internet-informed' patients. Common examples under these themes have been grouped in Boxes 1 and 2. In common with internet users worldwide, healthcare professionals value the internet as an

Box 1 Common themes identified to illustrate the impact of the internet as an information source

The internet as an information source
- Useful source of information after 'drug scares' in the media
- Valuable resource for CPD/CME purposes
- Source of information on self-help groups and patient organisations
- Useful source of information about 'rarer' diseases
- Search engines make it easy to locate up-to-date information on specific drugs and diseases

GP-specific
- Used to access guidelines and protocols, for example, NICE, SIGN, PRODIGY, and so on
- Can be used to check knowledge before or after consultations
- Provides useful access to online journals and textbooks
- Source of information on treatment options for rarer conditions
- Provides access to evidence-based information
- Provides fast and easy access to published research

Community pharmacist-specific
- Web-based information is used to prepare talks for community groups
- Source of information on drugs that are not available in the UK
- Source of useful information for health promotion activities, such as flu vaccination, National No Smoking Day, and so on

Box 2 Common themes identified to illustrate the impact of health-related use of the internet by patients

Patients' health-related use of the internet
- Increased knowledge and occasional misinformation of patients
- Patients present print-outs from websites relating to diagnoses, drugs and diseases
- Provision of print-outs for patients

GP-specific
- Patients request medicines based on what they have read on websites
- Patients may be unnecessarily worried about information found on the internet
- Increased patient expectation can be more unhelpful than helpful
- Patients use the information to 'check' information provided by doctors
- Useful for teaching patients
- Specific sites can be recommended to patients
- Has variable impact on consultation duration

Community pharmacist-specific
- Reports of patients who have obtained drugs via the internet illegally

information source, particularly the ability to search for specific information. It can be assumed therefore that those who wish to use the internet in their practice need to learn effective internet search and evaluation skills. With respect to use of the internet by patients, both professions indicated that patients presenting with information printed from the internet were having an impact on their practice and that patients were occasionally misinformed. In addition, both professions indicated that they sometimes provide downloaded information to patients. However, a number of differences were apparent. Several community pharmacists reported that they had dealt with patients who had obtained drugs illegally via the internet. It would be useful to investigate what drugs were being obtained in this way and why. GPs provided several additional patient-related examples, some positive and some negative. For example, they felt that the internet could be used to teach patients during the consultation and that useful websites could be recommended to patients. However, they reported that patients can be unnecessarily worried by information that they have found on the internet, and that increased patient expectations can be unhelpful. GP respondents felt that the production of information downloaded from the internet can have a variable impact on the GP consultation time. Murray *et al* have previously identified that 38% of physicians believed that the patient bringing in information made the visit less time-efficient.[8] This study identified that community pharmacists are more likely to be shown information downloaded by patients and that they are more likely to feel challenged by the patient bearing such information. Both the GP and community pharmacist questionnaires used the word 'patient' in this context; however, the greater accessibility afforded by community pharmacies means that community pharmacists will not only see patients, but also general customers and visitors to the pharmacy. Community pharmacists possibly feel challenged as they may face questions relating to topics outside their expertise; however, Hibbert *et al* have identified that those who visit a community pharmacy often adopt a challenging consumer stance, reluctant to be questioned and focused on buying a product rather than obtaining a professional service.[9] Further work

needs to be done to examine what types of information patients bring to their community pharmacist or GP, and the interaction that takes place as a result.

In conclusion, this study has found that use of the internet as a source of healthcare information has made an impact on the working practices of primary healthcare professionals. However, with increasing patient accessibility, combined with the drive towards encouraging patients to take a greater role in their health care, it is likely that the impact will increase in the future. The working practices of health professionals such as GPs and community pharmacists must evolve to include effective use of the internet and to accommodate their 'internet-informed' patients. For example, community pharmacists will need internet access in their consultation areas and GPs will need to develop strategies for dealing with these patients within the limited consultation time that is available. Furthermore, if primary care professionals are to keep up with their technologically-aware patients, training in effective use of the internet must be a priority.

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CONFLICTS OF INTEREST

None.

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