

SURVEY OF FELLOWS AND MEMBERS' USAGE OF PRINT AND ELECTRONIC PUBLICATIONS AND OF THE INTERNET

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INTRODUCTION

The Royal College of Physicians of Edinburgh (RCPE) is an international college with a worldwide membership. Half of the membership lives outside the UK, and only half of the UK membership lives in Scotland. Accordingly, communication between the College and the membership has to be given high priority. Until recently, the College communicated with its members through its quarterly print journal, *Proceedings of the Royal College of Physicians of Edinburgh* (continued as *The Journal of the Royal College of Physicians of Edinburgh* in 2002), printed notices and *Chiron*, a newsletter which has now been discontinued.

The internet offers several advantages as a means of communication and indeed the College has a website (<http://www.rcpe.ac.uk>), which allows it to communicate with its members via the internet. The main advantage is speed of production and delivery to the end user. There are also cost advantages. Unlike print, where economies of scale apply, in electronic communication only one version of an article or newsletter need be placed on the internet for all to access. Alternatively, a single copy can be delivered to many users simultaneously by e-mail. Information can be updated continually on the internet, and it is possible to include 'value-added features', that are not possible with print, including interactive features such as graphics and sound, and hyperlinks to information sources located elsewhere on the internet.

The College surveyed its membership in September 2001 to gauge the potential for future electronic communication by asking about purchase and usage of print and electronic publications, perceived advantages of electronic and print publications, self-assessment of computer skills and the extent to which members used the website.

METHODOLOGY

An online questionnaire was used to assess the views of the Fellows and Collegiate Members of the College (the membership). The questionnaire was laid out in Hypertext Markup Language (HTML). This made it possible to use drop-down menus and buttons to make answering the questionnaire simple. An e-mail alert containing a link to the questionnaire was sent to members with e-mail addresses on the College database. Using hypertext preprocessor (PHP), a programming language for creating dynamic web pages,

the results of each questionnaire submitted were entered into a PostgreSQL database for analysis. The page code also contained Java Script to prevent the user's browser from submitting the questionnaire without answering all the necessary questions. The purpose of this was to ensure that results were not skewed. An optional comment box was included to allow the respondents to express any personal views concerning the College's use of the internet. The database file, which contained the results of 950 completed questionnaires, was downloaded from the server one month after the e-mail alert was sent out.

The questionnaire was divided into six sections under the following headings: 'About yourself', 'About your journal reading', 'About your reading of *Proceedings of the Royal College of Physicians*', 'About your use of computers and the internet', 'About your use of the College website'.

Subjects

The e-mail alert was sent out to 2,799 Fellows and Collegiate Members; 591 e-mails were returned as undeliverable, so 2,208 e-mails were received in total. Eighty recipients reported that they, for technical reasons, could not return the questionnaire, reducing the effective number of e-mails issued to 2,128. In total, 950 completed questionnaires were returned, giving a response rate of 44.6%.

RESULTS

E-mail distribution

The College database contained e-mail addresses for 41.4% (n=2,884) of the membership. Incorrect e-mail addresses reduced this to correct addresses for 31%. An e-mail address was available for a higher proportion of the younger membership and for the membership overseas (Figure 1). These trends were the same for Fellows and Collegiate Members examined separately.

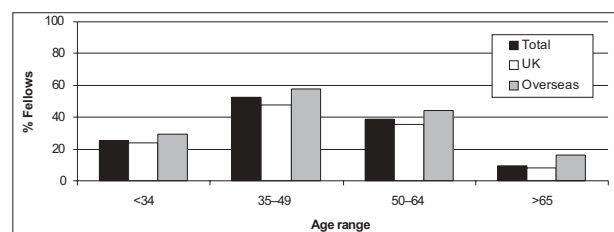


FIGURE 1

Proportion of the College membership with e-mail addresses.

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Respondents' characteristics

The age distribution of the respondents (Figure 2) was found to be similar to that of the College membership as a whole. Eighty-four per cent of the respondents were male, a distribution that is also similar to the proportion in the College membership as a whole (83%). Sixty-nine per cent of respondents were clinicians, 19% were academics or researchers, 7% had retired and 5% chose 'other' as their occupation. Sixty-three per cent of the respondents were Fellows, 35% were Collegiate Members and 2% were Associate Members. Table 1 compares the geographical distribution of the respondents with that of the total College membership.

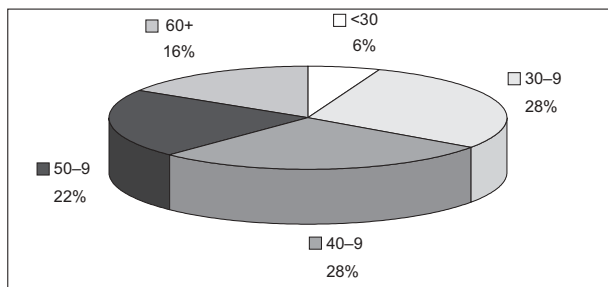


FIGURE 2
Age distribution of the respondents.

Journal subscriptions

Respondents were asked about their personal journal subscriptions. Figure 3 shows that the largest proportion of respondents subscribed to between four and six journals (41.3%). The majority subscribed to between one and three general interest journals (67.2%) and between one and three specialist journals (53.3%). Electronic-only journals were clearly not as widely read, as 66.5% of respondents did not subscribe to any electronic-only journals. Of those who subscribed to electronic-only journals 25.8% subscribed to between one and three, and 7.7% to four or more.

Journal reading

The respondents were asked how long they spent reading print and electronic journals, and it was found that more time was spent reading print journals than electronic journals (Figure 4). The respondents were

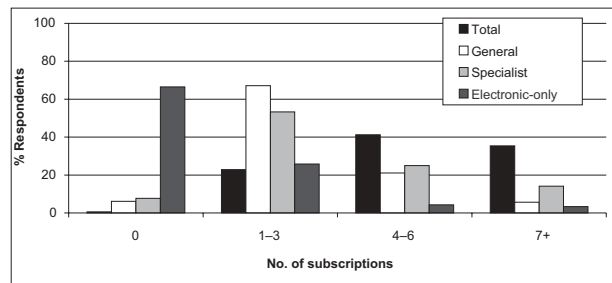


FIGURE 3
Number of individual subscriptions held by respondents.

also asked where they read journals most frequently, as this might determine the feasibility of using an electronic journal. The majority of reading is done at home (64%), work was the second most popular location (27%), and little time was spent reading in the library (6%) or while travelling (3%).

Valued features of print and electronic journals

The respondents were presented with particular features of print and electronic journals and asked to say how important they considered each (Table 2). Peer review, a feature of both print and electronic journals, is seen clearly as the most important feature as 77.6% felt it was either very important or essential. Portability, essentially a feature of print journals (assuming the respondents don't use laptops), was considered by most (56.6%) to be either very important or essential. Being able to comment on journal articles was considered very important or essential by 13.1%, and not at all important by 48.4%.

Proceedings

The respondents were asked about their use of *Proceedings* and the features they would like to see in an online version of the journal. The largest proportion of respondents (44.6%) spent between 30 minutes and one hour reading each issue of *Proceedings*. Very few respondents did not read *Proceedings* at all (2.7%). When respondents were asked to select the three sections of *Proceedings* they read most, Current Medicine and the Editorial were almost equal followed by Mini Series and History (Figure 5). When the respondents were asked

TABLE 1
Comparison of the geographical distribution of respondents and the College membership as a whole.

Region	% College membership	% respondents
Africa	2.4	2
Australasia	5.1	5
Europe	3.3	3
Indo-Pakistan Subcontinent	7.1	5
Middle East	4.1	4
North America	5.8	6
South and Central America/ Caribbean/West Indies	0.7	1
South East Asia	15.2	20
United Kingdom	55.9	54

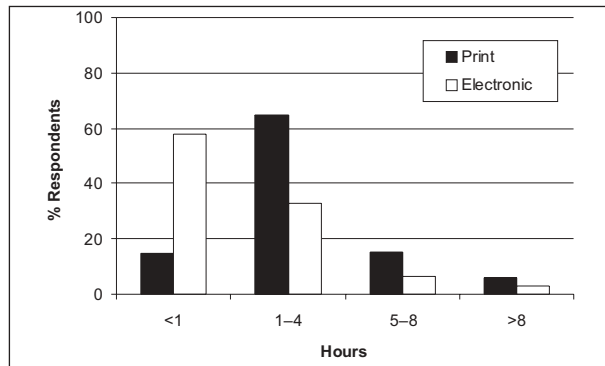


FIGURE 4

Time respondents spent reading print and electronic journals each week.

why they read *Proceedings* the most popular reasons were for scientific articles (70.5%), CME (69.4%), and College news (58.8%).

The two most recent issues of *Proceedings* were available online as PDF files, which offer no added value over the print versions. The respondents were asked whether they preferred the print or this electronic version. Thirty percent of the respondents preferred the electronic version, and 88% thought that back issues of *Proceedings* should be made available online. The respondents were then asked what features of an enhanced online version of *Proceedings* would appeal to them (Table 3). Hyperlinks to referenced articles were the most popular feature, and a search facility, hyperlinks to related material in other databases or sites, and e-mail alerts were also popular. A journal that fosters communication between its members was less popular, as was the inclusion of colour graphics and sound (Table 3). Most respondents (33%) did not know what format they would prefer for an online journal. The proportion of respondents choosing 'HTML', 'PDF' and 'both' were 19%, 22% and 29% respectively. Thus, an online version of *Proceedings* might need to be in both HTML and PDF format.

Respondents' computer and internet use

Access to internet-connected computers was not a problem for the respondents, though this is understandable as they had all answered an online questionnaire. Access to the Internet at work was

available to 91%, while 95% had access at home. The majority of respondents (59%) considered their computer skills to be adequate, while only 14% considered their abilities to be limited. Most respondents (78%) use the internet everyday, and only 3% use it less than once per week. The most popular use of the Internet was e-mail. An interesting finding was that although print journals are the popular choice for reading, 88.9% of respondents used the Internet for journal searches and 78.6% for viewing or downloading full-text articles. Internet newsgroups are used by 18.5%, and 33.6% use it for other purposes, which indicates that for some the internet is not just a means for locating references.

Respondent' use of the College website

Most respondents had visited the College website at least once within the previous six months, but 33.4% had not visited the website at all. Very few of the respondents had visited the site more than five times in the past six months (10.3%). The respondents were asked which sections of the College website they had visited. The most popular page was the Scottish Intercollegiate Guidelines Network (SIGN) followed by the publications and events pages (Table 4).

Level of interest in proposed features for an online newsletter from the College

Respondents were presented with possible features of an online newsletter and asked how interested they were in each (Table 5). The most popular items were College activities, medical policies and policy announcements. Interactive features such as online polls and open forums were less popular with the respondents.

DISCUSSION

The past decade has seen a significant increase in the number of available electronic journals, many of which are digitised versions of already well-established print journals. While digitisation of these journals may have helped increase acceptance of the electronic medium, print remains the predominant means of communicating scientific information. This is largely due to the fact that electronic journals need a computer-literate readership that has access to the Internet. Furthermore, the readership must want to accept, and use, the medium.

TABLE 2

Proportion (%) of respondents who felt certain features of print and electronic journals to be 'not important', 'fairly important', 'very important', or 'essential'.

	Not important	Fairly important	Very important	Essential
Peer review	2.6	19.7	44.1	33.5
Portability	8.3	35.1	44.9	11.7
Ability to comment on articles	48.4	38.5	11.4	1.7
Hyperlinks	13.2	42.5	35.3	9.1
Electronic keyword search	16.2	33.2	36.7	13.9
Ability to read on screen	27.8	32.7	29.8	9.7
Electronic delivery of journal issues	28.2	37.1	26.7	8.0

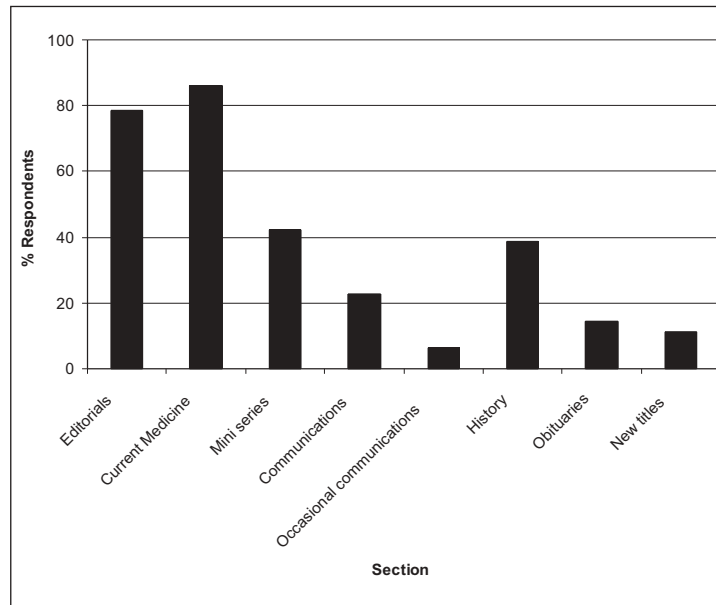


FIGURE 5
Sections of *Proceedings* most read by respondents.

The level of computer literacy and acceptance of electronic journals varies greatly between disciplines. Physicists, who are generally highly computer literate, have accepted the internet as a means of communication for well over a decade.¹ Users in other disciplines may be less well adapted to the medium and therefore be less likely to use electronic journals. While there have been studies involving research scientists at academic institutions in both the US and the UK,² little is known of the views of doctors. Indeed, the only user survey of doctors found was a report on the opinions on electronic publication of doctors working at Johns Hopkins Bayview Medical Centre.³ While the physicians responded favourably to the potential advantages of electronic publications, they were 'most concerned about the loss of convenience that printed journals offer'. Although the respondents in the present study also favoured some of the advantages electronic publishing has to offer, the results indicate that it will likely be some time before the Internet becomes the predominant means of communication in this group.

This study provided information from a substantial number of respondents (950), and the questionnaires returned represented a highly satisfactory return rate

TABLE 3
Level of respondent interest in possible features of an online version of *Proceedings*.

Features	%
Hyperlinks to referenced articles	75.3
Hyperlinks to related material	59.4
Search facility	64.3
E-mail alerts	50.6
Graphics and sound	26.5
Communication	33.8

(44.6%). The respondents comprised 13.5% of the total College membership, and 17.5% of those in active practice and they were representative of the whole College in terms of age (Figure 2) and geography (Table 1). It should be noted that the use of an online questionnaire made it possible to assess only the views of those members with e-mail addresses in the College database. The assumption was made that those members who have supplied the College with e-mail addresses are more likely to be computer literate and therefore favour electronic journals. Self-assessment showed that the respondents were, indeed, computer literate and the majority used the Internet everyday. This was perhaps a limitation of this study as it excluded those members who had not given e-mail addresses and who may have been more likely to prefer print journals. A promising finding, however, was that the proportion of Fellows and Members with e-mail addresses is higher in the lower age bands (Figure 1). This suggests that, in time, the computer literate membership will increase. As this occurs, the potential for electronic publishing will also increase. In the meantime, if the College membership reflects the wider medical community, medical publishers should be cautious of abandoning print.

It is clear that journals are highly important to the membership as the respondents subscribe to a large number of general and specialist journals (Figure 3). Even among this computer-literate group, most of the journals taken are print and most reading time is spent on print journals (Figures 3 and 4). This may well be because the majority of medical journals are still published in print. Likewise, the respondents may subscribe to fewer electronic-only journals because there are not many available. Furthermore, many of the

TABLE 4
Sections of the College website visited most by respondents.

Section of website	% Respondents
Examinations	25.1
Events	25.7
Library	19.3
Search page	16.2
News	18
Publications	26.2
Facilities	7.3
Fellows and members' area	20.2
Controlled trials	7.5
SIGN	33.2
Collegiate members' area	9.9

online medical journals are already established in print (e.g. *BMJ*, *NEJM*). Questions relating to the College journal showed that almost all members read the journal though the time spent on this was limited. Seventy percent favoured the print version but 88% at the same time approved the coexistence of an online version. These results are indicative of a transitional period in which readers are increasingly capable of using the electronic medium but are still served predominantly by, and are familiar with, printed material. The difficulty of moving away from print is well illustrated by the experience of the Royal College of Anaesthetists, the members of which resisted strongly the curtailment of their print journal in favour of electronic communication.^{4,5,6} Online versions of journals in PDF do not offer any value over the print versions, and more readers might prefer electronic versions in web format that can offer more interactive features.

Another important observation was that the respondents may subscribe to many journals but they spend little time reading these journals (Figure 4) and do most of their reading at home. This may be because of time constraints at work. If this is correct, an internet connection at home would be important to facilitate the respondents using electronic journals. In fact, 90% of the respondents did have internet access at home. Limited time for reading suggests that readers must be very selective, and that material is 'skimmed' for useful

information rather than studied in depth. Electronic journals do offer an advantage in terms of timesaving. Many wasted hours spent searching for references in the library would be saved if readers could hyperlink to abstracts or full-text articles.

Looking at the features of print and electronic journals favoured by the respondents it is clear that peer review is the highest priority (Table 2). This is understandable in a field where misinformation can have severe consequences, but it should be noted that 22% of the respondents considered peer review to be either fairly important or not important. This may be because peer review is often slow, is open to abuse and may not detect fraud.⁷ While it is clear that electronic journals will have to provide peer review to be credible, they should also perhaps use the internet's ability to improve the peer-review system. Journals can now open up the peer-review system to the readers through the Internet. Accepted articles can be posted on the Internet, people invited to comment, and authors given the opportunity to revise papers before they go to print. Such an open system would also be less prone to abuse by writers and reviewers. It was notable that portability, at the moment essentially a feature of print journals, was the next most highly regarded feature. Clearly, however, electronic-only features such as hyperlinks and electronic keyword searches were also well regarded. Accordingly, as electronic journals become more widespread, and users become more proficient in the use of computers, opinion may change. It was surprising that respondent interest in interactive features, such as the ability to comment on articles was low (Table 2, Table 3). About a half of respondents thought the ability to comment was not important. The internet is well suited to ongoing discourse, allowing users to share views and knowledge. The lack of interest may, again, be because the respondents are time-constrained at work, or because their previous education has not taught the value of interaction. Experience of communications in print journals, which can be inefficient and disjointed, may also be a reason for the lack of interest. Reversing this opinion will require a cultural change, one that is perhaps already happening. It has been noted elsewhere

TABLE 5
Level of respondent interest in proposed features for an online newsletter from the College.

	% Respondents who chose 'not interested'	% Respondents who chose 'interested' or 'very interested'
College activities	11.8	88.2
Medical policies	15.2	84.8
Policy announcements	20.8	79.2
Media round-up	37.7	62.3
Overseas reports	28.8	71.2
Online polls	49.4	50.6
Interactive open forum	38.8	61.2

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that potential advantages of electronic journals, such as sound and video, are not fully realised in the current generation of electronic journals, but may become established as the technology develops.³ The College could have an important role in promoting the electronic medium, and in educating its members to use and exploit its potential.

CONCLUSIONS

This survey of journal usage by the College's global membership is based on a substantial number of questionnaires completed by 44% of the target audience. However, the respondents represent only 13% of the total College membership, or 17.5% of those in active medical practice. Whether the results are representative of the total membership, or of physicians generally, is therefore speculative. The use of e-mail also probably biases the results to the more computer-literate members. Despite these limitations, important observations were made.

The high value the members put on information, as reflected in their significant investment in medical journals, is clear, but the limited time spent reading these journals probably reflects mainly the time-pressures of professional life. It was gratifying that most members read the College journal even if the time spent on this activity was short. Short, clear and focused articles, perhaps particularly general medical CME articles, might be of great value for those readers with limited time.

The strong support for print communication in this computer-literate group may reflect the high general availability of print journals by comparison with electronic journals, but the results suggest that print communication retains strong support and this needs to be remembered in any publication strategy. The age distribution of e-mail addresses supports the widely held view that younger people are more computer-literate,

suggesting a future increased demand for electronic communication. If electronic communication is to progress it will have to retain strong peer review (perhaps even improve it) and exploit the specific advantages of the electronic medium.

Finally, a striking aspect of the findings was the lack of interest in intercommunication with journals, and possibly one another. This is perhaps disappointing in a membership with what must be a huge collective knowledge and experience of medicine. The lack of interest may simply be another manifestation of lack of time or may reflect an educational background in which intercommunication was not a feature. As the potential benefits of intercommunication could be substantial, ways of encouraging this in future could be considered.

NOTE

ⁱThe author held this position at the time of writing this paper, he is currently a Production Editor at the Royal Society, London.

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