

A survey of dental practitioners on their use of electronic mail

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Objectives To assess the feasibility of using electronic-mail as a tool for surveying dental practitioners; to determine both response rates and response times for this method; and provide baseline information on e-mail usage.

Method Self-administered questionnaire distributed by e-mail to 309 practitioners on Monday morning, 1 June 1998.

Results 53.4% response rate within 1 month; 10.2% of replies were sent within 2 hours; and nearly half the replies were sent within 48 hours. Qualified dentists were more likely to respond early than undergraduates. The most popular point of access for e-mail was home (69.1%). The majority of responders (56.8%) use e-mail every day with 1 in 7 (14.2%) using it at least four times a day. 72.4% stated that they found e-mail useful for communicating with professional bodies, while 41.3% used it to communicate with colleagues about patients and patient referrals. 34.0% found e-mail useful for ordering goods, and supplies and 14.6% were using electronic mail to make patient appointments at least some of the time.

Conclusions Responses can be obtained at much greater speed than conventional postal techniques will allow, but response rates were only 53.4%. E-mail is predominately used at home and for inter-professional communications, only a small proportion of responders use it for direct communication with patients.

Studies into the attitudes and characteristics of the dental practitioners in the United Kingdom in relation to the way they are using electronic mail (e-mail) at their work places and in their homes have not been reported in the mainstream dental literature. The method of collecting information from the profession by the use of a self-administered electronic-mail questionnaire has not been fully investigated. This is despite an estimated 40% to 50% growth in the internet annually¹ and increasing e-mail and internet access in the practitioners' work places and homes.²

Taulois-Braga and Marcenés used a self-administered electronic mail questionnaire to investigate the knowledge and attitudes toward sugar in a group of Brazilian postgraduates.³ A response rate of 67% was achieved showing that this method had potential as an information gathering tool in oral health research. In the UK, Downes e-mailed a survey to 129 dentists, achieved a response rate of 57% and published his results on the internet.⁴

The Dental Practice Board's surveys have shown an increasing trend in the use of computerised facilities in dental practices in England and Wales. The most recent survey (1997) reported the current proportion of dental practices with computer facilities as 59%, showing an increase in computer use compared with an earlier figure of 22% in 1991. In the latest study, 19.5% of practices with computers indicated that they had e-mail facilities, and 17% of practices without computers indicated that they would be interested in using

e-mail if they were to purchase a computer.² A survey in a UK medical school revealed that only 2% of undergraduates had not used a computer in the preceding 12 months, and that the most popular reason for accessing a computer was to send e-mail. In the same survey 86% of students agreed that computer skills will be beneficial to them in their future career, and 62% of all students wanted a structured course in computer use as part of their undergraduate training.⁵

Aims and objectives

The aim of this study was to assess the feasibility of using electronic mail as a tool for surveying British Dental Association (BDA) members. The objectives were to assess whether e-mail addresses of members could be collected and used for this purpose; to determine both response rates and response times for this method; and provide baseline information on e-mail usage among this group.

Method

The British Dental Association's electronic mail list was obtained and included 425 e-mail addresses of dental surgeons and year 4 and 5 dental students. A dedicated e-mail account was set up for the survey by the Institute of Public & Environmental Health at the University of Birmingham. This account was designed to automatically forward any replies from practitioners to the research team in London. Approval was obtained from the association's Chief Executive who also agreed to 'sign' an electronic covering letter to practitioners requesting their participation.

An electronic questionnaire was sent to all the e-mail addresses along with the electronic covering letter on the Monday morning, 1 June 1998. The questionnaire was designed to be compatible with as many electronic mail systems as possible. Practitioners were requested to use their e-mail 'reply' facility to produce a duplicate of the questionnaire that could be completed and automatically returned to the survey team. The questionnaire was sent mid-day on 1 June 1998 with a reminder sent 10 days later to those who had not replied. In total, one calendar month was allowed for the receipt of replies.

Results

A total of 425 addresses were obtained for practitioners and undergraduates from the records kept by the BDA. At the first mailing, 116 e-mails were returned to the survey team as 'undeliverable' indicating either errors in the addresses or e-mail accounts that had been closed. This meant that 309 questionnaires should have been successfully delivered.

Response rate

One hundred and fifty-seven completed questionnaires were returned either directly as e-mail or as plain text files 'attached' to an e-mail. An additional six people replied to indicate that they had been unable to complete the form because of technical difficulties. One person replied stating that he or she had left the profession and one person replied to say that he or she was unwilling to complete the questionnaire. In total 165 people responded in some fashion.

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REFEREED PAPER

Received 15.09.98; accepted 17.12.98

© British Dental Journal 1999; 186: 131-134

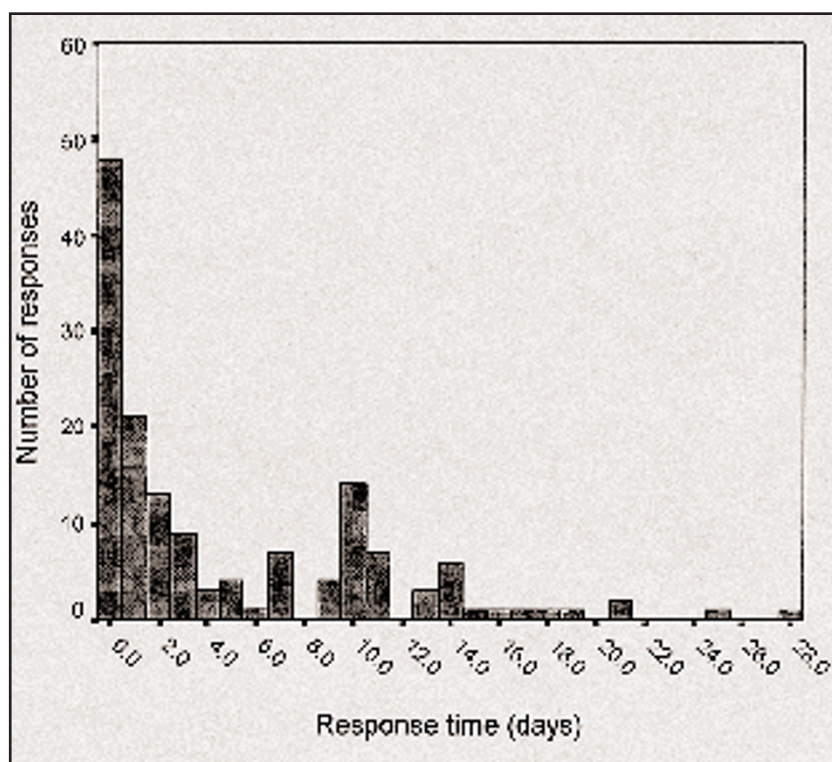


Fig. 1 Time taken for people to respond to the questionnaire (Base: 149 e-mails from which a response time could be calculated)

Excluding the person unwilling to participate in the survey, the resulting response rate was 53% within 1 month. Five of the responders replied from e-mail addresses that were different from the one to which the message was sent.

Response time

One hundred and forty-nine of the e-mails received contained sufficient encoded information to establish exactly when they were sent. The response times are indicated in figure 1. The first responses were made within 20 minutes of the original e-mail being sent. More than 10% of responses were sent within the first 2 hours; 38% of responses were sent in under 24 hours and nearly 50% were sent within 48 hours. By the end of the first week 69% had been sent. The second mailing of the questionnaire after 10 days resulted in further responses. By the end of the second week 91% of the responders had replied.

Early and late responders

Tables 1 to 3 list the personal details of early and late responders to the survey. In this context, an early responder was taken as someone who replied in less than 48 hours. It can be seen that undergraduates were less likely to respond early than qualified dentists. Statistically significant differences could not be shown on the basis of sex. Above average numbers of early responders were found among those people whose primary area of practice was in the general dental service and academia. The highest proportion of early responders was from academics. The mean age for early responders was 41 years old, whereas the mean age of late responders was 34 years old. When undergraduates are excluded from this comparison the mean age of early responders becomes 45 years old and 39 years old for late responders.

E-mail usage

Table 4 indicates the location used by practitioners to access their e-mail. The most popular point of access was 'home' with 69% of

Table 1 Professional status of early and late responders

Professional status	Early responder (less than 48 h)	Late responder (more than 48 h)	Total
Undergraduate	14 (32%)	30 (68%)	44 (100%)
Qualified	27 (56%)	21 (44%)	48 (100%)
Not stated	33 (58%)	24 (42%)	57 (100%)
Total	74 (50%)	75 (50%)	149 (100%)

Base: 149 e-mails from which response time could be calculated

Table 2 Sex of early and late responders

Sex	Early responder (less than 48 h)	Late responder (more than 48 h)	Total
Male	63 (53%)	55 (47%)	118 (100%)
Female	9 (37.5%)	15 (62.5%)	24 (100%)
Not stated	2 (29%)	5 (71%)	7 (100%)
Total	74 (50%)	75 (50%)	149 (100%)

Base: 149 e-mails from which response time could be calculated

Table 3 Primary area of practice of the responders

Primary area of practice	Early responder (less than 48 h)	Late responder (more than 48 h)	Total
General practice	35 (60%)	23 (40%)	58 (100%)
Community	6 (54.5%)	5 (45.5%)	11 (100%)
Hospital	4 (50%)	4 (50%)	8 (100%)
Armed forces	1 (100%)	1 (100%)	1 (100%)
Academic	13 (65%)	7 (35%)	20 (100%)
Undergraduate	14 (33%)	28 (67%)	42 (100%)
Not stated	2 (22%)	7 (78%)	9 (100%)
Total	74 (50%)	75 (50%)	149 (100%)

Base: 149 responders indicated their primary area of practice

Table 4 Location at which the e-mail was accessed

Area of access	Access	No access	No response	Total
Home	103 (69%)	46 (31%)	8	157
Work or office	79 (54%)	67 (46%)	11	157
Others	43 (31%)	97 (69%)	17	157

Table 5 Frequency of e-mail use

Frequency of e-mail use	Number of responders
More than 8 times a day	10 (7%)
4-8 times a day	11 (7%)
1-3 times a day	63 (43%)
Few times a week	57 (38%)
A few times a month	7 (5%)

Total	148(100%)

Base: 148 responders to this question

responders stating that they were able to send and receive e-mails from there; 54% of practitioners using e-mail were able to do so at work. Table 5 indicates how frequently responders typically use electronic mail. The majority (57%) use e-mail every day with 1 in 7 (14%) using it at least four times a day.

Survey participants were asked to rank electronic mail's usefulness for the following tasks: making patients' appointments; transmitting patient records or images; communication with professional bodies such as the BDA or Dental Practice Board; communicating with colleagues about patients and making referrals; and placing orders with supply companies (eg for stationery or dental materials). The results of this question are presented in Table 6. While the majority stated that e-mail was not useful or not applicable for making appointments (123, 85%), some practitioners (21, 15%) were using electronic mail to make appointments at least some of the time. Clearly this is only possible where both patient and dental practice have e-mail facilities and are willing to use them for this purpose. Forty-one (28%) of the people who answered the question indicated that they were using electronic mail to send 'attached' files such as digitised radiographic images to colleagues. The majority of responders stated that they found e-mail useful for communicating with professional bodies (105, 72%). While 59 (41%) used it to communicate with colleagues about patients and patient referrals. Forty-eight (34%) of those responding found e-mail to be at least occasionally useful in ordering goods and supplies.

Table 6 Responders' rating of e-mail usefulness for services

Services	1	2	Rating 3	4	Not applicable	No response	Total
Making patients' appointments	5 (4%)	4 (3%)	12 (8%)	22 (15%)	101 (70%)	13	157
Sending records or files eg image files, dental radiography	9 (6%)	15 (10%)	17 (12%)	12 (8%)	92 (63%)	12	157
Communication with professional bodies	45 (31%)	28 (19%)	32 (22%)	9 (6%)	31 (21%)	12	157
Making and communicating with colleagues about patient referrals	17 (12%)	23 (16%)	19 (13%)	17 (12%)	67 (47%)	14	157
Placing orders for supplies eg dental supplies or stationery	16 (11%)	16 (11%)	16 (11%)	14 (10%)	79 (56%)	16	157

Key: 1 = very useful, 2 = fairly useful, 3 = occasional useful, 4 = not useful

Discussion

The present study, and that of Downes⁴ recorded similar response rates to dental practitioner e-mail surveys. There are profound implications with regard to both cost and response times for this technique. The questionnaire response time profile indicates that many people are likely to respond almost immediately or not at all.

The address lists obtained for this study were small and clearly not representative of the profession as a whole. There can be little doubt however that information technology, including electronic mail will become more pervasive in society as a whole, but particularly so in the dental profession, with nearly two-thirds of practitioners already having a computer at home.² There is also more awareness of the internet in general in the dental literature.⁷⁻¹⁶ However, there is little specific reference to the value of electronic mail or internet based surveys. It may be regarded as an overly technical method for gathering data or be seen as having only limited sampling potential. However, this is steadily improving as more people are gaining access to computer networks with consequent access to electronic mail and internet facilities. There is undoubtedly growing interest in the use of computerised telecommunication networks in the dental and medical sector globally. These facilities provide a faster means of communication and exchanging information between individuals, organisations and institutions. The computer era has had a profoundly significant impact on the way health organisations, associations and institutions systems work. Practices are already using electronic mail for communications within the profession. However, the current study has also shown that a notable minority of practices are already finding e-mail useful for directly communicating with their patients. This is in addition to any indirect one-way communication that may be occurring as a result of practice-based web-sites such as those advertised on 'Dentanet'.¹⁷

The BDA's IT facilities are being upgraded at the time of writing. As e-mail address lists are constructed and maintained the cost of contacting members through this medium becomes virtually negligible. Responses can be obtained at much greater speed than conventional post will allow. Unlike conventional postal-systems, e-mail will notify users almost immediately of messages that have not been delivered. The potential role of e-mail in the profession is enormous. The BDA would be able to request members' views on important issues extremely rapidly. Thus the association would be able to form rapid responses to government or the broadcast media, based closely on the opinions of members. Furthermore, members would be informed of important issues and given appropriate advice almost immediately.

It would also seem reasonable to suggest that electronic mail is likely to have an increasing role in communications between the public and the profession. Calman writing in the *BDJ* stressed the importance of involving the public and patients in health and health

care.¹⁸ The broad-sheet print media provides regular examples of articles encouraging consumer voice in oral health.¹⁹ The BDA's web site provides a 'window' on the UK dental profession that can be accessed from any computer in the world with an internet connection.²⁰ However, the problem of confidentiality still remains a problem with material sent by e-mail. The difficulties of security are being addressed and one can envisage that in the near future e-mail will provide an almost instant and secure method for consumers and consumer groups to communicate their views to professional bodies.

The authors would like to acknowledge the kind assistance received from Dr John Hunt and the staff of the BDA and BDJ. In addition from Mr Andrew Burford, RegiNet System Manager, The Institute of Public & Environmental Health, University of Birmingham; Dr Mark Gilthorpe, Senior Lecturer, National Centre for Transcultural Oral Health, Eastman Dental Institute, University of London.

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