Health surveys in the workplace: comparison of postal, email and World Wide Web methods

R. Jones and N. Pitt
Department of Public Health, University of Glasgow, UK

Health surveys in the workplace are an important part of epidemiology, needs assessment and health promotion. Since the workplace is changing rapidly with the use of computer networks, we examined the feasibility, validity and cost of health surveys using email and the World Wide Web (WWW). Five hundred systematically sampled university staff in a convenience sample of 10 English universities were surveyed using either email alone, email plus a WWW form or postal questionnaire. Response rates, speed of response, validity and costs were examined. The postal survey obtained the best response rate: 72% as compared with 34% for email alone and 19% for the WWW, but it was also the most expensive at 92p per reply, with 35p for email, and 41p for the WWW. Most of the electronic responses were made within five days. In 1997, the increased response rate justified the higher cost of postal questionnaires. Email and WWW surveys are easy, quick and inexpensive to administer, and despite low response rates may be useful for pilot studies. The rapid changes in the spread and use of information technology means we have to keep reassessing the methods we use for health surveys in the workplace.

Key words: Information Technology; research methods; workplace.

INTRODUCTION

The workplace has been identified as an important site for health promotion. Evaluation of health promotion usually includes some form of survey. Until recently most surveys reported in the medical press have been conducted using postal questionnaires or face-to-face interviews, with an increasing number of telephone interviews and computer-assisted telephone interviews; few surveys have used email. A search of Medline for the years 1987–97 identified 76 papers with the words ‘postal survey’ or ‘postal questionnaire’ in the title and nearly 1,500 with these words in the abstract, 64 papers with ‘telephone survey’ or ‘interview’ in the title and 933 in the abstract and only two with ‘email survey’ in the title. However, the numbers of people connected at work to both computer networks within the organisation (Intranets) and to the Internet, is increasing, offering new survey methods. For example, general practitioners in Scotland have recently been offered a subsidized scheme for connection to the NHSnet and most are now connected. Two methods for communication using the Internet were examined in this study: email (the sending of a message just using text) and the WWW in which a respondent can log on to a WWW site and complete an ‘online form’. The majority of university staff are now connected to high speed local area networks and the Internet (for both email and the WWW). They therefore represent the workforce of the future. At the time of writing, the use of email for surveys had only been reported a few times in health and other surveys and more work was needed to compare these new survey methods with more traditional methods.

MATERIALS AND METHODS

To compare the use of email, email plus WWW and postal survey methods we surveyed employees of selected English universities. Three questions about exercise, teeth cleaning and fruit consumption were asked. A convenience sample of 10 universities whose staff directories were available on the WWW was identified. A systematic sample comprised:
• 200 people sent email messages and asked to respond by email;
• 200 people sent email messages containing the 'address' of a WWW questionnaire, and brief instructions on how to access it and
• 100 people sent individually signed questionnaires by post with prepaid envelopes.

The WWW form automatically checked and accumulated data. Email and paper responses were read, manually coded and entered for analysis. A convenience sample of 10 non-responders to the email survey was telephoned to try to find the reason for non-response. We compared the response rates, validity (whether the answers we obtained seemed to be the same\textsuperscript{13}) and cost of the three methods.

RESULTS

The postal survey obtained the best response rate (Table 1). Most (89\%) of those who did respond to email or WWW surveys had done so within five days as compared with 22\% of postal responders. Of 400 email messages sent, 19 failed to be delivered. Telephone interviews with 10 non-responders to email showed that two had resigned, two thought it was junk mail, three claimed not to have received it, one deleted it by mistake, one did not know how to reply and one had not 'got round to it'. Although sample sizes were small there were no differences in the responses to the three questions. Overall, 92\% had walked half a mile in the last 24 hours, 93\% did not clean their teeth at work and the average amount of fruit eaten was 2.2 pieces per day. Assuming an existing mailing list and a marginal labour cost of £6/hour, the cost per reply for the postal survey was twice that of the electronic methods. With 100\% responses, the cost differential would be even greater.

DISCUSSION

Email and WWW surveys are technically easy to complete and allow quick analysis of the responses. However, even amongst well-networked universities we had a poor response. Our email response rate of 34\% is much lower than rates of 76\% and 68\% reported in 1992 and 1995, but similar to the 40\% of another 1995 publication.\textsuperscript{8-10} In earlier years the novelty value of email and the natural selection of users may have contributed to higher response rates. Reasons for our low response in 1997 may include greater perception of email as junk mail, unfamiliarity with the Internet and out-of-date mailing lists. Modern users may end the connection before reading their email and therefore may be less likely to reply to WWW forms than to 'straight' emails. Letters may be forwarded by colleagues whereas email may not. Some systems have 'Confirm Reading' options when composing messages but the recipient's mail server may not honour such requests. The accuracy of email lists may improve as they are integrated into workplace administration systems, but the increasing amounts of junk email may cause new problems. The researcher's 'investment' in sending a letter with a prepaid envelope may emphasize its importance.

To use email surveys more often we need some idea of their validity. Some studies of direct computer–patient interviewing suggest that patients 'admit' to a greater consumption of alcohol in a computer-administered survey than in a personal interview\textsuperscript{13} but not all agree.\textsuperscript{14} Our study provided weak evidence of no difference between the groups but further work is needed.

We used WWW published lists for sampling and contacting staff directly without asking for permission from 'Webmasters' (the people who are responsible for the publication of information on the University's web site) or other 'authorities'. Was permission necessary? Should Webmasters act as gatekeepers? While Universities currently publish staff lists, few companies do. Surveys within organizations will still require co-operation from the management.

Of these three methods, WWW surveys require the least work to analyze. However, for email-only surveys there are now programs that claim to automatically analyze responses. The cost per successful reply was less for electronic methods than by post, despite the lower response rates. The use of email and the WWW for health surveys may be premature but they have potential for low cost surveys and should be considered for regular users of networks. In the interval between carrying out this study and this publication being printed, the use of information technology in the workplace in the United Kingdom will have changed considerably. For example, in the NHS workplace, electronic patient records are being developed, the NHSnet is increasingly used for intra-organisation communication, and information management has become part of specialist registrar training.
in many specialities. This rapid change means we have to keep reassessing the methods we use for health surveys in the workplace but email and WWW surveys could play a part.

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REFERENCES