

Nutrition discussion forum

Nutrition research using electronic mail

Increasing demands on research resources such as time and money require innovations in the methods that nutrition scientists commonly use. The past two decades have witnessed staggering advances in telecommunications throughout society. Computers now play a major role in the lives of most nutrition scientists and electronic mail (email) is frequently used as a means of communication.

Of all the Internet tools, the simplicity of email must facilitate its adoption and use. Worldwide, governments, industries, schools, households and the academic community have adopted email alongside the telephone, fax and postal mail as important modes of communication. Academics have reported the use of email in undergraduate teaching (Wild & Winniford, 1993; Pitt, 1996) and for scholarly discussion groups (Huff & Sobilloff, 1993; Berge & Collins, 1995) yet discussion of email as a research tool in scientific research has been meagre. To date, nutritionists seem to have focused only on describing the practical uses of the Internet as a source of information (Davison, 1996; Kipp *et al.* 1996) although applications of email to nutrition science are beginning to emerge. For example, findings from two dietary studies using email were recently presented by our group to the Nutrition Society (Eley & Lean, 1998; Hankey *et al.* 1998). We have incorporated email into the research design of a dietary survey of university students for recruitment and for data collection using an electronic food-frequency questionnaire (Eley & Lean, 1998).

This letter discusses the potential advantages and disadvantages of using email as a research tool, in order to stimulate discussion and critical evaluation of these new methods so that they may be used optimally in human nutrition science.

Using email for recruitment to, and data collection in, dietary surveys appears attractive for fast and economical applied nutrition research but suffers from the methodological issues applicable to surveys in general. Sampling bias is of major concern. Currently, email is inherently flawed as its use is limited to people with access to a computer. Compared with the general population, individuals who are computer literate are more likely to be young Caucasian males of high social class and income (Kerka, 1995). It has been estimated that male university students aged 18–24 years constitute the largest proportion of Internet users, that about 70% of users live in the USA and that about two-thirds are technical professionals or involved in higher education (Kenway, 1996). In the early 1990s, this skewed population was considered a problem for using email for market research (Katori, 1990), but Coomber (1997) argues that: 'the relative exclusivity of current internet use needs to be considered seriously but it does not preclude attempts to do useful and informative sociological research'. With the increasing spread of email use, the problem of limited coverage is more likely to subside to

be comparable with or superior to typical postal survey participation by the British public.

Two factors lie at the heart of email's appeal over traditional survey methods to both user and scientist alike. Email communication can be fast, but this speed may compromise its use as a research tool as, unlike a postal questionnaire, a message could be deleted by the respondent as quickly as it was sent (Thach, 1995). The unreliable transfer of mail messages via servers would also constrain any research using this approach if messages were received several days or weeks after being sent.

Second, email is informal with a sense of equality. Hierarchies including those based on sex, age and social status are not explicit. As Boshier (1990) argues: 'E-mail appears to provide a context for the kind of non-coercive and anti-hierarchical dialogue that Habermas claimed constitutes an "ideal speech situation", free of internal or external coercion and characterised by equality of opportunity and reciprocity in roles assumed by participants'.

Future research using email communication is likely to benefit from wider public coverage but increased participation will no doubt bring 'junk' email. I propose that nutritionists need to engage in research using email sooner rather than later. Electronic innovations in research methods need to be tested and refined for legitimacy now, before the potential is discarded by the public intuitively as unsolicited mail.

It is clear that, apart from email messages to request participation in a study, nutrition science could benefit from the replacement of conventional postal questionnaires with electronic questionnaires. Published studies suggest that electronic questionnaires achieve higher response rates than conventional unsolicited questionnaires (Mehta & Sivadas, 1995). In our research, from an electronic mail shot of 260 university undergraduates concerning an on-line dietary survey, fifty-six messages were returned to us as 'addressee unknown'. We received 161 replies (62% of overall mail-shot or 79% of opened mail) from students agreeing to participate in the study. From these 161 students, 150 returned the electronic dietary questionnaire (58% of total mail-shot, 74% of total contacted population or 93% of study volunteers). This is comparable with the findings of the 'computer network' survey of Walsh *et al.* (1992) who attained a 96% response rate with a self-selected sample and a 76% response rate with a randomly selected sample. The traditional research design of postal surveys and reminders (Dillman, 1978) typically achieves a response of between 20 and 50%.

Electronic questionnaires cost less in time and money to administer. A scientist can produce a questionnaire that the respondent could fill in and return by email with a program like Microsoft Excel that captures the data into a

spreadsheet for analysis. This could advance human nutrition as it would permit a greater throughput of samples and less error in re-keying data. Email gives the scientists greater control over the logistics of questionnaire despatch. Large mailshots of the same message are possible and most email packages allow the sender to confirm a message's delivery time and time of reading by the recipient. From our study, the fifty-six unknown addresses were all returned within 40 min of despatch and of the 204 'hits', the majority (183, 90%) were opened and read by the students within 5 h.

Careful consideration is required of the ethical issues surrounding the use of email as a research tool. Email can not preserve the anonymity of the respondent. This may compromise the validity of electronic questionnaires although scientists could make assurances of confidentiality.

In conclusion, there are significant uncertainties about the use of email as a research tool in nutrition science. Although it is likely that email users will become more representative of the general population over the next decade, I suggest that, at present, only very narrowly defined populations with protected access, i.e. individual email addresses, should be contacted using email as a research tool in nutrition. The continuing development of software will improve the delivery of questionnaires by email and the Internet (Schmidt, 1997). Selwyn & Robson (1998) argues that: 'at the present time using e-mail offers the researcher many advantages, temporally, spatially and in terms of easy access to otherwise unreachable samples'. There is a substantial need for experimental research to be carried out to test the validity of electronic methodologies as reliable alternatives to well-established methods. Only if nutritionists increasingly engage in this scientific process can peer-reviewed criteria for the use of email in nutrition research be developed. I invite comments and the collaborative exploration of some of the issues raised by this letter.

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Using the Internet in nutrition research – reply by Wise

Nutritionists should be encouraged to make the best use of recent developments in information technology in teaching (Wise, 1998a) and research (Wise, 1999). The letter by Eley (1999) with regard to using the Internet for research raises some interesting ideas on computer use that deserve comment. She suggests that we might use email to send questionnaires to subjects, who respond by email, and that the files returned could be entered into a spreadsheet for analysis. Any published information relating to the Internet

will suffer from the results of the rapid evolution of this medium. There are many questions raised by our students' use of the Internet as a source of information, especially with regard to referencing the material. There is no control on the material so it is not refereed, nor is its presence on the Internet guaranteed tomorrow. I can provide more recent information on the Internet than she has done in her letter simply because it has taken time to publish that information in the traditional fashion and it is now out of date. References