Using the internet for research:
results at a keystroke

This edition of the *BJGP* contains two very different studies: one on GPs' adherence to guidelines on management of hypertension,[1] and one on patients' views about the role of antibiotics in respiratory tract infections.[2] These diverse studies are linked by their methodology. Both sets of authors have obtained their data using internet-based questionnaires. Fifteen years ago this would not have been possible, but now the internet is increasingly used as a platform for undertaking research into health and health care, including web-based trials, web-based interviews and, as here, web-based surveys.

The internet is a relatively new phenomenon. Originally developed for use by the military in the 1960s, the internet became available for general use in the 1990s. Since then there has been a phenomenal growth in services available online, with health and health care consistently remaining popular uses of the internet. A Google™ search for 'health' on 21 September 2007 found 869 million sites, outranked by 'shopping', but easily outstripping 'sport' and 'sex' (932, 780, and 506 million respectively).

Initially, e-health research was limited to anguished articles bemoaning the inaccuracy of some of the health information on the internet. More recently, e-health research has evolved, both into a topic of research in its own right, and as a source of new methodologies.

The traditional 'gold standard' for health services research is the randomised controlled trial (RCT), and some researchers have started undertaking web-based RCTs. There are two components to an RCT, either or both of which can be undertaken online. The first is the intervention. Researchers have undertaken trials of many types of online interventions to promote better health, either in the form of health information, or more complex interventions which combine health information with interactive services, such as peer support, decision support, or behaviour change support. These web-based interventions, also known as internet interventions, are increasingly popular for promoting self-management of long-term conditions. They have the potential to improve patients' knowledge, perceived social support, self-efficacy, health behaviours, and clinical outcomes.[3]

The second component is the trial methodology itself; for example, a web-based intervention to promote self-care for people with heart disease could be trialled using traditional methods (recruitment through GP practices, and data collection using practice nurses or research fellows) or online methods. A trial conducted completely online advertises for participants on the web, obtains informed consent online, and collects all baseline and follow-up data online. Data collected from an online trial are often limited to self-report questionnaires, but some online trials can collect biological data by using electronic home monitoring (for example, for blood glucose or blood pressure).

There are advantages to running a trial online. Traditionally, recruitment is one of the hardest parts of running a trial. With online recruitment, researchers have access to millions of web users, and recruitment can be very fast. For example, an online trial of an online intervention to help heavy drinkers drink less (which is currently being run in our Unit) recruited over 3000 participants in 15 weeks. Another advantage is that data collection is automated: participants complete the questionnaires online, and the information goes directly into a database. Data entry for large trials is a time consuming and expensive procedure, so avoiding this can be a major advantage.

There are also some disadvantages to running a trial online. The first one is the validity of the data collected. It is very hard to check up on information provided by participants, even about basic information like age and sex. Secondly, it can be hard to stop people re-registering to get access to both arms of a trial. All they need is a series of e-mail addresses which are easily obtained. Although there are some ways of stopping this, none is foolproof and if people do re-register in large numbers the whole trial can be undermined. A third difficulty is the rate of follow-up, which is often very low in online trials. People may not feel as committed to an online trial as they do to an offline one where they have often met the researcher, and may feel a personal commitment to the success of the overall endeavour. It is also much easier to ignore an e-mail reminder to complete a questionnaire than a request from a researcher sitting opposite you in a clinic.

There can be difficulties with the outcome measures too. Questionnaires that have been developed and validated as paper and pencil measures may not have the same properties if they are transferred online. It seems as if many questionnaires maintain their validity and reliability if transferred online,[4] but some definitely do not.[5] Ideally, researchers should test each measure before using it for online data collection.

Researchers have to weigh the pros and cons of this approach for each trial. One thing to consider is the way the intervention will be used in practice. If the intervention is intended to be freely available to people surfing the net, then this is the target population, and the most appropriate evaluation is one that uses this population: that is, online evaluation. If the intervention is only going to be available by referral from a health professional, then it makes more sense to run the trial in a population of people referred by a health professional.

Researchers are also using the web for qualitative studies. Many researchers have adapted traditional qualitative methods for analysing interviews or focus groups to analyse the content of online discussion groups and bulletin boards. Such studies have shown that online groups can be supportive, and members of such groups offer and receive many forms of support, including information, advice, emotional support, and empathy.[6] Not surprisingly, tangible support or offers of practical help (for example, with shopping or lifts) is the form of support least often found in online groups. Analysing the content of online discussion groups can also reveal patients' unmet needs; they often talk about the information and support they would like to have received from their health professionals.

The web can also be used for surveys (questionnaire studies), as demonstrated in the two papers published in this edition of the *BJGP*. From a researcher's point of view, the advantages of carrying out a survey online are similar to those of undertaking an online trial. It is easy to reach large numbers of people and, as the questionnaire is filled out online,

data are automatically entered. However, it can be difficult to know how many people you have invited to complete a survey, and hence it can be difficult to calculate a response rate. Response rates can be very low, making it difficult to draw any conclusions from the data. Heneghan *et al*[1] and Cals *et al*[2] have avoided these pitfalls by using a defined population: the Oxford study[1] used a targeted electronic clinical bulletin, while the the Dutch study[2] used an internet panel. Internet panels are usually made up of individuals who have agreed to join and complete a certain number of questionnaires. In return, they receive points, money, or some other form of reimbursement. Therefore, internet panels are not necessarily representative of the general population.

Both studies had reasonable response rates: 75% in the Dutch study,[2] reflecting the use of an internet panel, and 50% in the Oxford study[1] which is comparable with many other surveys of GPs who are notoriously bad at responding to surveys.

Love it or loathe it, the internet is here to stay, both as a source of health information and as a research medium. Primary care clinicians and researchers are already adapting to its use, and my guess is that we will soon be wondering how we ever managed without it.

Elizabeth Murray

FRCGP, PhD, Reader in Primary Care, University College London.

REFERENCES

1. Heneghan C, Perera R, Mant D, Glasziou P. Hypertension guideline recommendations in general practice: survey of awareness, agreement, adoption, and adherence. *Br J Gen Pract* 2007; **57(545):** 948–952.

2. Cals JWL, Boumans D, Lardinois RJM, *et al.* Public beliefs on antibiotics and respiratory tract infections: an internet-based questionnaire study. *Br J Gen Pract* 2007; **57(545):** 942–947.

3. Murray E, Burns J, See Tai S, *et al.* Interactive health communication applications for people with chronic disease. *Cochrane Database Syst Rev* 2004; **4:** CD004274.

4. Ritter P, Lorig K, Laurent DD, Matthews K. Internet versus mailed questionnaires: a randomized comparison. *J Med Internet Res* 2004; **6(3):** e29.

5. Buchanan T, Ali T, Heffernan TM, *et al.* Nonequivalence of on-line and paper-and-pencil psychological tests: the case of the prospective memory questionnaire. *Behav Res Methods* 2005; **37(1):** 148–154.

6. Coulson NS, Buchanan H, Aubeeluck A. Social support in cyberspace: a content analysis of communication within a Huntington's disease online support group. *Patient Educ Couns* 2007; **68(2):** 173–178.

ADDRESS FOR CORRESPONDENCE

Elizabeth Murray

Department of Primary Care and Population Sciences, University College London, Archway Campus, Highgate Hill, London N19 5LW. E-mail: Elizabeth.murray@pcps.ucl.ac.uk

GP specialty training:
a European perspective

In 1998 the World Health Organization (WHO), after consultations with academic institutions for general practice and UEMO (the umbrella organisation for all European unions of GPs), published a document entitled: *Framework for Professional and Administrative Development of General Practice/Family Medicine in Europe*.[1] The document describes the core characteristics of general practice and the structural conditions that must be met if politicians, as recommended, should support a strong primary care sector with general practice as the cornerstone. The most important part of the document is the recommendation of a specific educational curriculum in primary care at all educational levels.

In 2000, an editorial in the *BMJ* followed this by questioning whether it is time for a new definition of general practice.[2] The new association of all academic colleges and societies for general practice in Europe took on the task: Wonca Europe, which was founded in 1995 after the political reunification of Europe.

In 2002, this academic society published *The European Definition of General Practice/Family Medicine*.[3] The purpose was to make the definition the cornerstone in the development of an agenda for research, teaching, and quality development in the three Wonca Europe networks and in the member countries.

In 2005, the European Academy of Teachers in General Practice (EURACT) drew up an educational agenda describing how the core competences should be addressed in the curriculum in all countries.[4] The EURACT educational agenda is intended for teachers, learners, curriculum planners, healthcare planners, and the whole medical profession. It focuses on GP specialty training, but is also intended as a guide for student training and continuing professional development for GPs.

Through the curriculum statement *Being a General Practitioner*,[5] the Royal College of General Practitioners (RCGP) has fulfiled the national part of the task assigned by Wonca Europe, and has filled the gap in the development from WHO-vision and idea through the European definition and EURACT educational agenda, to a national curriculum for GP specialty training.

Although acknowledging its European roots, the RCGP document also rests on the national rules on education laid down by administrative and academic bodies within the UK NHS, such as the General Medical Council's *Good Medical Practice* which provides guidance for GPs working within the NHS.[6]

The curriculum statement defines the mandatory learning outcomes and describes the skills required to practice as a GP in the NHS. On the RCGP website (www.rcgp-curriculum.org.uk/) additional detailed descriptions of each component of the very comprehensive curriculum can be found. Furthermore, the website gives detailed information to trainers and trainees on educational methods and resources. It also provides information on the comprehensive appraisal and assessment that is part of the new training scheme leading to certification as a GP and membership of the RCGP.

The RCGP describes the specialty within six domains of core competences:

- Primary care management
- Person-centred care
- Specific problem-solving skills
- Comprehensive approach
- Community orientation
- Holistic approach

As general practice is a person-centred scientific discipline, three types of features are considered essential: