



100%. Retrieval rates were less from undergraduate teaching hospitals than from other hospitals. The retrieval rate was lower from one region than from the other, independent of the proportion of patients treated at teaching hospitals.

For deceased patients the retrieval of case notes varied with district of residence but no association was found with the region of residence, the year of death, or the teaching status of the hospital. Of 223 patients recorded as having had radiotherapy, 184 were deceased. Records were retrieved from 11 centres treating 216 patients. The overall response rate was 172/216 (80%), but response ranged from 50% to 100% for the individual centres. The retrieval rate was lower from one region than from the other, but retrieval of records was similar for surviving and deceased patients and did not vary by year of death, district of residence, or the teaching status of the hospital.

Comment

Our analysis shows that the factors influencing the retrieval of patients' case notes and radiotherapy records are to some extent systematic. Non-response bias has potential to influence the findings of audit through underrepresentation of deceased patients and patients treated at teaching hospitals. Variation in response rates among districts and hospitals may be an important confounding factor for studies designed to investigate the reasons for differences in outcome among hospitals or health districts.

The commonest reason for not obtaining the case notes of deceased patients was that these records had not been filed in systematic order. The variation in response rate among districts mainly reflected the adequacy of the filing system for patients' case notes at the district's hospitals. The favourable response rate obtained from radiotherapy units shows that it is possible to maintain the records of deceased patients, although these units have fewer records to store.

Case note review is the form of audit most often used by clinicians. Maintaining access to clinical records is an important part of this process as well as being essential for consistent clinical practice. District health authorities need to ensure that case notes of surviving and deceased patients can be reliably retrieved both for clinical use and for audit.

We thank the Thames Cancer Registry for supplying the lists of patients; the clinicians who gave us access to their patients' notes, the medical secretaries and medical records staff who assisted in retrieving case notes; and Professor W W Holland for his support and encouragement. This study was supported by the Wellcome Trust and the Department of Health.

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Variables associated with retrieval of hospital case notes and radiotherapy records of surviving and deceased patients

Variable	No retrieved/ No sought	Relative odds of retrieval (95% confidence interval)	χ^2	Degree of freedom	p Value
<i>Hospital case notes (n=609)</i>					
Survival of patients:					
Alive	255/297				
Dead	191/312	0.26 (0.18 to 0.39)	48.7	1	<0.001
Surviving patients (n=297):					
Region of residence:					
Region A	117/127				
Region B	138/170	0.37 (0.17 to 0.78)	7.6	1	<0.01
District of residence*:					
Worst rate	3/8				
Best rate	16/16		48.3	27	<0.01
Hospital:					
Non-teaching	229/256				
Teaching	26/41	0.20 (0.10 to 0.43)	15.7	1	<0.001
Deceased patients (n=312):					
District of residence*:					
Worst rate	0/9				
Best rate	20/22		74.8	27	<0.001
<i>Radiotherapy records (n=216)</i>					
Region of residence:					
Region A	76/87				
Region B	96/129	0.42 (0.20 to 0.88)	5.6	1	<0.05
Radiotherapy centre†:					
Worst rate	14/28				
Best rate	14/14		32.8	10	<0.001

*Best and worst retrieval rates among 28 districts.

†Best and worst retrieval rates among 11 centres.

Audit in Person

Surveys of patient satisfaction: II—Designing a questionnaire and conducting a survey

Ray Fitzpatrick

This article considers some of the basic issues in designing a survey of patient satisfaction, particularly developing or selecting a questionnaire and conducting and analysing a survey. A few instruments have been developed by research teams for widespread use in the NHS. Examples include a hospital patient questionnaire developed by Clinical Accountability, Service Planning, and Evaluation (CASPE)¹; a questionnaire to measure satisfaction with consultations developed for use in general practice²; and a questionnaire to measure satisfaction with breast screening.³ Investigators can use such instruments knowing that some basic properties such as reliability and acceptability will have already been established (although it is always wise to examine carefully the published details of such developmental work). Another advantage may be that there may be other data with which their own eventual results can be directly compared. However, most

surveys of patients' views tend to be based on a questionnaire that the investigators have developed themselves.

Questionnaires of patient satisfaction take one of two forms: they may be either episode specific or more general in terms of the focus of the questions. Those that are episode specific tend to include questionnaire items such as, "Did the doctor give you a clear enough explanation of what was wrong with you?" whereas a more general focus would be provided by, "Does your doctor give you sufficiently clear explanations of what is wrong with you?" The choice will depend partly on the type of health care setting and partly on the research question. A recent meta-analysis of studies of patient satisfaction concluded that questionnaires with more episode specific content tend to produce more uniformly favourable responses from patients compared with somewhat more negative views elicited

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by means of generally worded questions.⁴ When patients are asked for their views about health care in general terms, it is suggested that they draw on more negative stereotypes about health care facilities whereas in surveys focused on specific episodes they may have an optimistic bias to assume that their own experience is better than that of others. The meta-analysis was heavily dependent on American surveys, and it is by no means clear that the same differences between methods would occur in Great Britain. The argument for episode specific questionnaire items is that they should reflect more accurately individuals' actual experiences. One study that did directly compare general questions with specific questions for a single sample of patients found that the specific questions resulted in more variation in answers.⁵

A second broad choice of approach is between questions which directly ask about level of satisfaction ("How satisfied were you with...?") compared with indirect approaches in which satisfaction is inferred from the choice of answer. For example, a positive answer to, "Did the doctor answer all of the questions about your problem?" would be interpreted as a satisfied response. There are no established advantages to either approach.

As was argued in my previous article⁶ it is clear that patient satisfaction is multidimensional. As a result questionnaires increasingly tend to ask more specific and focused questions rather than ask for global judgments of how satisfied the person is. The more clearly focused each question, the easier it is to compare satisfaction with the different elements of care.

The form of answers offered to the respondent in the questionnaires varies. The simplest form of response is "yes" or "no." The advantages of simplicity of this format are, according to many survey analysts, outweighed by the fact that most respondents will give the favourable answer to any item about health care. This is a major problem given the overall need to maximise the variability of responses in any survey. Therefore most survey questionnaires now favour more than two alternative responses per question (for example, respondents select from four or five possible answers in a range from "very satisfied" through to "very dissatisfied"). The respondent is given a greater opportunity to express the precise nature of his or her view. Moreover, the reliability of items increases as the number of response alternatives increases.⁷ In practice the gain in precision or reliability of increasing the possible answers beyond seven is minimal, and generally five response categories are used.⁷

More advanced questionnaires tend to be developed from more general principles of attitude measurement. In particular, several different items may be asked about one issue in the form of a Likert scale of items, each of which typically has five responses from "strongly agree" to "strongly disagree," which are given a numerical score (box). The summed score of all the items is taken to represent the person's underlying view or attitude. Again, psychometric analysis has shown that Likert summed scales are more reliable than individual items.⁸ The second box shows an example of such a scale taken from a study of patient satisfaction among chronically ill patients.⁹ The third

item also illustrates a conventional wisdom of questionnaire design: that "response acquiescence"—the tendency to agree rather than to disagree—should be allowed for by some items with reversed wording and the scoring appropriately reversed. The assumption that several items all contribute to the measurement of a single underlying view or attitude is something that has to be checked statistically on a pilot sample before it can be properly used in a scale. Techniques such as factor analysis are used for this purpose.

Summed scale of satisfaction among chronically ill patients

- (1) I am in better health now because of the care I received there
- (2) The doctors did as much as could be expected to help me get well
- (3) Some of the the things the doctor did were not very helpful
- (4) The doctors helped me feel a lot better

Each item scored from 5 (strongly agree) to 1 (strongly disagree), except item 3 in which scoring is reversed.
Total range of scores from 4 to 20

There are more general, commonsense considerations in the design of a questionnaire. If it is for self completion the questionnaire needs to be easy to follow and attractively set out. It is most important to include a simple, clear statement of the purpose and use of the questionnaire and explanations of why the person has been selected, how the questionnaire is to be completed, and what the person is to do with it after its completion.

Other items to be included

It is routine in survey research to include what are commonly referred to as "background variables"—that is, social and demographic variables. They have particular importance in research of patient satisfaction because variables such as age, sex, education, social class, and marital status may all exert as strong an influence on levels of satisfaction as any direct effect of health services. Only age seems consistently to be related to satisfaction, with younger respondents expressing less positive satisfaction. It is often difficult to clarify whether the relation between such variables and satisfaction is due to differences in expectations and readiness to express negative views or actual differences in the quality of health care received.¹⁰ Now that reliable and brief social survey instruments exist to measure health status,¹¹ and given the frequently observed relation between health status and patient satisfaction,¹² a simple measure of health status might also be included.

Piloting a questionnaire

It is essential that a questionnaire be piloted on a sample of respondents before the full survey. This will allow several potential problems to be predicted. Firstly, the clarity and acceptability of questionnaire items can be examined. Also, if respondents are given space for open ended comments additional items or issues not included in the first draft of a questionnaire may emerge. In addition, the variability of answers may be checked. The survey will not be particularly informative if the final version of the questionnaire includes too many items that produce uniform responses. It may even pay to have a phase of prepilot open ended, exploratory interviewing, in which the full range and dimensions of patients' views are

Examples of Likert scale of questionnaire items

"The doctor gave me a helpful explanation of what was wrong with me"

5=strongly agree, 4=agree, 3=uncertain,
2=disagree, 1=strongly disagree



assessed, before proceeding to the fixed, closed questionnaire items of the pilot. Other aspects of the survey such as method of explanation and presentational aspects of the questionnaire may also be tested at this stage, and this is also the best opportunity, if possible, to examine formal properties of a questionnaire, such as reliability.

Survey sample

It is important to be clear about the population whose views are relevant in any particular survey. For example, in one survey only the views and attitudes of patients who have actually attended and used a particular clinic may be wanted. For a different kind of inquiry including patients who have not recently attended the facility may be vitally important; their views may be appreciably different from those of the attenders.

Having decided on the relevant population, survey researchers then face the decision whether to conduct a *census* of every individual in the population or to obtain the views of a *sample*, in which case the aim is to construct a sample that can represent the entire population while avoiding the many costs that might be expected from gathering every person's views, as in a census. In addition to considerations of cost, statisticians argue that for most purposes a sample is probably superior to a census because the potential biases entailed in trying but failing to include all individuals in a census may be more effectively controlled in a smaller scale sampling procedure. Should investigators opt for a sample, several further decisions follow. Either they may conduct a *random sample* or some alternative to the random sample such as *quota sampling*. A random sample is not exactly that. Rather than respondents being chosen haphazardly or without pattern, it requires a process whereby each member of a population is given an equal chance of falling into the sample. Formal random sampling generally requires recourse to a table of random numbers. A more practical variant of random sampling that is unlikely to be seriously flawed is *systematic sampling*, whereby, for example, every tenth patient is selected. This would be a problem only if the systematic sample had something in common, for example, if it comprised patients given shorter consultation times by the appointments system.

A somewhat different approach, used in public opinion polls, is the *quota sample*, in which the investigators decide that three or four variables are potentially important to respondents' views—commonly these might include age, sex, and social class. The objective is to construct a sample representative of the population with regard to these variables. A predetermined number of men and women and young and old respondents would be obtained; with other variables the sample would be haphazard and based on availability. Whatever method is adopted, any survey will be more convincing if every reasonable effort has been made to recruit initial non-respondents, by follow up. Further advice is now readily available on issues of sampling in surveys of patient satisfaction.¹³

Conduct of survey

Two broad principles need to be adhered to as far as possible, the anonymity and confidentiality of the respondent's answers and the neutrality of the person gathering the data. Both are primarily designed to maximise the candid expression of views. The principle of anonymity is completely achieved if no method of identifying respondents is used, but some technique such as identification by code numbers is needed if follow up of non-respondents is to be achieved.

Statements of confidentiality require a simple explanation of how information is to be processed and analysed. Many surveys attempt to guarantee the neutrality of the person gathering the data by involving research institutes or academic groups, which are less closely identified with health care providers, in collecting and analysing the data, but this may not always be feasible. It would be reasonable to assume that the setting in which the respondents express their views would influence results, so that, for example, they were more frank in the privacy of their own homes. However, the one systematic analysis of the effect of setting failed to find any evidence to support such views.⁴

Analysis

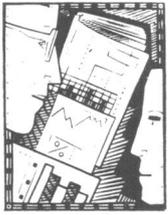
Details about analysis are beyond the scope of this article, but one general point can be emphasised. Sensible analysis and interpretation of a survey of patient satisfaction will require at least two kinds of manipulation of variables, which means that a computer, and most probably a statistical package such

Methods of survey sampling

- Random sampling
- Systematic sampling
- Quota sampling

as the statistical package for the social sciences (SPSS) or SAS will be highly desirable. These requirements obviously need to be anticipated from the outset. The two kinds of manipulation of variables that are almost inevitable are (a) combining single satisfaction items into summed scales and (b) subgroup analysis. The value of summed scales has been explained in the context of reliability. The need for subgroup analysis is a direct consequence of the effects that demographic, social, and other "background" variables may have on satisfaction. Suppose, for example, that a significant difference in satisfaction was found between two group practices, two wards, or two doctors. Before taking the result seriously as evidence that some aspect of the service was responsible for the difference, it would be essential to establish that it was not an artefact of other differences between the two groups of patients, such as in age or health status. This can be examined only by manipulating the data to "control" for possible confounding effects.

Subgroup analysis has another role in studies of patient satisfaction and, indeed, in survey analysis more generally. Important relations may emerge only from such analysis. To take two simple examples, in a randomised trial of fee for service care compared with enrolment into a health maintenance organisation differences in satisfaction between the two groups of patients were clearest among those with higher incomes but poorer health status.¹⁴ In a study of satisfaction with primary care among elderly people satisfaction was related to whether the doctor showed personal interest in the patient only among those of poorer health status.¹⁵ The survey makes its greatest contribution to knowledge when relations between variables are clarified and "specified" in this way, and methods of doing this have been clearly described.¹⁶ By going beyond the basic reporting of proportions of individuals satisfied with this or that aspect of care, investigators contribute not only to a more accurate understanding of the specific topic covered in the survey but also to the broader questions of how patients respond to and evaluate their health care.



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News and Information

Intensive staff training, meticulous aseptic technique, and employing two nurses to change bags were the key factors in reducing sepsis from catheters used in nutritional support at the Birmingham Children's Hospital (*Archives of Disease in Childhood* 1991;66:335-7). An unacceptable infection rate of 45% initiated remedial action, which in turn led to a dramatic reduction to 8%—a nice example of closing the audit loop.

A study from Finland comparing one week and one month hospital stays for children with newly diagnosed diabetes (*Lancet* 1991;337:656-60), unsurprisingly, found no difference in outcome at the end of two years. Surely it is generally accepted that unless there is ketoacidosis management as an outpatient is not only safe but more compassionate? Shouldn't doctors have to justify the expense of hospital treatment?

Monthly audit meetings of the surgical unit at Southampton identified 89 "avoidable" deaths over 10 years (*Journal of the Royal Society of Medicine* 1991;84:213-6). Leaking anastomoses, intestinal perforations, and pulmonary embolus were the leading causes. Hints of a downward trend in the past two years need confirmation; and it is strange that the audit nurse responsible for collecting the data is neither an author nor acknowledged in the paper.

Nearly 80% of 381 women admitted to the National Maternity Hospital, Dublin, with a miscarriage accepted an appointment at a new miscarriage unit (*British Journal of Obstetrics and Gynaecology* 1991;98:306-8). In a fifth grief persisted for at least a month, and most of the women expressed gratitude for help. Questions for the future should be: Does the service do any objective good—and how should this be measured?

A small chink of light in the gloom of gastric cancer? Comparison of two series in Edinburgh 20 years apart (*British Journal of Surgery* 1991;76:349-51) shows that five year survival has doubled from 5.2% to 11% and one year survival after resection has risen from 24% to 73%. Perhaps this simply reflects improved technical competence; certainly it offers no new insight into the nature of the disease.

Gynaecological practice in treating ovarian cancer, on the other hand, is not as good as it should be. A prospective survey of 908 cases in the North East Thames region (*Journal of the Royal Society of Medicine* 1991;84:206-9) showed that optimal removal of the tumour was achieved in only 29% of patients with advanced disease, compared with an expected 85%, and that survival rates were lower than in most reports: a case for specialist surgeons perhaps.

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DIARY

22-23 May

Bristol: Health Care Evaluation Unit. A basic audit training course. Contact Mary Solomon, Health Care Evaluation Unit, Canynge Hall, Whiteladies Road, Bristol BS8 2PR (tel 0272 738223).

7-9 June

Harrogate: National Health Service Training and Studies Centre. A basic course in medical audit. Contact Patricia Kent, 124 Albert Street, London NW1 7NF (tel 071 267 3800).

24 June

Southampton: Boldrewood Conference Centre, University of Southampton. Clinical outcomes conference. Contact Geoff Woodall, Wessex Regional Health Authority, Winchester SO22 5DH (tel 0962 863511).

24-25 June

Brighton: Brighton General Hospital. Computers and information in medical audit. Contact Cynthia Lyons, Brighton General Hospital, Elm Grove, Brighton BN2 3EW (tel 0273 696011 ext 3971).

Community hospital audit—Doctors in the 65 bed Yeatman Hospital in Sherborne are developing an audit system for GP community hospitals. All inpatients are screened for complications by an audit assistant using existing Körner data, discharge diagnosis, and criteria defined by the medical staff. Patients staying longer than predicted by the admitting doctor (or surgeon) are reviewed with a computer based protocol to examine common causes of delayed discharge. Details from Dr Simon Cave, Yeatman Hospital, Dorset DT9 3JU (tel 0935 813991).

New audit newsletter—This week the medical audit programme at the King's Fund Centre has published the first edition of *Network*, a newsletter for audit assistants, funded by the Department of Health. However, a wider distribution is envisaged, with copies going to regions, district audit chairmen, and NHS and specialty libraries.

Medical audit advisory group—Newcastle upon Tyne was selected as one of four family health services authorities (FHSA) to receive Department of Health funding to pilot the establishment of medical audit advisory groups. A report on its first year outlines some ideas—such as a structured audit

"away day" and the inclusion of the FHSA manager as an observer at meetings, the question of recognition of the postgraduate education allowance, and sensitive handling of non-participating practices—and suggests that audit in primary care in Newcastle is alive and well. One problem is ensuring the participation of all GPs: up to now audit has been confined to volunteers and although these are the majority of local doctors, a significant minority do not yet take part.

Copies of the report (£5.00 per copy) are available from the general manager, Newcastle Family Health Services Authority, Pearl Assurance House, 7 New Bridge Street West, Newcastle upon Tyne NE1 8BY (tel 091 261 2884.)

Medical Audit Information Service—The Medical Audit Information Service has performed an activity analysis of its first year. This service, based at the King's Fund Centre, helps the implementation of medical and clinical audit through identifying and recording published and unpublished examples of audit and advising people new to audit about relevant sources of help and other information resources.

The largest proportion of inquiries were from audit assistants and co-ordinators (243 of 643, 37.8%). Doctors were the next largest group, with 176

inquiries (27.4%). A wide range of inquirers from other clinical professions and NHS administration used the service, together with librarians, researchers, voluntary agencies, and applicants for medical audit posts.

The information collected by the service is entered into the DHSS Data database. In March 41 items were entered. Of these, only two were project details. The service is planning a greater emphasis on finding current project activity to remedy this deficiency. Also, it would be grateful for help from clinicians who can give details of their work.

Criteria for medical audit—The Medical Audit Programme at the King's Fund is collecting samples of sets of criteria which have been successfully used for audit. These will be recorded on a database and copied, with the originators' permission, for others wishing to do similar audit. Examples to Patricia Kent, Manager, Medical Audit Programme, King's Fund Centre, 126 Albert Street, London NW1 7NF.

Items for possible inclusion in the news and information section to the programme manager, Medical Audit Programme, King's Fund Centre, 126 Albert Street, London NW1 7NF (tel 071 267 6111; fax 071 267 6108).