Day surgery: development of a questionnaire for eliciting patients' experiences

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Abstract

Objective—To develop a single, short, acceptable, and validated postal questionnaire for assessing patients' experiences of the process and outcome of day surgery.

Design—Interviews and review of existing questionnaires; piloting and field testing of draft questionnaires; consistency and validity checks.

Setting—Four hospitals, in Coventry (two), Swindon, and Milton Keynes.

Patients—373 patients undergoing day surgery in 1990.

Main measures—Postoperative symptoms, complications, health and functional status, general satisfaction, and satisfaction with specific aspects of care.

Results—Response rates of 50% were obtained on field testing draft questionnaires preoperatively and one week and one month after surgery. 28% of initial non-responders replied on receiving a postal reminder, regardless of whether or not a duplicate questionnaire was sent; a second reminder had little impact. Many patients who expressed overall satisfaction with their care were nevertheless dissatisfied with some specific aspects. Outcome and satisfaction were related to three aspects of case mix: patient's age, sex, and type of operative procedure. The final questionnaire produced as a result of this work included 28 questions with precoded answers plus opportunities to provide qualitative comments. Several factors (only one, shorter questionnaire to complete, fewer categories of non-responders, and administration locally) suggested that a response rate of at least 65% (with one postal reminder) could be expected.

Conclusion—A validated questionnaire for day surgery was developed, which will be used to establish a national comparative database.

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Introduction

Day surgery is an increasingly important component of surgical services.¹ In theory, the advantages of day surgery are reduction in costs for the purchaser and a reduction in waiting time and a quicker return to a familiar home environment for the patient. There is a growing body of research evidence in support of these advantages.²⁻⁵

Clearly, the adoption and development of day surgery will be partly dependent on how day surgery compares with inpatient care in terms of effectiveness and acceptability. Although patients' experiences of inpatient surgery have been studied,⁶⁻⁸ it is unclear whether or not the findings can be extrapolated to day surgery. Unfortunately, few studies of patients' experiences of day surgery have been published, though many may have been carried out by individual surgeons and hospitals but reported only locally. Among those that have been published, some have found significant minorities of patients who were dissatisfied with the process and outcome of the services they received.^{3 9-12}

A simple, valid, reliable, and cheap method is needed for assessing patients' views of day surgery. In practice, this means the use of a single postal questionnaire. In designing such a questionnaire, there are two requirements: firstly, questions about specific aspects of care should be included as they are less ambiguous and more sensitive than general questions and, secondly, open-ended questions should be included to aid interpretation of the responses to precoded questions.^{13 14}

This paper describes the development and field testing of questionnaires administered preoperatively and postoperatively for determining patients' views of the process and outcome of day surgery and the subsequent production of a single postoperative questionnaire.

Methods

DEVELOPMENT OF DRAFT QUESTIONNAIRES

Draft preoperative and postoperative questionnaires were based partly on a review of 25 existing questionnaires of patients' experiences (five of which had been designed specifically for day surgery patients); two questionnaires had been published,^{15 16} most had to be obtained from their developers. These existing questionnaires provided both an awareness of the relevant issues and an opportunity to identify specific, validated questions which could be copied. In addition, insight into the relevant issues was also obtained from interviews with 15 people who had recently undergone day surgery. The interviews were undertaken by a member of the research team, and the interviewees included the parents of four children, eight adults of working age, and three elderly people.

As the optimum time for surveying patients was unclear, two postoperative questionnaires

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were designed: one to be completed one week after surgery and the other one month after surgery. In addition, as it was felt that the health and attitudes of patients preoperatively might influence their response postoperatively, it was decided to administer a preoperative questionnaire. Table 1 shows the topics covered in the three questionnaires. Adult and child (age under 16 years) versions were produced, the latter to be completed with or by parents.

The questionnaires were 13 to 17 pages long and contained both open and closed questions. They covered patients' sociodemographic characteristics, their clinical management during and after surgery, their health status, and the outcome of the operation. The last two topics were assessed with a series of questions covering hospital readmission, postoperative complications, length of convalescence, change in symptoms, amount of postoperative anxiety, difficulties with activities of daily living, change in daily life, and perception of speed of recovery.

The questionnaires were piloted during June 1990 at Walsgrave Hospital and Coventry and Warwickshire Hospital, both in Coventry. Between 40 and 50 responses were obtained for each of the questionnaires, which resulted in modifications to them before the field testing began.

FIELD TESTING

Field testing sought to answer several methodological questions: what were patients' most frequent concerns; when should patients be surveyed; who should send the questionnaire and to whom should it be returned; how many reminders should be sent to non-responders and should these include an additional copy of the questionnaire; and why did some people not respond? Field testing took place during the late summer of 1990 at three contrasting sites: a hospital with a dedicated day ward and theatre (Coventry); one with a dedicated ward only (Milton

Keynes General Hospital); and one with no dedicated facilities (Princess Margaret Hospital, Swindon).

Two sites (Coventry and Swindon) achieved their targets of recruiting 150 patients each, but at the third site only 73 patients were included, apparently because of a low workload. At two hospitals it was possible to send only postoperative questionnaires to patients who had returned a preoperative questionnaire and not to the non-responders. As a result the target population for the postoperative questionnaires was 262.

Local difficulties meant that the effectiveness of different arrangements for administering the questionnaires could be investigated only at Coventry ($n=150$). Patients treated there received a covering letter which explained the study and indicated the origin of the questionnaires as being the consultant surgeon or the hospital manager or the London School of Hygiene and Tropical Medicine. For the same administrative reasons, it was possible only at Coventry for non-responders to be sent a reminder, with or without a new questionnaire. A one page questionnaire was sent to continued non-responders, seeking their reasons for lack of response. More intrusive methods, such as visiting or telephoning, were avoided.

DEVELOPMENT OF THE FINAL QUESTIONNAIRE
Data from the questionnaires were coded at the London School of Hygiene and Tropical Medicine. χ^2 tests were used to test significance, when appropriate, and agreement between variables was assessed with κ statistics. Kappa is derived from the cross-tabulation of one set of observations against another and allows for the extent to which agreement could have occurred by chance, given the proportions in each category. Perfect agreement (scoring 1) is possible only if the proportions in each category are the same in each set of observations. Fleiss suggests that values of κ below 0.40 may be taken as poor agreement, 0.40 to 0.75 as fair to good agreement, and over 0.75 as excellent agreement.¹⁷ Qualitative data were used to interpret some of the quantitative responses and to identify additional commonly reported views that had not been included in the closed questions.

Criteria for inclusion of a question were topics that were a cause of dissatisfaction for at least 5% of respondents; case mix factors (such as age, sex, and procedure) that were related to the overall level of satisfaction; questions that provided additional understanding to that obtained from other questions; and questions that were more sensitive to dissatisfaction than other questions on the same topic.

The design of the final questionnaire was governed by the following requirements: the questionnaire should cover relevant events before, during, and after treatment in chronological order; should be suitable for adults and children undergoing a wide range of procedures; should consist largely of closed

Table 1 Topics covered in draft questionnaires

	Preoperative questionnaires	Postoperative questionnaires	
		One week	One month
Open invitation to comment on care	x	x	x
Procedure	x	x	x
Expectation of outcome	x		
Length of stay including preference	x	x	
Anxiety about operation	x	x	
NHS or private funding	x		
Anaesthetic, including preference	x	x	
Lay care availability	x		
Domestic consequences of admission	x		
Comorbidity	x		
Past medical history	x	x	x
General health status	x	x	x
Activities of daily living	x	x	
Information about procedure	x		
Travel to and from hospital	x	x	
Postoperative accommodation	x	x	x
Sociodemographic factors	x		
Outcome of procedure	x	x	x
Postoperative use of health care		x	x
Satisfaction with treatment		x	x
Discharge arrangements		x	
Information about aftercare		x	x
Postoperative use of lay care		x	x
Opinion of length of stay		x	x
Comments about the questionnaire		x	x

Table 2 Response rates to one month postoperative questionnaire during field testing (n=262)

	No(%)
Responders	130(50)
Non-responders	132(50)
Wrong address	21(16)
Operation postponed	8(6)
Claimed to have responded	16(12)
Positive refusal	13(10)
Reason unknown	74(56)

questions with precoded answers; should allow some qualitative responses; should be understood by all adults with a reasonable grasp of written English; and should be no more than eight pages long.

The final design issue was how many patients were needed to obtain reliable results. According to conventional sampling theory, for an underlying rate of 5% a sample of 200 would give confidence intervals of about 3 to 9%; for 10%, 6 to 15%; for 25%, 19 to 32%; and for 50%, 43 to 57%. If the underlying rates in two "populations" (different hospitals or the same hospital on different occasions) were 5% and 15%, samples of 200 patients from each would be sufficient to detect a difference at the 5% level with 80% power. They would also be sufficient to detect a difference if the underlying rates were 25% and 40%.

Results

RESPONSE RATE

During the field testing we obtained completed questionnaires from about half of the patients (preoperatively 180/373 patients; one week postoperatively 129/262; one month postoperatively 130/262). Difficulties encountered in retrieving questionnaires from consultant surgeons and hospital managers meant that the observed response rates underestimated the true response, though by how much was uncertain. The response rate was not associated with either the identity of the sender or the destination for completed questionnaires (clinicians, managers, research team). Thus, in view of the previous observation, it is possible that a local source may have actually produced a better response than a distant research team. The response rates from men and women were similar but those from parents of child patients and patients with Asian names were lower, at about 40% and 20% respectively.

Of those patients sent a reminder when their one month questionnaire was two weeks overdue, 28% responded. The proportion was similar regardless of whether or not a new copy of the questionnaire was enclosed. A second reminder was ineffective in boosting the response rate further. There were several reasons for continued non-response (table 2). Some questionnaires (16% of non-responders) were returned by the post office as they had been sent to the wrong address, even though the address was supplied by the hospital from their admission lists. A further 6% had had their operation postponed (the patients having been recruited from preoperative waiting lists). Of the remainder, we obtained information from 22% (16/74) as to why they had not replied. Over half (10) claimed that they had returned a completed questionnaire. The rest had chosen not to respond because they never responded to questionnaires; they claimed they had never received or had lost the questionnaire; the questionnaire was too long; English was not their first language; or the questions were too personal.

FIELD TESTING

Although about 130 completed questionnaires were received for one week and for one month after surgery, only 94 patients completed questionnaires on both occasions. Analyses of time trends are therefore confined to this group of 94 patients.

One week after day case surgery most patients (80%) would not have rather been treated as an inpatient, and a similar proportion (83%) would recommend day care to a friend in a similar situation. Similar views were expressed one month after surgery. The main reasons dissatisfied patients gave for wanting to stay in hospital overnight were the desire to have recovered fully from the anaesthetic and the operation before going home; anxiety about being at home if something went wrong; difficulty of getting sufficient rest once back at home; and difficulties early discharge had caused family and friends.

Table 3 shows the proportions of patients dissatisfied with specific aspects of the process of care accompanying their day surgery. Some questions were considered not applicable by a substantial number of the patients – for example, (at one week and one month respectively) for parking, by 12 and 8 patients, for pain control 29 and 20, for keeping occupied 11 and 9, and for telephone facilities 25 and 18. These were counted as valid responses and therefore included in the denominator when calculating the percentages of patients who were dissatisfied. For most of the items in table 3 the levels of agreement between responses after one week and one month were good (κ 0.6–0.75) and for a few they were extremely good (κ > 0.75). There was no consistent pattern of increasing or decreasing satisfaction with time. Dissatisfaction with specific items was not confined to the 15–20% of patients who expressed overall dissatisfaction with their

Table 3 Specific areas of dissatisfaction recorded one week and one month postoperatively (n=94) during field testing

Area	One week No(%)	One month No(%)	κ	95% Confidence interval
Parking at the hospital	26(28)	28(30)	0.783	0.663 to 0.903
Things to keep you occupied in ward	15(16)	14(15)	0.720	0.566 to 0.875
Level of privacy in ward	13(14)	14(15)	0.499	0.287 to 0.711
Information about treatment	9(10)	14(15)	0.650	0.456 to 0.843
After effects of anaesthetic	15(16)	12(13)	0.731	0.561 to 0.901
Pain control immediately after operation	12(13)	11(12)	0.669	0.526 to 0.812
Atmosphere in ward	4(4)	6(6)	0.845	0.642 to 0.999
Finding the ward	6(6)	5(5)	0.866	0.684 to 0.999
Availability of help from doctors	4(4)	5(5)	0.545	0.280 to 0.810
Amount of help from reception staff	3(3)	5(5)	0.748	0.525 to 0.971
Telephone facilities in ward	7(7)	4(4)	0.533	0.352 to 0.982
Attitudes of doctors	4(4)	3(3)	0.757	0.532 to 0.982

Table 4 Self assessment of health status and outcome of surgery recorded one week and one month postoperatively (n=94) during field resting

Question	Response	Preoperatively No(%)	One week postoperatively No(%)	One month postoperatively No(%)	Overall agreement postoperatively (%)	κ (95% confidence interval)
1 How has your health been in the last week compared with others of your own age?	Much better	6(6)	7(7)	10(11)	72.3	0.533 (0.394 to 0.673)
	Slightly better	8(9)	9(10)	9(10)		
	Average	54(27)	56(60)	59(63)		
	Slightly worse	11(12)	15(16)	8(9)		
	Much worse	9(10)	4(4)	2(2)		
	No response	6(6)	3(3)	6(6)		
2 How much has the operation improved your day to day life?	Not at all		31(33)	29(31)	46.8	0.346 (0.233 to 0.458)
	Slightly		11(12)	24(26)		
	Quite a lot		6(6)	18(19)		
	A great deal		7(7)	8(9)		
	Too soon to say		30(32)	9(10)		
	Not applicable/no response		9(10)	6(6)		
3 Have there been any changes in symptoms compared with before your operation?	Yes		24(25)	44(47)	52.1	0.369 (0.245 to 0.492)
	No		20(21)	25(27)		
	Too soon to say		38(40)	12(13)		
	Not applicable/no response		13(14)	13(14)		
4 How do you feel now compared with before your operation?	Much better		18(19)	22(23)	58.5	0.402 (0.267 to 0.537)
	Slightly better		12(13)	20(21)		
	About the same		46(49)	43(46)		
	Worse		13(14)	6(6)		
	No response		5(5)	3(3)		

care. Indeed, similar levels of dissatisfaction to those shown in table 3 were reported by patients who were satisfied overall.

Table 4 shows patients' assessments of their health status and surgical outcome. The first question refers to health in the previous week, with a preoperative assessment providing a baseline for the two postoperative assessments. The number of patients describing their health as average or better than average in the previous week increased by 12% (from 72% to 84%) by one month after surgery. Questions 2 to 4 sought patients' views of the extent of change and referred overtly to the operation. Between 40% and 60% of patients considered that they had improved. Respondents who felt that questions 2 and 3 were not applicable to them had undergone procedures for reasons unrelated to symptoms, particularly laparoscopic sterilisation.

There was fair agreement (κ 0.4–0.59) between the responses at one week and one month for question 1 but only poor agreement for the other questions. In questions 2 and 3 respondents were offered the option of "too soon to say," and this disclosed that the main reason for the poor agreement between the response on each occasion was the pronounced difference between the numbers choosing this option at one week and one month.

FINAL QUESTIONNAIRE

Analysis of the responses from the field testing disclosed many questions that could be omitted from the final questionnaire without any loss of insight into patients' opinions. Firstly, some questions covered issues that gave rise to little or no dissatisfaction (cleanliness of the ward, size of the ward, premedication, special needs of patients, difficulty getting medications, and the type and choice of anaesthetic). Secondly, several case mix items were unrelated to satisfaction and effectiveness (marital status, social class, housing tenure, and educational level). Thirdly, some questions duplicated others

without providing any additional insights (speed of recovery and overall results; anxiety/depression and happiness). Finally, some open questions were converted to closed ones in the light of finding frequently occurring answers.

The final questionnaire contained 28 questions (some with multiple parts) covering all relevant aspects of patients' experiences

Topics covered in final questionnaire

Before admission	– written/ printed information about treatment – spoken explanation about treatment
Admission	– procedure/s – length of stay – preoperative worries – spoken explanation about treatment – written/printed information about treatment – amount of warning about discharge time – satisfaction with 17 specific aspects of care
After discharge	– pain during first 24 hours – medical complications – time taken convalescing – change in symptoms (where applicable) – anxiety since operation – activities of daily living – effect of operation on day to day life – speed of recovery – readmission – use of ambulatory and domiciliary services – use and sufficiency of lay care
Overall	– person most helpful in explaining treatment – amount of information provided – recommendation to a friend
Personal	– age, sex, ethnicity – living companions

(box). All the questions had precoded answers and, when appropriate, the option for adding an alternative answer. For example, the answer to the question of which operation a respondent underwent included 20 procedures carried out in day surgery. Respondents were invited to offer additional comments in open questions at the beginning and the end of the questionnaire. A slightly modified version was provided for patients under 16 years of age. Instructions on how to conduct a survey using the questionnaire were also produced. This included advice on sampling, the need to send reminders to non-responders, and the need for at least 200 respondents.

Discussion

A single, short questionnaire for assessing patients' experiences of day surgery was successfully developed. This project confirmed several methodological findings that have previously been reported.

Firstly, an acceptable response rate could be obtained despite the minor nature of the intervention the patients had undergone. The final questionnaire was expected to achieve a higher response rate than the 50% obtained in field testing the draft versions for five reasons: patients would receive only one questionnaire rather than the three sent during field testing; the final version was less than half the length of the drafts and designed and printed in a more attractive style; some potential categories of non-responders could be avoided – namely, those whose operations have been delayed and those who have changed address – and the questionnaires would be administered by the patient's hospital rather than a distant research team. It is therefore anticipated that a response rate of at least 65% could be achieved with the final version of the questionnaire.

Secondly, although response rates can be enhanced by sending one reminder, there was no advantage in sending a second questionnaire with the reminder.

Thirdly, if patients are to be followed up only once then it should not be as early as one week after surgery as they often do not have clear views of the outcome then. This has to be balanced against the likelihood that the later the questionnaire is completed, the greater the chance that patients may have forgotten about aspects of the process of care they received. We therefore suggest that the questionnaire be administered about three weeks after surgery.

Fourthly, despite expressing satisfaction overall with their care some patients were dissatisfied with specific aspects, and therefore both general and specific questions need to be included.

Finally, the recommendation of a sample size of 200 represents the usual compromise between what is desirable and what is practicable and efficient, given diminishing returns on effort; it would take nearly twice

this sample size to detect a difference between 30% and 40%, for example. Of course, there are questions about whether the use of sampling theory is appropriate in this context. The theorist would question whether a consecutive series of patients can be regarded as a random sample. On the other hand we may be concerned about the views of a particular set of patients per se, rather than as a basis for inference about a larger group, in which case the survey can be treated as a census and the results as exact. And in many cases the decision about whether or not to intervene will depend to only a limited extent on the precision of estimates of the scale of a problem.

The final version of the questionnaire was published by the Audit Commission of England and Wales in 1991 and made available to hospitals and health authorities throughout Britain. To facilitate its uptake and use computer software was produced to enable local users to process and analyse their survey results. The development of this software and the establishment of a comparative audit system are described in the following paper.

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