Do early and late responders to a patient experience survey differ?

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# Introduction

The national patient survey programme was first proposed in the UK in The NHS: Modern, Dependable (1997) as a way of assessing patients’ experiences of care and how they change over time. The proposed survey would be part of a more general commitment to make the NHS more responsive to patients. The reasoning was—and still is—that if hospital Trusts are given information about how patients evaluate the quality of the care they received as in-patients, they will be able to respond to any identified shortcomings, leading to a general improvement in the quality of care.

The first Trust-based national survey of adult in-patients was conducted in 2001 when each hospital Trust in England was asked to conduct a postal survey of 500 patients using a questionnaire designed to evaluate the perceived quality of, among other things, a patient’s access to information, the quality of communication with the patient by clinical staff, and relationships between clinicians. Since the first survey was reported (Bullen and Reeves 2002), inpatient surveys have been repeated almost every year. They are a potentially important resource for NHS Trusts as they provide information on experiences of care from consecutive samples of recent patients. However, the utility of the surveys depends partly on the representativeness of those who respond. A number of studies have reported that response rates to postal surveys have declined in recent years 1,2 and the NHS inpatient survey is no exception. In 2002, the response rate was 64 per cent, but this had declined to 52 per cent by 2009.

As low response rates are a potential threat to the representativeness of surveys, the Trusts are required to adopt a methodology that attempts to increase response rates by sending a reminder letter and then a second reminder with a duplicate questionnaire to non-responders. Most Trusts sent out a reminder around 21 days after the first questionnaire and a second questionnaire around 21 days after the reminder. Response to the first mailing without the need for a reminder in 2009 was 41 per cent, so the reminder and second questionnaire added eleven per cent to that initial response. The purpose of this paper is to see if there are significant differences between early and late responders, information that could be used to determine whether the expense of carrying out repeat mailings is justified.

# Previous research

A number of papers have reported a significant association between whether a patient was an early or late responder and one or more outcomes of interest3,4; as many (if not more) reported no significant associations5,6. Of the papers that did report a relationship, early respondents had a tendency to be more positive and those who were older and female were more likely to respond earlier1. Some papers have argued that response rates are important in ensuring that survey results are unbiased and that attempts to increase rates with reminders or incentives are valuable. The value added by increasing response rates through either method is an ongoing debate.

To conclude, the effect of patient survey response time has been discussed in multiple studies. Though some significant relationships have been found, these are inconclusive and do not appear to have been applied to the National Patient Survey Programme. Further study is needed to test for significant associations between early and late responders and reported outcomes, adjusting for demographic and other confounding factors such as trust type and location. Findings could inform more appropriate ways of following up non-responders, analysing these data to make them more useful for service providers and practitioners, and improving the survey process.

# Methods

This study uses the 2009 national inpatient survey. Questionnaires were sent to 137,360 patients, of whom 69,348 returned usable responses. Excluding undelivered questionnaires and deceased patients gives a response rate of 52 per cent. We used two dependent variables. The first was the time in days from the dispatch of the first mailing until the receipt of a response from the surveyed patient. The response time was measured either from the time of the first mailing or from the time of the most recent mailing. Where no questionnaire was returned we use the date on which the latest questionnaire was received as the censoring time. The second dependent variable was an indicator of whether a response was received before a reminder was sent out or not.

The duration dependent variables were analysed using accelerated failure time regression assuming a hazard rate with a log-logistic distribution. This distribution was chosen as non-parametric estimates of the hazard rate showed a clearly non-monotonic form, as indeed would be expected. Robust standard errors that account for clustering within trusts were used. Binary logistic regression with random intercepts was used for the analysis of the binary dependent variable.

The key explanatory variable was the patient’s response to the question “Overall, how would you rate the care you received?” Responses to this variable are shown in table 1. We can see that a large majority (79.3%) rated their care to be at least very good. We therefore divided responses to this question into three categories: Excellent, Very Good, and Other.

We also controlled for other factors that previous research has suggested may be associated with satisfaction with care. These factors were age, sex, length of stay in hospital, and whether the person was admitted as an emergency or not.

# Results

Table 2 shows descriptive statistics for the key variables. We can see that there is a significant association between satisfaction with care, age, sex, whether an emergency admission, and length of stay with whether a patient replied after the first or subsequent mailing. Patients who rated their care as “Excellent” were more likely to respond to the first mailing than those who rated their care to be “Very Good” or worse. On the other hand, those patients who rated their care as worse than “Very Good” were more likely to respond to the second reminder. This suggests already that the repeated mailings are fulfilling a worthwhile function. We can also see that in the tables that those who responded to the first mailing were more likely to be older, male, have had an emergency admission and had a shorter stay in hospital than those who responded after the first or second reminder.

Figure 1 shows how the response rate changes over time, with the most common times of the first and second reminders shown as vertical lines. Of the questionnaires that were returned, 63.5 per cent were received before the first reminder was sent. A further 17.2 per cent were received before the second reminder was mailed, with the rest arriving after that.

The first column in Tables 3 and 5 show differences of about 3.4 days in response times of the most and least satisfied patients, with the least satisfied patients taking longer to reply. However, when we analyse response times from the most recent mailing these differences become much smaller. This suggests that the key issue is not the length of time that patients take to respond, but whether or not they respond to the initial mailing or only reply after receiving one or two reminders. In part this may be an artefact of the data, as there is much less variation in these response times given the relatively short times between the mailings. Presumably some of the people who responded after the second or third mailings would have replied to the original questionnaire without having a reminder, but such long response times are lost in these analyses

We therefore carried out two sets of logistic regressions designed to estimate the probability that a survey respondent will reply within fourteen days of receiving the first mailing, and the probability that they respond before the first reminder is sent out, respectively. These results are shown in Table 6; they show a significantly higher probability of respondents who were less happy with their care replying after at least the first reminder was received. Predicted probabilities are shown in Table 7.

# Conclusion

In the past, some have questioned whether or not repeat mailings are important. For example, ethics committees have been reluctant to give their approval for repeat mailings. This paper shows that there is a relationship between a patient’s overall satisfaction with their care and whether the patient responds to a first or subsequent mailing. Less satisfied patients are more likely to fail to respond to the initial mailing, but significant numbers of them do respond to subsequent reminders. This demonstrates that repeat mailings are very important to reduce response bias in patient surveys.

# References

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# Figures

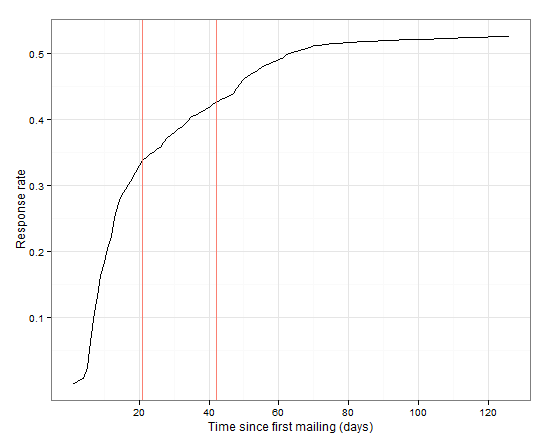


Figure . Response rate increases over time.

# Tables

Table . Responses to the question: "Overall how would you rate the care you received?"

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Excellent | Very good | Good | Fair | Poor |
| 30038  (44.7%) | 23228  (34.6%) | 8821  (13.1%) | 3532  (5.3%) | 1527  (2.3%) |

Table . Descriptive statistics

|  |  |  |  |
| --- | --- | --- | --- |
| Quality of care | Replied to 1st mailing | Replied after 2nd or 3rd mailing | Total |
| Excellent | 20043  (67.2%) | 9804  (32.8%) | 6756 |
| Very good | 14449  (62.6%) | 8622  (37.4%) | 11280 |
| Other | 7950  (57.8%) | 5803  (42.2%) | 20169 |
| Total | 42442  (63.7%) | 24229  (36.3%) | 66671 |
| Pearson chi-square: 371.7, df: 2, p < .05 | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Age group | Replied to 1st mailing | Replied after 2nd or 3rd mailing | Total |
| 16-35 | 3295  (48.8%) | 3461  (51.2%) | 6756 |
| 36-50 | 6279  (55.7%) | 5001  (44.3%) | 11280 |
| 51-65 | 12685  (62.9%) | 7484  (37.1%) | 20169 |
| 66+ | 27614  (63.7%) | 15757  (36.3%) | 43371 |
| Total | 49873  (61.1%) | 31703  (38.9%) | 81576 |
| Pearson chi-square: 720.2, df: 3, p < .05 | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Replied to 1st mailing | Replied after 2nd or 3rd mailing | | Total | |
| Female | 23477  (63.2%) | 13690  (36.8%) | | 37167 | |
| Male | 20279  (64.0%) | 11408  (36.0%) | | 31687 | |
| Total | 43756  (63.5%) | 25098  (36.5%) | | 68854 | |
| Pearson chi-square: 5.11, df: 1, p < .05 | | | | | |
|  |  | |  | |  |
|  | Replied to 1st mailing | | Replied after 2nd or 3rd mailing | | Total |
| Emergency | 19705  (65.3%) | | 10465  (34.7%) | | 30170 |
| Planned | 22684  (62.5%) | | 13617  (37.5%) | | 36301 |
| Total | 42389  (63.8%) | | 24082  (36.2%) | | 66471 |
| Pearson chi-square: 56.9, df: 1, p < .05 | | | | | |

|  |  |
| --- | --- |
|  | Length of stay (days) |
| Replied to 1st mailing | 6.14 |
| Replied after 2nd or 3rd mailing | 6.65 |
| *t* test: 6.20, df: 63117, p < .05 | |

Table . Log-logistic regression estimates. The first column is time from first mailing regardless of when received, others time from most recent mailing. (Robust standard errors in parentheses)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | All replies | First Mailing | Second mailing | Third mailing |
| Intercept | 2.68\*  (.020) | 2.26\*  (.021) | 2.09\*  (.020) | 2.28\*  (.018) |
| Very Good | .098\*  (.009) | .028\*  (.007) | -.006  (.017) | .010  (.012) |
| Other | .208\*  (.013) | .047\*  (.011) | .011  (.019) | .049\*  (.015) |
| Scale | .481 | .256 | .381 | .347 |
| N | 67019 | 42433 | 10714 | 12622 |
| Log likelihood | -269919 | -122899 | -32881 | -41055 |

Table . Predicted response times in days, based on the estimates shown in table 3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | All replies | First Mailing | Second mailing | Third mailing |
| Excellent | 14.5 | 9.56 | 8.10 | 9.79 |
| Very Good | 16.0 | 9.83 | 8.05 | 9.89 |
| Other | 17.9 | 10.0 | 8.19 | 10.3 |

Table . Log-logistic regression estimates. The first column is time from first mailing regardless of when received, others time from most recent mailing. (Robust standard errors in parentheses)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | All replies | First Mailing | Second mailing | Third mailing |
| Intercept | 2.90\*  (.024) | 2.29\*  (.024) | 2.09\*  (.033) | 2.37\*  (.026) |
| Very Good | .088\*  (.009) | .026\*  (.007) | -.007  (.018) | .011  (.012) |
| Other | .169\*  (.011) | .040\*  (.011) | .006  (.020) | .039\*  (.014) |
| Emergency admission | .047\*  (.014) | .006  (.014) | -.004  (.017) | .002  (.015) |
| Age 36-50 | -.132\*  (.016) | -.025\*  (.011) | .023  (.027) | -.047\*  (.020) |
| Age 51-65 | -.265\*  (.017) | -.040\*  (.011) | -.015  (.032) | -.085\*  (.020) |
| Age 66+ | -.333\*  (.018) | -.041\*  (.014) | -.036  (.031) | -.119\*  (.019) |
| Log length of stay (days) | .010\*  (.005) | .006  (.005) | .011  (.008) | .004  (.006) |
| Male | .009  (.008) | -.018\*  (.006) | .015  (.015) | -.021  (.011) |
| Scale | .477 | .256 | .381 | .346 |
| N | 64847 | 41181 | 10334 | 12267 |
| Log likelihood | -260414 | -119231 | -31732 | -39410 |

Table . Odds ratios from random intercept logistic regression using whether person responded within 14 days of first mailing (“Early”) or whether responded to first mailing (“First”) or after receiving a reminder. (Standard errors in parentheses)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Early | First | First |
| Intercept | 1.01  (7.25) | .500\*  (.024) | .745\*  (.112) |
| Very Good | 1.20\*  (.121) | 1.21\*  (.118) | 1.19\*  (.129) |
| Other | 1.44\*  (.086) | 1.46\*  (.084) | 1.37\*  (.099) |
| Emergency admission |  |  | 1.08\*  (.239) |
| Age 36-50 |  |  | .807\*  (.129) |
| Age 51-65 |  |  | .626\*  (.043) |
| Age 66-80 |  |  | .541\*  (.027) |
| Log length of stay (days) |  |  | 1.00  (1.82) |
| Male |  |  | 1.03  (.525) |

|  |  |  |  |
| --- | --- | --- | --- |
| SD of intercept | .773 | .389 | .379 |
| N | 67028 | 66671 | 64512 |
| Log likelihood | -44032 | -42872 | -41125 |

Table Using middle column of Table 6, predicted probabilities of being a late responder for different levels of overall satisfaction with care.

|  |  |  |
| --- | --- | --- |
| Excellent | Very Good | Other |
| .333 | .377 | .422 |