Cost effectiveness of a prize draw on response to a postal questionnaire: results of a randomised trial among orthopaedic outpatients in Edinburgh

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Postal questionnaires are frequently used in health services research and epidemiological studies. Poor response rates, however, reduce statistical power, may introduce bias, and limit generalisability. Many factors have been investigated in attempts to improve returns,¹⁻³ and we report the results of a randomised trial to assess the cost effectiveness of a prize draw on response rates during a longitudinal study.

Methods

The people eligible had already responded to at least one 14 page postal questionnaire relating to their attendance at the outpatient department of an Edinburgh orthopaedic unit. Those due to receive follow up questionnaires between March and December 1995 were randomly assigned (using a random number table) either to be aware or to be unaware of a monthly prize draw offering a 25 gift voucher. Based on pre-existing response rates, we calculated that a sample size of 1300 would demonstrate a 10% absolute difference (0.01 significance, 90% power), and have an evens chance of identifying a 5% difference (0.05 significance). Only those individuals who had been made aware of the incentive, and had returned a completed questionnaire were entered into the draw.

Participants received a 15 page follow up questionnaire, a hand-signed covering letter, and a second class business reply envelope. The follow up period was three or 12 months after their first outpatient appointment. Questions related to health status and satisfaction with the orthopaedic referral; most required responses on a Likert scale. The cover displayed

the project title, the participant's project number, contact information, and an assurance of confidentiality. Postcard reminders were sent to non-responders after 10 days and second reminders after three weeks; these also reminded those aware of the draw of the incentive scheme. The trial had approval from the local research ethics committee.

Results

Over the nine month period, 1307 patients were eligible for participation. Altogether 654 were randomly assigned to the group aware of the draw and 653 to the group that remained unaware. In the draw-aware group 461 (70.5%) responded compared with 430 (65.8%) in the group unaware of the draw (difference 4.7%; 95% CI -0.3%, 9.7%; $p=0.07$).

Costs for the two groups are shown in table 1. Overall, the group aware of the draw cost £187.18 more than the control group, largely due to the purchase of gift tokens, and this was equivalent to approximately £6 per extra return (lower 95% CI £2.53). However, the cost per extra return is very dependent on the number of individuals made aware of the prize and on the frequency with which the draw takes place. This means for example that, assuming the effect was true, doubling the number of entrants to each monthly draw would reduce the additional cost per extra return to £2.40 (lower 95% CI £0.77). Alternatively, halving the frequency of the draw would have the same effect.

Discussion

The trial suggests that the draw led to about one extra response for every 20 people made aware of the draw. The results are not conclusive, however, and are compatible both with no effect and with a near one in 10 extra responses.

Entry into a prize-draw is a marketing technique that has not been widely used in health research. We were concerned that it might generate a certain cynicism amongst recipients, but we received no direct complaints about the incentive. One person asked not to be included in the draw and another requested that, if successful, the prize be donated to the hospital. All participants had previously returned at least one questionnaire; it is possible that the effect of an incentive on this group is an under-

Table 1 Costs comparison between the groups aware and not aware of the prize draw.

	Costs (£)		Cost difference	
	Aware of draw (n = 654)	Not aware of draw (n = 653)	Observed difference (n = 31)	Lower 95% CI difference* (n = 64)
First reminder	107.50 (n = 500)	113.52 (n = 528)	-6.02	-12.04
Second reminder	192.78 (n = 252)	230.27 (n = 301)	-37.87	-64.26
Return postage	89.90 (n = 461)	83.85 (n = 430)	6.05	12.87
Gift vouchers	225.00		225.00	225.00
Total	615.18	428.02	187.18	161.77

* The upper 95% CI costs are not shown; the associated CI for the proportional difference is negative.
Notes: Fixed costs are not included. Costs for the first reminder include preprinted postcard and postage. Costs for the second reminder include a printed questionnaire, envelope, postage and business reply envelope. The return postage rate includes a £0.05 premium for Royal Mail business reply services.

estimate of its potential effect on subjects generally. However, a previous randomised trial of a cash-prize lottery in a general population health survey (sample size=2452) also failed to show an effect,⁴ although a small non-randomised study offering a restaurant meal suggested that response rates were increased.⁵

We conclude from our study that the cost effectiveness of this approach is unproven but our estimate is that the prize draw cost approximately £6 for one extra response from every 20 people. This incentive may have in-

creased cost effectiveness with higher numbers of participants or reduced draw frequency.

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