

The effect of cash and other financial inducements on the response rate of general practitioners in a national postal study

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SUMMARY

Background. Low response rates are acknowledged as a potential source of bias in survey results. Response rates are a particular problem in surveys of GPs. Thus, the methods used to encourage response to mailed surveys and the influence of inducements in maximizing response rates are fundamental issues to be examined when addressing the problem of response bias.

Aim. To increase the overall response rate to a national study of GPs and to explore the effects of financial and non-financial inducements on response rates.

Methods. Two mailing waves of a postal questionnaire to a 20% random sample of all GPs in England and Wales had achieved a 33% response rate. For the third mailing wave, the non-responding GPs were then divided into a control group, a group who were offered a donation to charity to complete the questionnaire and a group who were offered cash. The charity and cash groups were further subdivided into £5 and £10 groups to assess the effect of the size of the inducement offered. For the control group, a fourth wave was sent the offer of a £5 or £10 incentive.

Results. Response was positively affected by the offer of an inducement. Cash, however, had a more substantial effect than the offer of a donation to charity. Older GPs were less likely to participate overall, whereas male GPs were more likely to respond to a cash inducement. Doctors who had seen more patients were less likely to reply earlier and were more likely to respond to the offer of cash.

Conclusions. Primary care is going through many changes, some of which have increased the workload of the GP. It may now be that, to achieve the response rates needed to validate policy-related research, the offer of inducements will become a necessary part of the research process.

Keywords: surveys; postal questionnaires; financial incentives; general practitioners.

Introduction

LOW response rates have been acknowledged as potential sources of bias upon survey results,¹⁻³ making generalization

from the research findings to the wider population difficult.^{4,5} Consequently, the methods used to encourage responses to surveys and the influence of inducements used to maximize response are fundamental issues to be addressed when considering the potential for response bias in any large survey.

The effects of length of questionnaire,⁶ inclusion of prepaid postage envelopes⁷⁻⁹ and the colour or design of questionnaires¹⁰ have been considered as factors explaining participation in surveys. The offering of incentives, such as donations to charity¹¹ and financial rewards¹¹⁻¹⁵ has been found to be generally useful in increasing participation in mailed surveys. Cash inducements^{11,12} in particular, produce significantly higher response rates than other non-cash inducements.

In 1995, a 20% random sample of all general practitioners in England and Wales was surveyed about work with alcohol-misusing patients using a postal questionnaire distributed by A Deehan and L Templeton. Two mailings achieved a 33% response rate. The method for subsequent mailings was modified to include various financial inducements with the aims of increasing the overall response rate and of exploring the effect of different types of inducements on response rates. This paper is an account of the methods used and the effects of three inducements on the response rate to the survey.

Methods

Sampling procedures

The study population was the 27 801 unrestricted principals on the National Health Service Executive database for England and Wales on 1 April 1993. A 20% random sample was drawn from this database (5560 doctors), stratified by family health services authority (FHSA) and the number of partners in the practice.

Description of respondents

The majority of respondents were male (73%) and over 40 years of age (54%). Most were partners in a practice of between two and five doctors (66%). Seven per cent were single-handed GPs.

The postal questionnaire

A four-page closed-form questionnaire collecting information on clinical work with alcohol-misusing patients and attitudinal data was mailed to a targeted GP by name, with a prepaid return envelope. Two mailing waves were made. (The results from the main study are reported elsewhere.¹⁶)

The third mailing

The first two mailings yielded a 33% response rate. The remaining GPs (i.e. the non-responders) were then randomly assigned to five inducement or non-inducement groups and mailed for a third time. A random third of the GPs were offered no inducement and became the control group. The remainder were randomly assigned to personal reward or charity donation groups and were further subdivided into different levels of inducement (£5 or £10).

This method allowed the effect of different types of inducement (cash or charity donation) on response rate to be measured against a control group which had received no inducement to

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respond to the third mailing; it also allowed the effect of the size of the financial inducement to be measured.

The fourth mailing to the control group

In order to maximize response for the main study, the non-induced non-responders in the control group of the third wave were targeted a fourth time and offered a cash payment (£5 or £10). Thus, the effect of the levels of financial inducement could be measured over two waves.

Statistical procedures

Analyses of the impact of the relevant factors on the return rates are presented as the odds of return for each group. Chi-square tests of significance between groups and *t*-test comparison of means are also used.

Results

First, a comparison was undertaken of the effect of inducements on the response rate, comparing non-induced mailing waves with induced waves. In the second section, comparison focused on the responders and non-responders to the different mailing waves of the study to assess whether or not those who responded to inducements differed significantly from non-induced responders. Finally, the level of activity with alcohol-misusing patients of responders to the various inducements was compared.

The effect of offering inducements

Response rates decreased by almost a half from the first to the second wave. One would expect this decrease to continue through a third wave. However, the third wave response increased when a cash inducement was offered and almost maintained the response rate of the second wave when a charity donation was offered. When no inducement was offered, response rates fell, but only by a third (Table 1).

The likelihood of a reply varied with the type of financial inducement offered. A charity donation of £5 increased the return rate by a factor of 1.12, whereas the offer of a £10 donation to charity increased these odds slightly more, by a factor of 1.19. However, a substantially greater return rate occurred when a cash payment was offered. The effect of a £5 cash payment almost doubled (2.22) the effect of a £5 donation to charity (1.12). A £10 payment nearly trebled (3.14) the £10 charity

effect (see Table 1). The cash inducements in the fourth wave achieved only two-thirds of the return rate achieved by cash inducements in the third wave (0.134 for a £5 inducement and 0.188 for £10 inducement; Table 2), as expected since fourth wave targets had not responded to three previous mailings. However, there was an increase in the return rate of these fourth wave groups over all the other third wave groups. With no inducement in the third wave, the return rate was only 0.093; and compared even with the return achieved for those targeted with charity donations in the third wave (£5 donation, 0.104, and £10, 0.111), these fourth wave levels were better.

Cash payments increased the return rate over both charity inducement and non-inducement groups (chi-square = 33.55, $P < 0.0001$, and chi-square = 46.69, $P < 0.0001$, respectively). Response was particularly affected by the amount of cash offered (chi-square = 9.127, $P < 0.005$). This relative effect of offering £10 and £5 payments remained almost constant over the third (1.42) and fourth waves (1.40).

Respondent characteristics

The respondents in the inducement groups were more likely to be men than in the non-inducement groups (chi-square = 5.99, $P < 0.05$). Men were more likely to respond to a £10 rather than a £5 inducement (chi-square = 7.604; $P < 0.005$) (Table 3). The £10 groups disproportionately consist of men (Table 3) (chi-square = 5.30, $P < 0.05$). There is an age difference between responders and non-responders but no significant difference in age by response to inducement ($t = 1.38$, $P = 0.168$) or to level of inducement ($t = 0.66$, $P = 0.506$).

The age difference between the non-responders and the responders in the inducement waves was significant for two groups: those who had been offered £10 in the third and fourth wave. In both groups, non-responders were significantly older than responders ($t = 2.56$, $P < 0.01$, third wave; $t = 3.13$, $P < 0.005$, fourth wave). Among the other inducement groups, the same age difference existed, although it was non-significant.

This difference in age between responders and non-responders to the £10 inducement could be a reflection of the general problem in the first and second mailings in which non-responders were older than responders. Even £10 did not increase participation among older GPs (Table 3); it produced larger age gaps between responders and non-responders. However, the overall age difference between responders and non-responders

Table 1. Response rate and the effect of offering inducement during the third wave.

	No. mailed	Percentage returned (number)	Odds of return	Effect over no inducement
First wave	5375	23.3 (1254)	0.304	–
Second wave	4064	12.8 (519)	0.147	–
Third wave: no inducement	1188	8.5 (101)	0.093	–
Third wave: £5 charity donation	607	9.4 (57)	0.104	1.118
Third wave: £10 charity donation	578	10 (58)	0.111	1.193
Third wave: £5 payment	613	17.1 (105)	0.206	2.215
Third wave: £10 payment	598	22.6 (135)	0.292	3.139

across all of the mailing waves was small, only two years.

Practice characteristics

Non-responders were more likely to be attached to practices with fewer partners (Table 3). Information about practice health promotional banding and fundholding status was collected (Table 4), and responders in the earlier waves were more likely to be from practices banded at the highest level (with responsibility to conduct alcohol consumption screening), while respondents from fundholding practices were more likely to reply to later waves.

Number of alcohol-misusing patients identified

The mean number of alcohol-misuse patients seen fell over the three waves of non-inducement responses (test for linearity: $f = 5.08$, $P < 0.05$), but increased in the later inducement waves, particularly in the cash-paid fourth wave, when respondents were seeing more patients misusing alcohol than in previous waves ($t = -2.49$, $P < 0.05$). The median number of alcohol-misuse patients seen changed less than the mean number over successive mailings, suggesting that the increase was among doctors seeing larger numbers of patients. Fourth-wave doctors, on average, were seeing a greater mean number of patients in the preceding four weeks (Table 5) than responders in the non-induced waves (chi-square = 5.147, $P < 0.05$).

Table 2. The effect of offering inducement during the fourth wave.

	No. mailed	Percentage returned (number)	Odds of return
Fourth wave: £5 payment	534	11.8 (63)	0.1338
Fourth wave: £10 payment	536	15.8 (85)	0.1876

*The total number mailed in the fourth differs from the total number of non-responders in the third wave no-incentive group because of the subtraction of GPs who had retired, moved or were not contactable.

Table 3. Profile of responders and non-responders by wave.

	Responders % Male	Non-responders % Male	Responders Mean Age	Non-responders Mean Age	Responders Mean no. of partners in practice	Non-responders Mean no. of partners in practice
First wave	72.9	74.8	42.05	44.18	4.4	3.9
Second wave	70.1	75.5	42.41	44.45	4.4	3.9
Third wave: no inducement	72.4	76.8	43.38	44.88	4.5	3.8
Third wave: £5 charity donation	72.4	75.1	44.81	44.83	4.3	3.9
Third wave: £10 charity donation	86.4	73.9	42.11	44.06	4.4	3.9
Third wave: £5 payment	68.2	75.3	42.83	44.56	4.4	4
Third wave: £10 payment	80.3	75.7	42.31	44.81	4.6	3.8
Fourth wave: £5 payment	77.6	76.1	43.5	44.92	3.9	3.9
Fourth wave: £10 payment	81.7	76.5	42.04	45.55	4	3.8

Level of activity with all patients

The number of alcohol-misuse patients seen by the respondents and the number of all patients seen in the past four working weeks were used as indicators of how busy the GPs were. This trend was examined in more detail by analysing the proportion of doctors at or above the overall 75th percentile (more than 700 patients in a month) by wave (Table 5). The responders in the cash payment waves were more likely to be seeing 700 or more patients in the month: 27% of the £5 payment third wave, 29% of the £10 payment third wave, 35% of the £5 payment fourth wave and 36% of the £10 payment fourth wave. Differences at the third wave were not significant between the induced and the non-induced groups.

Discussion

Response was increased by offering inducements. Donations to charity increased the likelihood of a response by a small degree only; and the amount offered made little difference to the likelihood of response. The offer of a cash inducement increased the response more substantially. Men were more likely to participate in the study after being offered a cash inducement — even at the lower level. The difficulty of encouraging older GPs to respond (seen in the early mailings) continued throughout the later waves. This was previously noted as a problem of GP surveys.¹⁶

Table 4. Type of practice.

	Respondents in a level 3 banded practice (%)	Respondents in a fundholding practice (%)
First wave	84.2	31.4
Second wave	85.5	31.6
Third wave: no inducement	76	36
Third wave: £5 charity donation	80.7	33.3
Third wave: £10 charity donation	81	36.2
Third wave: £5 payment	86.7	28.6
Third wave: £10 payment	79.3	43
Fourth wave: £5 payment	84.1	38.1
Fourth wave: £10 payment	77.6	40

Table 5. Trends in alcohol misuse patients detection during past four working weeks and total patients seen in past four weeks by WAVE.

	Mean no. of patients detected (standard deviation)	Median patients detected	Mean (standard deviation) total patients seen in past month	Respondents seeing more than 700* patients a month (%)
First wave	3.45 (4.49)	2	536.00 (242.1)	25.7
Second wave	3.06 (4.66)	2	543.00 (266.9)	25.7
Third wave No inducement	2.66 (2.90)	2	548 (248.3)	23.0
Third wave £5 charity donation	1.95 (2.63)	1	494 (238.6)	19.6
Third wave £10 charity donation	1.95 (1.89)	2	550 (202.8)	31.4
Third wave £5 payment	2.60 (3.39)	2	551.00 (275.2)	26.7
Third wave £10 payment	2.85 (4.48)	2	556.84 (234.3)	29.4
Fourth wave £5 payment	4.08 (6.9)	3	582.5 (271.7)	35.0
Fourth wave £10 payment	3.27 (5.88)	2	583.5 (276.7)	36.1

*This is the seventy-fifth percentile (i.e. 25% of the GPs had seen 700 patients or more in the past month).

Earlier replies to the survey were likely to emanate from practices banded at the highest health promotion level. Response is more likely if the targeted individual has an interest in the area under investigation, which may explain the greater proportion of high-banded practices. Doctors in practices banded at the highest level would at least be expected to be more aware of alcohol misuse (as it is part of band 3 requirements to screen for such problems). Doctors seeing more patients in the previous month were less likely to reply earlier and were also more likely to respond to a payment. This may partly reflect doctors reporting a heavier workload since the introduction of the 1990 NHS general practitioner contract.¹⁷

Knowledge of doctors' attitudes, beliefs and behaviour is essential if more effective public health policies are to be developed in the future. This survey was the first of its kind in England and Wales and was mailed at a particularly important time in the development of primary care — a new GP contract placing emphasis on the need for health promotional activities within primary care having been recently introduced. This may have affected the type of doctor who responded to the study, as subject matter can affect response rates.¹⁸ The low response rate and increase in participation following the offer of inducements may reflect the increasing extent to which doctors are the subject of mailed surveys, forcing busy doctors to be selective about the subject matter to which they respond and about the value of the time they give to such work. On the other hand, the offer of an incentive might reduce the response rates in the later waves, as some doctors may be against accepting inducements. These results suggest that, in order to achieve reasonable response rates to large-scale surveys of GPs, serious consideration must now be given to the possible future necessity of offering inducements.

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