Do GPs working in practice with high or low prescribing costs have different views on

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SUMMARY

Background. *In a previous study we found that a minority of general practitioners (GPs) had different views to health authority advisers on a number of prescribing cost issues. However, there were few differences between subgroups of GPs. We hypothesised that subgroups that might show differences were GPs from practices with either high or low prescribing costs.*

Aim. *To assess differences in views on prescribing cost issues between GPs working in practices with either high or low prescribing costs.*

Method. *Using PACTLINE data, prescribing costs were obtained for general practices within the Trent Region for the financial year 1996 to 1997. A questionnaire was sent anonymously to 340 GPs working in those practices with high prescribing costs, and to 322 GPs working in practices with the lowest prescribing costs.*

Results. *A total of 216 (63.5%) GPs from high-cost practices and 194 (60.2%) from low-cost practices responded. There were statistically significant differences between the two groups on seven out of 22 statements. However, when the confounding effect of fundholding was taken into account, significant differences were found for just three statements and each of these related to substitution with comparable but cheaper drugs.*

Conclusions. *GPs working in practices with either high or low prescribing costs had different views on a number of statements concerning substitution with comparable but cheaper drugs. When encouraging GPs to control their prescribing costs, a different approach may be required for doctors in some high-cost practices.*

Keywords: *prescribing costs; general practitioners; GPs' views.*

Introduction

IN 1994, the Audit Commission stated that the National Health Service (NHS) could save £425 million if all general practitioners (GPs) were to prescribe in a similar way to those in 50 selected practices.[1] Areas of prescribing where savings could be made without detriment to patients were suggested. We conducted a national survey[2] to determine the views of GPs and health authority advisers on a number of statements based on suggestions made by the Audit Commission. We found that, for most statements, GPs had similar views to advisers, which were generally favourable towards the types of suggestion made by the Audit Commission. However, the views of a minority of GPs led to many statistically significant differences between GPs and advisers. We analysed subgroups of GPs to try to determine factors that might explain differences in their views. For most statements, factors such as age, sex, qualifications, fundholding status, dispensing status, and whether the practice had developed a formulary did not influence the responses. We discussed our results with a number of health authority advisers and it was suggested that the differences might come from GPs with relatively high prescribing costs. Therefore, we decided to explore this issue further.

There are many influences on GPs' prescribing costs;[3-12] however, the importance of doctors' views on prescribing cost issues is not known. Previous studies have suggested that doctors' beliefs and attitudes may help to predict their prescribing behaviours,[13,14] and one model showed up to 74% of drug choices (in irritable bowel syndrome) could be predicted by attitudes towards the prescribing of a drug: values assigned to personal experiences of prescribing drugs and subjective norms.[15] Given the suggestion that some GPs make inappropriately expensive drug choices,[1] it is important to consider whether doctors in practices with relatively high prescribing costs have views that are unfavourable towards suggestions for cost control.[1] If this were the case, special strategies might be required to encourage these doctors to control their costs.

The main objective of the present study was to determine whether GPs from practices with either high or low prescribing costs had different views on issues concerning prescribing costs.

Method

The sample was obtained from 619 general practices in the Trent region of England that had been established for at least six years. From these practices, a sample with either high or low prescribing costs was obtained in the following manner.

Using PACTLINE data, we calculated the net ingredient cost per prescribing unit (NIC/PU) for each practice for the year April 1996 to March 1997 (NIC/PU is a measure of prescribing costs using a denominator that gives a triple weighting to patients aged 65 years and over). The practices were then ranked on this variable so that we could identify those with either high or low costs.

A sample size estimation showed that at least 180 GPs were needed from each group of practices to detect a 25% difference (from 35% to 60%) in agreement to statements, with a power of 80% at the 1% significance level.

In drawing up the sample, we selected sufficient practices from those with the highest and lowest NIC/PU to provide an adequate sample size. Assuming a 60% response rate and an average of 3.6 GPs per practice, we decided to send the questionnaire to GPs in the 100 practices with the highest NIC/PU and the 100 with the lowest NIC/PU. However, we made a number of exclusions for the following reasons.

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First, using figures from the health authorities, we excluded practices that were not in the top and bottom tertiles for NIC/ASTRO-PU (age, sex, and temporary resident originated prescribing unit).[3] This is because we did not want to include practices that had high or low costs simply because of their age–sex structure (the ASTRO-PU takes account of these factors). Secondly, we excluded practices that had changed their list sizes by more than 10% between 1995 and 1996, and 1996 and 1997. This is because there may be a lag between the calculation of prescribing costs and the recording of list size for a practice. Large changes in list size may lead to spurious results.

Following this process we found that the sample contained four times as many dispensing practices in the high-cost group as were present in the low-cost group. In order to counter the potential confounding effect of the views of dispensing doctors,[9] we removed a systematic sample[16] of three out of every four high-cost dispensing practices based on their initial NIC/PU. This meant that the remaining practices came from across the spectrum of high-cost dispensers. The excluded practices were replaced with the highest cost non-dispensing practices that had not been included in the original sample. These practices came from within the top tertile for both NIC/PU and NIC/ASTRO-PU.

We decided to conduct the survey anonymously in order to avoid the selection bias that would have occured if we had written to ask GPs for permission to access their prescribing data. However, although the data on the practices were anonymised, each practice had an individual code (which was used on the questionnaire) and we knew how many GPs worked in each practice. We prepared the correct number of questionnaires for each practice and asked the health authority pharmaceutical advisers to distribute them. The questionnaires were sent to 340 GPs in high-cost practices and 322 in low-cost practices. A repeat questionnaire was sent to the whole sample six to eight weeks afterwards. We were able to identify people who returned two questionnaires on the basis of their practice code, age, and sex. In these cases, only the first questionnaire was analysed.

The questionnare was a shortened version of that used in our previous study.[2] It covered the following themes from the Audit Commission report:[1] 'practice prescribing policies', 'over-prescribed drugs', 'drugs of limited therapeutic value', 'the range of drugs prescribed', 'use of generics', and 'substitution of comparable cheaper drugs'. Responders were asked to rate 22 statements using a five-point Likert scale. The questionnaire also requested information on the characteristics of responders, such as age, sex, fundholding status, dispensing, and whether practices had developed a prescribing formulary.

Analysis

The responses were coded and entered into SPSS for Windows. The chi-squared test was used to investigate differences between GPs working in practices with either high or low prescribing costs (*t*-tests were used for comparing responders' ages, which were normally distributed). Categories from the five-point Likert scale were combined to create a three-point scale. There were only minor differences in statistical results using the two scales. Therefore, for the purposes of clarity, the three-point scale has been presented in this paper, together with the results from the chi-squared test.

We did an ordered logit analysis,[17,18] using LIMDEP 6.0, to determine the effects of potential confounding factors on our results. Fundholding status was found to be an important confounder for some statements, and attention is drawn to this in the presentation of the results.

A significance level of $P<0.01$ has been used in this paper. We acknowledge that some researchers might have chosen a lower *P*-value to take greater account of multiple testing.

Results

A total of 216 (63.5%) GPs from high-cost practices and 194 (60.2%) from low-cost practices responded. The mean age of responders from each group was 43 years (SD = 9.4) and 43.2 years (SD = 9.0) respectively. Other characteristics of responders are shown in Table 1. It can be seen that responders from low-cost practices were more likely to be fundholders or to come from practices that had developed a prescribing formulary. Table 2 shows the characteristics of responders and non-responders, and shows that GPs in high-cost practices were just as likely to respond as those in low-cost practices. GPs from fundholding practices accounted for a disproportionately high percentage of responders.

Table 3 shows the GPs' responses. It can be seen that, according to the chi-squared tests, there were statistically significant

Table 1. Characteristics of responders (n = 410).

Characteristics of responders	Responders from practices with high prescribing costs (%) (n = 216)	Responders from practices with low prescribing costs (%) (n = 194)	Chi-square (df = 2)	P-value
Male	159/215 (74)	141/192 (73.4)	0	0.99
Fundholding	96/216 (44.4)	129/194 (66.5)	20.07	<0.0001
Dispensing[a]	21/216 (9.7)	20/194 (10.3)	0.04	0.84
From a practice that had developed a prescribing formulary	89/215 (41.4)	112/194 (57.7)	13.53	<0.01

[a]The questionnaire was deliberately sent to a similar number of general practitioners from high- and low-cost dispensing practices.

Table 2. Characteristics of responders and non-responders.

Practice characteristics	Responders (%) (n = 410)	Non-responders (%) (n = 252)	Chi-square (df = 1)	P-value
High prescribing cost practice	216/410 (52.7)	124/252 (49.2)	0.76	0.38
Fundholding	225/410 (54.9)	101/252 (40.1)	13.68	<0.001
Dispensing	41/410 (10)	23/252 (8.7)	0.29	0.59

Table 3. Responses of 410 general practitioners to 22 statements on general practice prescribing.

Themes from Audit Commission report and statements used in the questionnaire	Numbers of responses (%)						Chi-square (df = 2)	P-value
	High-cost practice prescribers (n = 216)			Low-cost practice prescribers (n = 194)				
	Agree	Neutral	Disagree	Agree	Neutral	Disagree		
Practice prescribing policies								
1. In my practice there are a number of areas where I will need to increase my prescribing if I am to treat patients properly.	149 (69)	37 (17.1)	30 (13.9)	125 (64.8)	29 (15)	39 (20.2)	2.96	0.23
2. I would be better able to contain my prescribing costs if I had more information on the cost-effectiveness of drugs.	141 (65.3)	47 (21.7)	28 (13)	101 (52.1)	64 (33)	29 (14.9)	8.08	<0.05a
3. I would find it difficult to change a patient's established medication when the reason for the change was to keep down costs.	125 (57.9)	42 (19.4)	49 (22.7)	89 (46.1)	47 (24.4)	57 (29.5)	5.67	.059
4. In my practice, we do not have the time to analyse our prescribing to see whether we can contain costs.	82 (38.1)	51 (23.8)	82 (38.1)	38 (19.7)	35 (18.1)	120 (62.2)	25.15	<0.0001[a]
5. In my practice there is nothing that we could do to contain our prescribing costs without harming patients.	15 (7)	38 (17.7)	162 (75.3)	15 (7.7)	28 (14.4)	151 (77.8)	0.83	0.66
6. If there were better incentives I would be willing to put more effort into trying to control prescribing costs.	95 (44.2)	67 (31.2)	53 (24.6)	90 (46.6)	56 (29)	47 (24.4)	0.29	0.86
7. Using a prescribing formulary can help to control costs without detriment to patients.	158 (73.2)	45 (20.8)	13 (6)	155 (80.3)	29 (15)	9 (4.7)	2.93	0.23
8. The benefits of developing a practice prescribing formulary outweigh the time and effort involved.	104 (48.4)	65 (30.2)	46 (21.4)	110 (57)	48 (24.9)	35 (18.1)	3.04	0.22
9. There is little to be gained from having regular meetings in a practice to discuss prescribing policies.	24 (11.1)	50 (23.2)	142 (65.7)	16 (8.3)	44 (22.8)	133 (68.9)	0.99	0.61
Over-prescribed drugs								
10. Non-steroidal anti-inflammatory drugs (NSAIDs) should be prescribed firstline in the management of osteoarthritis.	39 (18)	47 (21.8)	130 (60.2)	35 (18)	34 (17.5)	125 (64.5)	1.22	0.54
Drugs of limited value								
11. There is no clinical justification for prescribing cerebral vasodilators.	133 (61.9)	64 (29.8)	18 (8.3)	126 (65.3)	51 (26.4)	16 (8.3)	0.59	0.74
12. Topical NSAIDs have an important role in the management of joint pain.	57 (26.4)	60 (27.8)	99 (45.8)	45 (23.2)	39 (20.1)	110 (56.7)	5.28	0.07
13. Cough suppressants are of little clinical value in upper respiratory tract infections.	155 (71.8)	32 (14.8)	29 (13.4)	150 (77.3)	20 (10.3)	24 (12.4)	2.15	0.34
The range of drugs prescribed								
14. To provide patients with adequate choice, GPs need to prescribe from a wide range of drugs within most therapeutic groups.	85 (39.4)	43 (19.9)	88 (40.7)	48 (24.7)	36 (18.6)	110 (56.7)	12.21	<0.01[a]
Use of generics								
15. The vast majority of drugs can be prescribed generically without detriment to patients.	173 (80.1)	19 (8.8)	24 (11.1)	175 (90.2)	13 (6.7)	6 (3.1)	10.79	<0.01[a]
16. Practices should increase generic prescribing wherever this would save money without detriment to patient care.	187 (86.6)	18 (8.3)	11 (5.1)	175 (90.2)	13 (6.7)	6 (3.1)	1.50	0.47
Substitution with comparable but cheaper drugs								
17. SSRIs should not be used as firstline treatment for depression.	34 (15.7)	31 (14.4)	151 (69.9)	62 (32)	34 (17.5)	98 (50.5)	18.46	0.0001
18. Adults with asthma should be given metered dose inhalers as firstline treatment as these are less expensive than other types	111 (51.4)	42 (19.4)	63 (29.2)	110 (56.6)	42 (21.7)	42 (21.7)	3.03	0.22

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Table 3 (continued). Responses of 410 general practitioners to 22 statements on general practice prescribing.

Themes from Audit Commission report and statements used in the questionnaire	Numbers of responses (%)						Chi-square (df = 2)	P-value
	High-cost practice prescribers (n = 216)			Low-cost practice prescribers (n = 194)				
	Agree	Neutral	Disagree	Agree	Neutral	Disagree		
19. The cost of using modified release NSAIDs is justified because they are convenient for patients.	79 (36.6)	65 (30.1)	72 (33.3)	39 (20.2)	63 (32.6)	91 (47.2)	14.56	<0.001
20. GPs should prescribe isosorbide dinitrate rather than isosorbide mononitrate for most patients because it is less expensive.	26 (12.1)	61 (28.2)	129 (59.7)	35 (18.3)	80 (41.9)	76 (39.8)	16.12	<0.001
21. Unless there are contraindications, cimetidine should be used in preference to ranitidine in treating peptic ulcers because it is less expensive.	115 (53.2)	45 (20.8)	56 (26)	134 (69.8)	23 (12)	35 (18.2)	12.04	<0.01[a]
22. Lower cost drugs should be prescribed if they are as safe and effective as higher cost alternatives.	202 (93.5)	10 (4.6)	4 (1.9)	183 (94.3)	8 (4.1)	3 (1.6)	0.12	0.94

[a]Differences between high- and low-cost prescribers were not significant when ordered logit analysis was used to take account of the confounding effect of fundholding status.

differences between high- and low-cost practices on seven of the 22 statements. However, when ordered logit analysis was used to take account of the confounding effects of fundholding status, only three statistically significant results remained. These all came under the heading of 'substitution with comparable but cheaper drugs'. Responders from high-cost practices were more likely to disagree with the statements, 'SSRIs should *not* be used as firstline treatment for depression' (statement 17), and 'GPs should prescribe isosorbide dinitrate rather than isosorbide mononitrate for most patients because it is less expensive' (statement 20). In contrast, responders from low-cost practices were more likely to disagree that 'the cost of using modified release non-steroidal anti-inflammatory drugs is justified because they are convenient for patients' (statement 19).

Discussion

This survey has shown potentially important differences in the views of GPs from practices with high and low prescribing costs concerning substitution with comparable but cheaper drugs. However, before discussing the possible implications of the results, it is important to comment on the questionnaire and the validity and generalisability of our results.

The questionnaire on which this survey was based was originally used on a large random sample of GPs in England and Wales, and it achieved a response rate of over 70%.[2] Original work on the questionnaire showed it to have face validity and content validity.[19,20]

Our sampling method for the current study is likely to have introduced some selection biases. In common with previous work,[9] we found a disproportionate number of dispensing practices in our original sample of high-cost practices. The differences between the high- and low-cost practices were so great that we decided to equalise the number of dispensing practices in each group. In doing this, we were able to control for the potential confounding effects of dispensing status. However, we may have obtained different results if all the original sample of dispensers had been included. Also, the views of high-cost prescribers may have been 'diluted' by our sampling technique. This is because high-cost dispensing practices were replaced with non-dispensing practices with lower costs (even though the latter group remained within the top tertile for NIC/PU and NIC/ASTRO-PU).

The current survey had a response rate of over 60%, which is reasonable for an anonymous survey of GPs.[21] However, it is important to consider the possibility of non-response bias. It is reassuring that the response rate was similar for GPs from both high- and low-cost practices. However, our findings under-represent the views of GPs from non-fundholding practices because they were less likely to respond than fundholders.

The responders to the questionnaire were similar to other GPs in England and Wales in age, sex, and fundholding status.[22] Dispensing doctors were deliberately under-represented for reasons stated earlier. The survey took place in one region of the United Kingdom and this might limit its generalisability. However, the Trent region is reasonably representative of the country as a whole in terms of practice and sociodemographic characteristics.[22]

There are many factors that might influence GPs' prescribing costs.[3-15] If sociodemographic characteristics and morbidity were the only important factors, then one would not expect differences in views between GPs in high- and low-cost practices. In contrast, if GPs' views were the major influence on prescribing costs, one would expect considerable differences. The picture that emerges from the current study is that, in many of the areas identified by the Audit Commission, responders in high- and low-cost practices had similar views. For some statements, differences in views were because of the confounding effect of fundholding status. However, in the area of 'substitution with comparable but cheaper drugs' there were some clear differences between GPs from high- and low-cost practices. Thus, responders from high-cost practices were more likely to favour relatively expensive drugs within different therapeutic groups (statements 17 and 19) and less likely to be persuaded of the benefits of lower-cost choices in another area (statement 20).

What are the implications of these findings for attempts to control prescribing costs in high-cost practices? The fact that responders had similar views for many of the statements means that some doctors in high-cost practices may be prepared to respond to cost-control initiatives in the same way as colleagues

- Attitudes: these arise from behavioural beliefs. They encompass the perceived likelihood that a behaviour will result in a particular outcome together with the extent to which a person values these outcomes.
- Subjective norms: these relate to how an individual perceives social pressures and how motivated they are to comply with these pressures.
- Perceived behavioural control: this is the extent to which individuals feel that a particular behaviour is under their control.

Box 1. Psychological influences on behaviour (based upon the theory of planned behaviour[23]).

in other practices. This may be welcome news for those with responsibility for tackling prescribing costs in primary care groups. However, in the area of substitution with comparable but cheaper drugs, there may be more difficulties in trying to change the behaviour of GPs in high-cost practices.

In considering why GPs may have different views and how one might influence behaviour, it can be helpful to consider findings from the field of psychology. For example, in one model, behaviour has been shown to be predicted by attitudes, subjective norms, and perceived behavioural controls[23,24] (Box 1). Each of these elements may need to be explored in order to build up a more detailed picture of why some GPs favour higher-cost drugs. For example, some GPs may have strong behavioural beliefs in the efficacy of expensive drugs that they perceive to be convenient for patients while being poorly motivated to comply with subjective norms around the importance of cost control.[1] Considerable work may need to be done to change behaviour in such situations. Given the limited time available to most prescribing advisers, it may be most fruitful to focus on changing the behaviour of high-cost prescribers in areas where they do not have markedly different views to GPs with lower costs.

Conclusion

This study has shown that GPs working in practices with either high or low prescribing costs had different views on a number of statements concerning substitution with comparable but cheaper drugs. When encouraging GPs to control their prescribing costs, a different approach may be required for doctors in some high-cost practices.

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