

Communicating information to patients about medicine

Prescription information leaflets: a national survey

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Summary

Three thousand four hundred and ten patients recruited at 254 pharmacies took part in a national postal survey of the effect of prescription information leaflets. The patients had been prescribed penicillins, non-steroidal anti-inflammatory drugs (NSAIDs) or β -adrenoceptor antagonists. The 1809 patients who received leaflets knew more about their medicines, especially the side effects and were significantly more satisfied than the 1601 patients who were not given additional written information. The leaflets were found to be effective when issued in the north, in the south and in small, medium and large towns. Patients of both sexes, all age groups and social classes were found to benefit from the leaflets and almost everyone (97%) thought they were a good idea. These results confirm and extend our previous findings and add further support for the routine use of information leaflets with prescribed medicines.

Introduction

In previous studies we have shown that people want and need more information about prescribed medicines than they currently receive from doctors and pharmacists^{1,2}. In response to this, we developed a series of Prescription Information Leaflets (PILs) which have been described in previous publications³⁻⁵. We found that the great majority of people welcomed the idea of such leaflets and liked those which we have produced. Furthermore, those who received them knew more about their medicines (particularly the side effects) and were more satisfied with the information provided^{4,5}. However, these studies have been conducted in small Hampshire towns so extrapolation of the results to the rest of the country could be misleading. In addition, it has not been established whether some groups of patients, for example the elderly, or those from the lower social classes, obtain less benefit than others from leaflets. The aims of the present study were firstly, to determine whether there was a geographical variation in patients' response to PILs and secondly, to compare the effects of PILs issued in small, rural towns with those distributed in larger, urban communities. Finally, we sought to

compare the impact of leaflets on men and women, on patients of various ages and those from different social classes.

Methods

Approval was obtained from the British Medical Association and the Council of the Royal Pharmaceutical Society of Great Britain to conduct a national postal survey into the effects of leaflets for penicillins, non-steroidal anti-inflammatory drugs (NSAIDs) and β -adrenoceptor antagonists. The leaflets have been published elsewhere^{3,4}. A systematic 1 in 12 sample of pharmacies in England, Scotland and Wales was obtained from the Annual Register of Pharmaceutical Chemists⁶. Of the 1000 pharmacies selected, half were allocated alternately to the 'experimental group', where leaflets were issued; the others formed the 'control group', where no leaflets were distributed. The invitations to the pharmacies to take part were delivered by Vestric plc. Each participating pharmacy was asked to approach 10 patients prescribed an oral penicillin (British National Formulary⁷ (BNF) section 5.1.1), 10 patients prescribed an oral NSAID (BNF section 10.1.1) and 10 patients prescribed an oral β -adrenoceptor antagonist (BNF section 2.4 but excluding compound preparations). In each case, 10 successive patients were to be selected. Patients were recruited for the study during a 2-week period from 22 February, 1988. Children under 16 years, and people collecting prescriptions for someone else, were not included. Patients were asked to take part in the study by the pharmacist who filled in the name of the medicine prescribed on a consent form, which was presented to each patient to read and complete. Patients were informed that 'Southampton University is attempting to find out how patients feel about their medicines. If you agree, we would like to send you a questionnaire about the tablets you have just collected. This will help us find out how people get on with their medicines and how satisfied they are with the information they have been given.' Those willing to participate were asked to write their name and address on the form. They were told that their name, address and replies to the survey would remain confidential. Patients visiting the 'experimental' pharmacies, who gave their consent, received leaflets wrapped around the medicine container when the medicine was dispensed. Those recruited in the 'control' pharmacies received no additional information. In all pharmacies, the staff were asked not to alter their usual practice of providing verbal information.

Consent forms were completed in the pharmacy and returned to Southampton University by the pharmacist at the end of each survey week in a freepost envelope. When a patient declined to participate, a blank consent form was returned to facilitate the calculation of patients' response rates. A questionnaire, based on one developed by Gibbs *et al.*⁴, and a covering letter were sent to each patient

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by the Clinical Pharmacology Group at Southampton. Information was collected on patients' knowledge about their medicine, their satisfaction with the information received, their demographic details and, from the experimental pharmacies, details of how the leaflets were used.

Questionnaires and patient consent forms were colour-coded to match the leaflets: green for penicillins, pink for NSAIDs and blue for β -adrenoceptor antagonists. The name of the medicine prescribed was inserted at Southampton before each questionnaire was dispatched. A freepost envelope was included for the reply but, if this was not received within one month, a further copy of the questionnaire was sent with a reminder letter. Questionnaires returned more than 6 months after dispatch were not analysed.

Returned questionnaires were coded at Southampton and the data were double punched by a commercial data punching agency (Sunlight Computer Services Ltd) onto magnetic tape, which was transferred onto the University of Southampton IBM 3090 mainframe computer. The pharmacies in the study were divided into north and south by a line drawn from the Wash to the Severn estuary. The resident population was determined from the 1981 Census⁸. The towns were coded as 'small' if their population did not exceed 15 000, 'medium' if it was between 15 000 and 99 999 and 'large' if 100 000 or more people resided there.

Initial analysis of the data was conducted using the SPSS-X statistical package. Throughout the analysis, patients' 'intended' to receive leaflets were assumed to have done so. Comparisons were made using the chi-squared statistic (with Yates correction for 2x2 tables). The satisfaction data were ranked from 'completely satisfied' to 'completely dissatisfied' and a chi-squared test for trend performed. This assumes that 'satisfaction' has the characteristics of a continuous variable to enable numerical values to be allotted to each category so as to detect trends⁹. Logit modelling techniques^{10,11} were applied to investigate the effects of receiving a leaflet, sex, age and social class on knowledge and satisfaction outcomes. The GLIM statistical package¹² was used to fit models which took these four variables into account. The significance of each variable was assessed by eliminating each in turn from the model. The effect

of the leaflet within each sex, age and social class group was tested by adding each variable in turn to a model which always contained the leaflet. The association between variables and knowledge and satisfaction outcome was expressed as the odds ratio¹³ and 95% confidence intervals were calculated.

Results

Response rates

Two hundred and fifty-four (25.4%) pharmacies agreed to take part in the study, of which 136 were in the 'experimental' group, where leaflets were issued, and 118 were 'controls', where no additional written information was provided. Details of patients willing to take part in the survey were received from 117 (86.0%) of the experimental pharmacies and 98 (83.1%) of the controls. One hundred and twenty-three of the participating pharmacies were in the north (72 experimental, 51 control), and 92 were in the south (45 experimental, 47 control). Sixty-three were classified as 'small' towns (35 in the north and 28 in the south), 71 were 'medium' sized towns (39 in the north and 32 in the south) and 81 were large towns (49 in the north and 32 in the south). The mean number of patients recruited in each pharmacy was 15.7 (with a range of 1-27).

During the 2-week study period, a total of 4510 patients gave permission to be sent a questionnaire. One thousand five hundred and sixty-four had been prescribed a penicillin, 1518 an NSAID and 1428 a β -adrenoceptor antagonist. Completed questionnaires were returned by 3410 (75.6%) patients. There was a higher response to the questionnaire from those prescribed β -adrenoceptor antagonists than for the other two medicines: 1222 (85.6%) patients replied compared with 1146 (75.5%) of those prescribed NSAIDs and 1042 (66.6%) penicillin takers ($\chi^2_2=145.37$, $P<0.001$). Although 1936 (57%) of the respondents came from the north of the country, the proportion of questionnaires returned from this region was not significantly different from the response obtained in the south. There were no significant differences in the response rates for patients recruited in small, medium or large towns. Finally, there were no significant differences in response rate from patients who received leaflets and others who did not.

Table 1. Demographic characteristics of the respondents (percentages in brackets)

	Medicine					
	Penicillins		NSAIDs		β -adrenoceptor antagonists	
Leaflet	Yes	No	Yes	No	Yes	No
Total number	550	492	618	528	641	581
Sex						
Male	206 (37.8)	179 (36.6)	241 (39.3)	205 (39.2)	303 (47.6)	271 (47.3)
Female	339 (62.2)	310 (63.4)	372 (60.7)	318 (60.8)	334 (52.4)	302 (52.7)
Age (years)						
16-34	217 (39.7)	227 (46.3)	76 (12.3)	59 (11.3)	22 (3.5)	14 (2.4)
35-64	262 (48.0)	204 (41.6)	316 (51.2)	263 (50.2)	358 (56.2)	317 (55.0)
65 and over	67 (12.3)	59 (12.0)	225 (36.5)	202 (38.5)	257 (40.3)	245 (42.5)
Social class						
I and II	185 (36.3)	170 (37.3)	192 (28.6)	176 (36.3)	227 (37.5)	191 (34.6)
III	226 (44.3)	183 (40.1)	230 (40.6)	199 (41.0)	252 (41.6)	231 (41.8)
IV and V	72 (14.1)	68 (14.9)	100 (17.6)	69 (14.2)	89 (14.7)	96 (17.4)
Unclassifiable	27 (5.3)	35 (7.7)	45 (7.9)	41 (8.5)	37 (6.1)	34 (6.2)

Missing values are excluded from the percentages

Table 2. Patients' knowledge about their medicine (numbers are those giving correct answers; percentages in brackets)

	Medicine					
	Penicillins		NSAIDs		β -adrenoceptor antagonists	
Leaflet	Yes	No	Yes	No	Yes	No
Total number	550	492	618	528	641	581
Take with fluid	421 (77.7)	342 (70.8)	475 (78.3)	368 (71.7)	490 (77.3)	372 (65.1)
Medicine and meals	359 (66.5)	247 (51.0)	497 (81.8)	420 (81.1)	—	—
What to do if dose is missed	411 (77.1)	319 (66.6)	338 (56.8)	216 (42.9)	442 (71.1)	343 (61.0)
Storage out of reach	531 (98.2)	480 (99.2)	592 (99.0)	506 (98.6)	623 (99.5)	556 (98.9)
Safe method of disposal	494 (91.8)	438 (90.9)	577 (97.0)	459 (90.9)	601 (96.3)	526 (94.3)
Aware not to share medicines	513 (95.5)	461 (95.4)	543 (91.3)	443 (87.0)	570 (91.9)	522 (93.5)

* $P < 0.05$; *** $P < 0.001$

Missing values are excluded from the percentages

Demographic characteristics

The demographic characteristics of the respondents are shown in Table 1. The patients taking penicillins were mostly young, whereas those taking NSAIDs or β -adrenoceptor antagonists were often over 65. There were no significant differences in sex, age or social class distribution between those who received leaflets and others who did not. A social class difference was apparent, however, between the north and the south: more respondents from the south were classified as social class I & II whereas more from the north came from classes IV & V ($\chi^2_2 = 83.99$, $P < 0.001$). In addition, there was a significant tendency for people from higher social classes to live in smaller towns ($\chi^2_4 = 20.96$, $P < 0.001$).

Patients' knowledge

Patients who received a leaflet were found to be better informed about their medicines than those who did not (Table 2). Significantly more patients who received leaflets knew they should take their medicine with fluid (penicillins $\chi^2_1 = 5.98$, $P < 0.05$; NSAIDs $\chi^2_1 = 6.00$, $P < 0.05$; β -adrenoceptor antagonists $\chi^2_1 = 12.85$, $P < 0.001$) and were aware of what to do if a dose was

missed (penicillins $\chi^2_1 = 13.36$, $P < 0.001$; NSAIDs $\chi^2_1 = 20.69$, $P < 0.001$; β -adrenoceptor antagonists $\chi^2_1 = 12.85$, $P < 0.001$). In addition, significantly more patients who received a leaflet about penicillins knew to take their medicine on an empty stomach ($\chi^2_1 = 24.56$, $P < 0.001$). Overall, awareness about safe storage and safe disposal of medicines was found to be very high. Ninety-six per cent of all respondents knew they should keep their tablets out of reach of children, 91% knew to return left-over tablets to a pharmacist or flush them down the toilet and 90% knew they should not share their tablets with family or friends. Nevertheless, significantly more patients who received a leaflet for NSAIDs knew they should return left-over medicines to the pharmacist or flush them down the toilet, and were aware of the dangers of sharing medicines ($\chi^2_1 = 17.36$; $P < 0.001$ and $\chi^2_1 = 4.70$, $P < 0.05$, respectively).

There was little evidence that patients' knowledge about penicillins or β -adrenoceptor antagonists was associated with the region of the country where they lived. Slightly more NSAID takers from the north (77.1%) were aware that their tablets should be swallowed with fluid compared with the south (72.6%)

Table 3. Patients' knowledge of the side effects of their medicine (percentages in brackets)

	Medicine						
	Penicillins		NSAIDs		β -adrenoceptor antagonists		
Leaflet	Yes	No	Yes	No	Yes	No	
Total number	550	492	618	528	641	581	
Feeling sick	173 (37.1)	100 (23.6)	222 (42.9)	158 (36.2)	153 (31.2)	76 (16.2)	
Bowel complaints	159 (34.1)	101 (24.0)	95 (20.7)	27 (7.2)	85 (18.7)	27 (6.2)	
Rash	181 (38.8)	120 (28.4)	101 (21.8)	28 (7.5)	122 (25.7)	46 (10.4)	
Wheezing	54 (12.5)	20 (5.0)	100 (21.6)	27 (7.2)	139 (30.2)	63 (14.2)	
Pains in joints	71 (15.9)	18 (4.5)	77 (71.0)	17 (4.6)	173 (34.3)	50 (11.1)	
			Tarry stools	93 (20.5)	13 (3.6)		

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Missing values are excluded from the percentages

Table 4. Patients' satisfaction with information received (percentages in brackets)

	<i>Medicine</i>					
	<i>Penicillins</i>		<i>NSAIDs</i>		<i>β-adrenoceptor antagonists</i>	
Leaflet	Yes	No	Yes	No	Yes	No
Total number	550	492	618	528	641	581
Completely satisfied	170 (31.8)	115 (24.1)	160 (27.1)	107 (21.7)	180 (29.4)	141 (25.6)
Satisfied	257 (48.1)	211 (44.1)	314 (53.2)	244 (49.7)	329 (53.8)	280 (50.9)
Indifferent	53 (9.9)	76 (15.9)	60 (10.2)	59 (12.0)	30 (4.9)	50 (9.1)
Dissatisfied	46 (8.6)	63 (13.2)	52 (8.8)	63 (12.8)	63 (10.3)	67 (12.2)
Completely dissatisfied	8 (1.5)	13 (2.7)	4 (0.7)	18 (3.7)	10 (1.6)	12 (2.2)

* $P < 0.05$; *** $P < 0.001$

Missing values are excluded from the percentages

Table 5. Effects of leaflet and demographic group on knowledge and satisfaction

<i>Factor</i>	<i>Leaflet (Yes)</i>	<i>Sex (female)</i>	<i>Age</i>	<i>Social class (manual)</i>	<i>Model</i>			
					χ^2	<i>df</i>	<i>P</i>	
<i>Penicillins</i>								
Medicine and meals	1.83 ***	1.02	(>=55)	0.44 ***	0.85	24.04	19	0.20
Take with fluid	1.52 **	1.63 **	(>=55)	1.23	1.36 *	15.40	19	0.70
What to do if dose missed	1.65 ***	1.97 ***	(>=55)	1.18	0.90	18.25	19	0.51
Side effects	1.42 *	2.18 ***	(>=55)	0.51 ***	0.61 ***	28.60	19	0.07
Satisfaction	1.52 **	0.99	(>=55)	1.31	1.00	41.98	19	<0.01 *
<i>NSAIDs</i>								
Medicine and meals	1.04	1.97 ***	(55-74) (>=75)	1.17 1.46	0.80	12.83	18	0.80
Take with fluid	1.30	2.07 ***	(55-74) (>=75)	1.13 1.27	1.95 ***	19.33	18	0.37
What to do if dose missed	1.70 ***	1.41 *	(55-74) (>=75)	0.69 0.94 *	1.21	17.86	18	0.47
Side effects	1.55 ***	1.30	(55-74) (>=75)	0.56 0.42 ***	0.76 *	16.42	18	0.56
Satisfaction	1.62 ***	1.10	(55-74) (>=75)	1.32 4.06 ***	1.02	25.42	18	0.11
<i>β-adrenoceptor antagonists</i>								
Take with fluid	2.01 ***	1.51 **	(55-74) (>=75)	1.44 1.99 *	1.55 **	16.44	18	0.57
What to do if dose missed	1.65 ***	1.03	(55-74) (>=75)	1.04 1.06	1.04	16.55	18	0.55
Side effects	2.85 ***	1.02	(55-74) (>=75)	0.58 0.54	0.75 *	17.03	18	0.52
Satisfaction	1.57 **	0.84	(55-74) (>=75)	2.09 2.57 ***	1.01	8.75	18	0.97

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

All figures are for the odds ratio which is quoted relative to the factor given. An odds ratio > 1 implies a positive association between the factor and outcome, whereas an odds ratio < 1 implies an association in the other direction. If the odds ratio is zero there is no association. Odds ratios are quoted for receiving a leaflet relative to no leaflet, for females relative to males, for the 55-74 and >=75 age group (except for penicillins, where the odds ratios are for the >=55 age group) relative to the <55 age group and for the manual class relative to the non-manual class

($\chi^2_1=2.91$, $P=0.09$). However, significantly more southerners who received a leaflet for β -adrenoceptor antagonists were aware of what to do if a dose was missed, and knew of safe methods to dispose of unused medicines ($\chi^2_1=13.44$, $P<0.001$; $\chi^2_1=5.74$, $P<0.05$). The effect of the size of town on patients' knowledge about their medicines was negligible.

Knowledge of side effects

Knowledge of the side effects of all three medicines was significantly higher amongst patients who received leaflets (Table 3). This enhanced knowledge was apparent amongst patients who received leaflets in both geographic areas and in all sizes of town studied. However, the 'improvement' amongst patients who received a leaflet for NSAIDs was more marked in the north, but the opposite was true for those who received a leaflet about β -adrenoceptor antagonists.

'Side effects' experienced

Since starting their tablets, 160 (15.4%) of those taking penicillins, 199 (17.7%) patients taking NSAIDs and 218 (17.9%) of β -adrenoceptor antagonist takers reported experiencing at least one of the symptoms listed on the leaflets. There was little or no evidence that these symptoms were reported more frequently by those who received PILs for penicillins or NSAIDs. However, more of the people who received our leaflet for β -adrenoceptor antagonists reported experiencing itching or rash than those who did not [41 (6.4%) compared with 21 (3.6%) of the controls ($\chi^2_1=4.34$, $p<0.05$)]. In addition, sleeplessness or vivid dreams were reported significantly more frequently among those who received leaflets [76 (11.9%)] compared with those who did not [29 (5.0%) $\chi^2_1=17.42$, $P<0.001$]. Forty-one of the patients with symptoms in the experimental group were taking atenolol, 20 propranolol and seven metoprolol compared with 11, 10 and one respectively in the control group. There was little evidence of a regional difference in the pattern of symptom reporting or of variation between towns.

Patients' satisfaction

Patients who received leaflets were significantly more satisfied with the information received than those who were not given one (penicillin χ^2_1 test for trend=17.57, $P<0.001$; NSAIDs χ^2_1 test for trend=16.53, $P<0.001$; β -adrenoceptor antagonists χ^2_1 test for trend=5.42, $P<0.05$) (Table 4). Amongst those who received the NSAID leaflet, this 'improvement' in satisfaction was more marked in the north than in the south (χ^2_1 test for trend in the satisfaction score=11.63, $P<0.001$). No other differences in the level of satisfaction recorded between regions or towns were statistically significant.

Opinion about the leaflets

In response to the question 'Do you think it is a good idea to be given an information leaflet with your tablets?', 97% of the respondents replied 'Yes', irrespective of whether or not they had been given a leaflet.

Effects of demographic characteristics on knowledge and satisfaction

The main effects of sex, age, and social class on knowledge and satisfaction are given in Table 5, together with the effects of the leaflet. Women knew more about all aspects of their medicines than men. A significantly higher proportion of penicillin

takers who were under 55 years old were aware of the need to take penicillins on an empty stomach ($P<0.001$), and of the potential side effects of their treatment ($P<0.001$). However, there was a tendency for knowledge about NSAIDs and β -adrenoceptor antagonists to be greater amongst those over 75 years. A higher proportion of patients in this age group were aware of the need to take β -adrenoceptor antagonists with fluid ($P<0.05$), knew what to do if a dose of NSAIDs was missed ($P<0.05$) and were aware of the potential side effects of NSAIDs ($P<0.001$). In addition, the older patients were significantly more satisfied with the information they received about their medicine (NSAIDs, $P<0.001$ and β -adrenoceptor antagonists $P<0.001$, respectively). For all three medicines, significantly more patients from the non-manual social classes knew at least one side effect of their treatment (penicillins $P<0.001$; NSAIDs $P<0.05$; β -adrenoceptor antagonists $P<0.05$), whereas awareness that medicine should be taken with fluid was significantly greater amongst those from the manual classes (penicillins $P<0.05$; NSAIDs $P<0.001$; β -adrenoceptor antagonists $P<0.01$).

Impact of the leaflets within each demographic group

Despite the differences outlined above, the leaflets were associated with improvements in knowledge and satisfaction within each demographic group. Analysis of the impact of the leaflets within each stratum revealed no significant differences in their effects on men and women, on the young, the middle aged and the old, or on those from the non-manual and manual social classes.

Discussion

This large national survey has fulfilled two main objectives. Firstly, overwhelming public support for the use of PILs has now been demonstrated in the north as well as in the south and in 'medium' sized and 'large' towns, as well as their smaller counterparts. Furthermore, significant improvements in knowledge about medicines (especially their side effects) and improvements in satisfaction have been reported in association with the issue of leaflets to a larger, more representative patient population. Secondly, patients of both sexes, all age groups and social classes have been shown to benefit from the leaflets. These results are encouraging, since reservations have been expressed about the level of interest in written information amongst the elderly¹⁴ and the usefulness of leaflets amongst the less well educated¹⁵.

The results of the present study largely confirm those obtained previously for populations drawn from small towns in the south of England¹⁻⁵. For the most part, side effects were no more frequently reported by patients who received a leaflet than by others who did not. The exceptions related to β -adrenoceptor antagonists for which skin trouble (itching and rash) was about twice as frequent, and sleeplessness/vivid dreams affected 76 patients in the leaflet group and 29 controls. It is possible that some of these 'side effects' were 'spurious' and produced by suggestion. However, our evidence points to an improved recognition of 'true' side effects. In particular, 39 of those who reported sleeplessness or vivid dreams and 12 who experienced itching or rash, volunteered additional information on their questionnaires. Their comments referred to previous, and in some cases prolonged, experience of these unexplained symptoms,

none of which they had previously connected with their medicine. Because of this, and the fact that other effects such as very slow pulse, wheezing and dizziness were reported at a similar rate in the two groups, we believe that our evidence points to an improved recognition of true side effects. Furthermore, there is little support in the literature for the argument that informed patients experience more side effects¹⁶⁻¹⁸, but such patients are more likely to attribute their symptoms to drug therapy^{4,19}.

Although patients who received a leaflet were significantly more satisfied than those who did not, the level of satisfaction expressed in this survey was lower than we have seen previously. The main difference was that fewer patients claimed to be completely satisfied. Several explanations are possible. Firstly, although the scale used to measure satisfaction was the same as in our other studies, the methods of data collection were not and it is possible this may have affected patients responses²⁰. Secondly, most of our previous work has involved the patients own general practitioner, which has been shown to influence patients response²¹ and finally, those prescribed penicillin may have completed the treatment well before a questionnaire was received. Interestingly, the level of satisfaction and knowledge about NSAIDs was higher amongst northerners than southerners. We do not know why this should be the case, but it is known that there are higher prescription rates for this group of drugs in the north²².

In the light of the current interest expressed by pharmacists in information provision and patient counselling²³ the poor response to this study from community pharmacists was surprising. While we recognize that this low response could have biased our results, this seems unlikely since there were no significant differences in response rate, age, sex or class distribution between patients recruited in experimental and control pharmacies. In addition, the demographic characteristics of the respondents were similar to those in our previous studies, with the exception of the inclusion of more patients from social classes IV and V.

In conclusion, this study confirms that almost all patients would like to receive leaflets with their prescribed medicines. Despite recent improvements in patients' knowledge about some aspects of their treatment (an almost universal awareness that medicines should be kept out of reach of children is encouraging), and despite the greater background knowledge that women, the young and those from the non-manual social classes have about medicines, our studies suggest that the introduction of leaflets^{24,25} will be beneficial to the majority of British patients who are prescribed medicines.

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References

- 1 George CF, Waters WE, Nicholas JA. Prescription Information Leaflets: a pilot study in general practice. *Br Med J* 1983;**287**:1193-6

- 2 Ridout S, Waters WE, George CF. Knowledge of and attitudes to medicines in the Southampton community. *Br J Clin Pharmacol* 1986;**21**:701-12
- 3 Gibbs S, Waters WE, George CF. The design of Prescription Information Leaflets and feasibility of their use in general practice. *Pharmaceut Med* 1987; **2**:23-34
- 4 Gibbs S, Waters WE, George CF. The benefits of Prescription Information Leaflets (1). *Br J Clin Pharmacol* 1989;**27**:723-39
- 5 Gibbs S, Waters WE, George CF. The benefits of Prescription Information Leaflets (2). *Br J Clin Pharmacol* 1989;**27**:345-51
- 6 Annual Register of Pharmaceutical Chemists. London: The Royal Pharmaceutical Society of Great Britain, 1987
- 7 British National Formulary. London: British Medical Association and The Pharmaceutical Society of Great Britain, 1989
- 8 Office of Population Censuses and Surveys. Index of Place Names. London: HMSO, 1985
- 9 Everitt BS. *The analysis of contingency tables*. London: Chapman and Hall, 1977
- 10 Cox DR. *The analysis of binary data*. London: Methuen, 1970
- 11 Aitkin M, Anderson D, Francis B, Hinde J. *Statistical modelling in GLIM*. Oxford: Oxford Science Publications, 1989
- 12 Baker RJ, Nelder JA. *The GLIM system. Generalised Linear Interactive Modelling*. Oxford: Numerical Algorithms Group, 1978
- 13 Fleiss JL. *Statistical methods for rate and proportions*. New York: Wiley, 1981
- 14 Dodds LJ, King RW. Factors affecting attitudes to the provision of information with prescribed drugs. *Pharmaceut J* 1989;**18**: 7-12
- 15 Gatherer A, Parfit J, Porter E, Vessey M. *Is health education effective?* London: Health Education Council, 1979
- 16 Myers ED, Calvert EJ. The effect of forewarning on the occurrence of side effects and discontinuance of medication in patients on amitriptyline. *Br J Psychiatry* 1973;**122**:461-4
- 17 Myers ED, Calvert EJ. The effect of forewarning on the occurrence of side effects and discontinuance of medication in patients on dothiepin. *J Int Med Res* 1976;**4**:237-40
- 18 Myers ED, Calvert EJ. Information, compliance and side effects: a study of patients on antidepressant medication. *Br J Clin Pharmacol* 1984;**17**:21-5
- 19 Morris LA, Kanouse DE. Informing patients about drug side effects. *J Behav Med* 1982;**5**:363-73
- 20 Moser CA, Kalton G. *Survey methods in social investigation*. London: Heinemann, 1971
- 21 Smith WCS, Crombie IK, Campion PD *et al*. Comparison of response rates to a postal questionnaire from a general practice and a research unit. *Br Med J* 1985;**291**: 1483-5
- 22 Health Care Financial Management Association. Health services trends. Vol 2. Health Care Financial Management Association and Chartered Institute of Public Finance and Accountancy, 3 Robert Street, London WC2N 6BH, 1987
- 23 Committee of Inquiry. *Pharmacy: a report to the Nuffield Foundation*. London: Nuffield Foundation, 1986
- 24 Association of the British Pharmaceutical Industry. *Information to patients on medicines*. London: Whitehall, 1987
- 25 Gibbs S. Informing patients about medicines: an evaluation of Prescription Information Leaflets in general practice. PhD thesis, Southampton University, 1990

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