Prescribing behaviour in clinical practice: patients' expectations and doctors' perceptions of patients' expectations—a questionnaire study

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Abstract

Objectives: To examine the effect of patients' expectations for medication and doctors' perceptions of patients' expectations on prescribing when patients present with new conditions.

Design: Questionnaire study of practitioners and patients.

Setting: General practice in Newcastle, Australia.

Subjects: 22 non-randomly selected general practitioners and 336 of their patients with a newly diagnosed medical condition.

Main outcome measures: Prescription of medication and expectation of it.

Results: Medication was prescribed for 169 (50%) patients. After controlling for the presenting condition, patients who expected medication were nearly three times more likely to receive medication (odds ratio = 2.9, 95% confidence interval 1.3 to 6.3). When the general practitioner thought the patient expected medication the patient was 10 times more likely to receive it (odds ratio = 10.1, 5.3 to 19.6). A significant association existed between patients' expectation and doctors' perception of patients' expectation ($\chi^2 = 52.0$, $df = 4$, $P = 0.001$). For all categories of patient expectation, however, patients were more likely to receive medication when the practitioner judged the patient to want medication than when the practitioner ascribed no expectation to the patient.

Conclusions: Although patients brought expectations to the consultation regarding medication, the doctors' opinions about their expectations were the strongest determinants of prescribing.

Introduction

Most research into decision making and the prescribing patterns of general practitioners has focused on identifying "good prescribing" or examining doctors' choice of drug.^{1 2} The option of not prescribing has been considered only occasionally. Several authors have attempted to determine which factors, other than clinical ones, influence the decision to prescribe or not.³⁻⁵ Available evidence suggests that clinical decision making in primary care is strongly influenced by social factors, including the expectations that patients bring to the consultation.⁶⁻¹⁰

The present study expanded on previous research in that we examined not only patients' expectations and preferences for medication, but doctors' opinions about patients' expectations. Another study has shown that people who had previously seen their practitioners for the same conditions were more likely to expect medications, suggesting that patient knowledge and experience influence expectations.⁶ To control for this, we studied only patients diagnosed with a new condition.

Methods

The study took place in the second half of 1992 in Newcastle, Australia. General practitioners who had participated in an earlier observational study of general practice processes and outcomes¹¹ were approached to participate in this follow up study, 10 years later. Practitioners were eligible if they were still working full time in the same practice.

Up to 40 consecutive, eligible patients who visited the surgeries of each consenting general practitioner over the study period were asked to participate. Patients were eligible if they were aged 18 to 70, able to read and write English, and not too ill to complete questionnaires. Consenting patients were asked to complete a questionnaire before the consultation. Participating practitioners filled out a questionnaire about each patient at the end of each consultation and a questionnaire that asked for their own demographic and practice details at the end of the study.

Prescription of new medications for new conditions—The outcome measure was whether new medications were prescribed for a new diagnosis for the patient. In the questionnaire after each consultation practitioners were asked to record up to three active diagnoses dealt with in the consultation, whether these conditions were new or continuing, any new medications that were prescribed, and the reasons why. In this way the prescribed medication could be matched with the corresponding new diagnosis. The International Classification of Primary Care was used to classify patients' diagnoses.¹²

Patients' expectation and patients' preference to take medication—Before the consultation patients were asked to rate, on a five point scale, the extent to which they thought they needed medication for the condition for which they were seeing their doctor. The categories

were 1: absolutely necessary; 2: probably necessary; 3: don't know; 4: probably not necessary; and 5: not at all necessary. Patients were classified into three groups: those who thought medication necessary (1 and 2), those who did not know (3), and those who thought it not necessary (4 and 5). Patients also stated their preference for taking medications for the condition for which they were seeing the doctor. These responses were also grouped into three categories: those who preferred to take medication (1 and 2), those who did not know (3), and those who preferred not to take medication (4 and 5).

Practitioners' perceptions of patients' expectation and of patients' influence on prescription—In the questionnaires after each consultation practitioners rated on a five point scale the extent to which they thought that the patient expected a medication. The anchors for the scale were 1: no expectation at all to 5: a great extent. This variable was collapsed into two categories: the practitioner considered that the patient did not expect a medication (1 and 2), or did expect a medication (3, 4, and 5). The practitioners also rated the extent to which the patient's expectation influenced their decision to prescribe, with the anchors being 1: no influence at all to 5: to a great extent. This variable was also recoded into two categories: the practitioner thought the patient had no influence (1 and 2) or some influence (3, 4, and 5) on the medication prescription.

Patient and practitioner characteristics—Details were obtained of patient's age, sex, country of origin, marital status, main occupation, and income. Details of each practitioner's age, sex, practice, and professional characteristics were collected at the end of the study.

Statistical analysis— χ^2 tests or Fisher's exact probability tests were performed to determine the relation between each variable and the outcome measure (prescription of medication). Multiple logistic regression was used to determine the association between variables that were significant in univariate tests and the prescription of new medication while other variables were controlled for. A random effect adjustment for general practitioners was used in SAS 6.10 using macro GLIMMIX to control for prescribing rates between general practitioners. The odds ratio of the final model is given.

Results

Thirty five of the 56 practitioners from the original study were still practising in Newcastle and, of these, 22 consented to take part in this study: 18 were men and 17 were aged 35–54 years. Of the 19 practitioners who completed the final questionnaire 10 reported seeing more than 150 patients per week and seven held postgraduate qualifications. Compared with Australian general practitioners as a whole, the practitioners in our study were older and less likely to have postgraduate qualifications.¹³ There were no significant differences on demographic and practice characteristics between practitioners in our study who prescribed medication in more than half their consultations ($n=10$) and practitioners who prescribed in less than half ($n=9$).

Nine hundred and thirty eight eligible patients presented at participating general practitioners during the study and, of these, 756 (81% of those eligible)

Table 1 Patient demographic variables and their association with medication prescription, patient's expectations and general practitioner's attribution of expectation*

Variable	No	% Of sample	% Prescribed medication	% Expected medication	% GP attributed expectation
Sex:					
Female	200	59.5	52.5	47.4	50.8
Male	136	40.5	47.1	47.7	39.3‡
Age:					
18–24	65	19.4	49.2	40.3	39.0
25–44	111	33.0	46.0	44.0	37.3
45–64	121	36.0	52.9	50.0	53.7
65–70	39	11.6	56.4	62.1†	58.9§
Country of birth:					
Australia	301	90.4	49.8	48.4	46.8
Other	32	9.6	56.2	37.5	40.6
Marital status:					
Never married	60	18.1	48.3	45.7	38.3
Married or living together	217	65.4	50.7	46.2	47.5
Separated	16	4.8	75.0	37.5	53.3
Divorced	23	6.9	34.8	59.1	50.0
Widowed	16	4.8	56.3	68.8	50.0
Occupational status:					
Unskilled or semi-skilled	115	44.0	46.1	48.2	42.3
Skilled or professionals	149	56.0	55.0	46.3	47.9

*Some missing data in some categories: † $\chi^2_{\text{TREND}}=5.2$, $df=1$, $P=0.23$; ‡ $\chi^2=4.3$, $df=1$, $P=0.04$; § $\chi^2_{\text{TREND}}=7.9$, $df=1$, $P=0.005$.

consented to participate in the study. The age of participants and non-participants did not significantly differ, although women were more likely to participate in the study than men ($\chi^2=6.3$, 1 df , $P=0.012$).⁸ Of the study participants, 336 (44.4%) were diagnosed with at least one new condition, and of these 169 (50%) were prescribed a new medication. Table 1 shows the demographic characteristics of the sample.

Association between variables and medication prescription—Table 1 shows that doctors were more likely to ascribe an expectation of medication to women than to men. There was also a significant linear trend towards a greater proportion of people in older age groups expecting a medication ($\chi^2_{\text{TREND}}=5.2$; $df=1$; $p=0.23$) and towards doctors ascribing an expectation to a greater proportion of older people ($\chi^2_{\text{TREND}}=7.9$; $df=1$; $p=0.005$). However, there was no significant relation between any of these demographic variables and actual prescription.

Influences on prescribing—Table 2 shows the results of the logistic regression. Compared with patients who had general or social conditions (who were least likely to be prescribed medications) patients with respiratory, skin, digestive, or psychological conditions were more likely to be prescribed a medication. After controlling for the presenting condition, the strongest predictor of a prescription was the practitioner's perception of patient's expectation. When the general practitioner thought the patient expected medication the patient was 10 times more likely to be prescribed a medication than when the practitioner thought that the patient did not expect any medication. Of the people whom the general practitioner considered to expect medication, 80% received a prescription. Patient expectation was also a significant predictor: patients who expected a medication were 2.9 times more likely to be prescribed medication than those who did not. About two thirds of patients who expected a medication were prescribed medications.

Table 2 Association between the prescription of medication and patient and practitioner variables

Variable	% Prescribed	P value	Odds ratio (95% CI)
Patients' newly diagnosed condition:*			
General or social (n= 34)	14.7		1.0
Respiratory (n=80)	80.0	0.0001	15.0 (4.1 to 54.5)
Skin (n=56)	53.6	0.009	5.8 (1.6 to 21.3)
Neurological or musculoskeletal (n=52)	28.9	0.06	3.6 (0.9 to 13.5)
Genital system (n=31)	38.7	0.14	3.1 (0.7 to 14.2)
Digestive (n= 22)	54.6	0.01	6.9 (1.5 to 32.3)
Endocrine and metabolic (n=15)	26.7	0.55	1.7 (0.3 to 8.5)
Circulatory or blood (n=13)	53.9	0.38	2.9 (0.4 to 18.3)
Psychological (n=12)	58.3	0.02	8.3 (1.4 to 49.1)
Ear (n=11)	45.6	0.15	3.9 (0.6 to 25.1)
Eye (n= 8)	62.5	0.02	11.4 (1.5 to 85.8)
Patients' expectations:†			
Does not expect (n=101)	22.8		1.0
Does not know (n=69)	56.5	0.003	3.8 (1.6 to 9.1)
Expects medication (n=154)	67.5	0.008	2.9 (1.3 to 6.3)
Patient preference:‡			
Prefer no medication (n=167)	42.5		1.0
Does not know (n=38)	50.0	0.73	0.9 (0.3 to 2.2)
Prefer medication (n=116)	65.0	0.64	1.1 (0.6 to 2.3)
Doctors' perceptions of patients' expectations:§			
Patient does not expect (n=180)	24.4		1.0
Patient does expect (n=154)	80.0	0.0001	10.1 (5.3 to 19.6)
Doctors' perceptions of patients' influence on prescribing:¶			
No influence (n=291)	46.7		1.0
Influence (n=41)	70.7	0.74	1.2 (0.4 to 3.2)

*Baseline group: patients with general and social problems. †Baseline group: patients who do not expect medication. ‡Baseline group: patients who prefer not to take medication. §Baseline group: practitioners who perceive their patients do not expect a medication. ¶Baseline group: practitioners who perceive their patients' expectation does not influence their decision to prescribe.

Relation between patients' expectations and general practitioners' perceptions—Table 3 shows that there was a significant association between patient's expectation and general practitioner's perception of patient's expectation ($\chi^2=52.0$, $df=4$, $p=0.001$). When the patient did not expect a medication the practitioner's judgment agreed in 80% of cases and when the patient did expect a medication the practitioner's judgment agreed in 65% of cases. When the patient did not know in about half the cases the practitioner considered that the patient did not want a medication. However, for all categories of patient's expectation, patients were more likely to receive a medication when the practitioner judged that they wanted medication than when the practitioner judged that they did not.

Discussion

There are some limitations to our study. We did not have a random sample of doctors. The doctors in this study had previously been part of a large observational study and were still in the same practice 10 years later. These doctors may therefore be different in their

approach to patient care from other general practitioners. We also had a relatively small sample of general practitioners, which might explain why we could not detect any influence of general practitioners' characteristics on prescribing. The patient sample size meant that only relatively large differences between groups (about 15%) would be detected as significant. In addition, our study did not contain an objective measure of the "medical necessity" for medication. Such a measure would be difficult to develop because for many conditions there are no clear guidelines for optimal pharmaceutical management. The prescription profile for the various conditions in our study is similar to that obtained in other studies. For example, Webb and Lloyd also found that patients with respiratory diseases and skin diseases are more likely to be prescribed medications than patients with other conditions.⁶ This suggests that prescribing patterns in the practices in our study are similar to those in others.

The fact that doctors were more likely to ascribe an expectation of prescription to women than to men agrees with other research that suggests a sex bias in some decisions made by doctors.¹⁴ There was trend towards more older people expecting a medication and towards doctors being more likely to ascribe an expectation to older people. However, these findings were not translated into actual prescribing differences between men and women or between older and younger people. We also found no significant relations between patient demographic characteristics and prescribing. Previous research has shown that sex is not related to prescribing.^{6, 8} However, other studies have shown that older patients require more medication and are therefore more likely to be prescribed medication.⁶ The discordance in findings between our study and previous research could be due to our focus on new conditions, as most elderly people are prescribed medication for existing conditions. We also had an upper age limit of 70.

Within the limitations of our study, our findings do concur to some extent with other studies that suggest that practitioners prescribe more medication in total than patients expect.^{8, 15} Bradley has attempted to explain this discrepancy by suggesting that practitioners may fail to consider the patients' reasons for coming, and so prescribe medications because they perceive that patients expect it even when this is not the case.¹ Our study supports this to some extent in that the strongest predictor of medication prescription was not the patient's actual expectation but the practitioners' judgment of this.

For the most part, however, doctors' and patients' expectations were in accord. This was particularly so when the patient did not expect a medication, with

Table 3 Patients' expectations and general practitioners' perceptions of patients' expectation* and the likelihood of being prescribed medication

Doctors' perceptions of patients' expectations	Patient expectation					
	Does not expect		Does not know		Expects medication	
	% (n=101)	% Prescribed medication†	% (n=69)	% Prescribed medication‡	% (n=154)	% Prescribed medication§
Patient does not expect	80.2	8.8	56.5	30.7	34.2	48.0
Patient does expect	19.8	80.0	43.5	90.0	65.8	77.0

* $\chi^2=52.0$, $df=4$, $P=0.001$; † $\chi^2=46.4$, $df=1$, $P=0.001$; ‡ $\chi^2=24.2$, $df=1$, $P=0.001$; § $\chi^2=13.0$, $df=1$, $P=0.001$.

Key messages

- This study showed that patients who expected medications were three times more likely to be prescribed medicines for new conditions
- If the general practitioner thought that the patient expected medication, patients were ten times more likely to be prescribed medication
- Although patients brought expectations to the consultation regarding medication, it was the doctors' opinions about patients' expectations that were the strongest determinants of prescribing
- With the increasing promotion of rational prescribing, practitioners need to be aware of these influences on prescribing

doctors' perceptions agreeing with patients' expectations in about 80% of cases. However, in the other 20% of cases, when the doctor ascribed an expectation when none was there, patients were more likely to be prescribed medications. Similarly, when the patient did not know before the consultation whether medication was necessary, if the doctor attributed an expectation the person was more likely to receive a prescription. Britten has suggested that doctors may use a prescription to close difficult consultations.¹⁰ If this is the case, it could be that doctors also attribute an expectation of medication to the patient, perhaps to rationalise their decision.

This is not to say that patient expectation does not play a role in medication prescription, as shown in other studies,⁶⁻⁹ only that it appears to have less

influence than practitioners' perceptions. Given concerns about the costs of pharmaceuticals in limited health budgets, and the increasing promotion of rational prescribing,¹⁶ practitioners should be aware of these influences on prescribing.

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Any questions

Why does HIV infection progress to AIDS?

The answer to this deceptively simple question has aroused controversy,¹ much of it clarified recently. From the beginning of the epidemic it was clear that progression to AIDS was marked by the development of opportunistic infections or tumours, associated with immunological failure and T4 cell lymphocyte depletion. Overwhelming epidemiological evidence showed that a retrovirus, HIV, capable of infecting and destroying T cells, was the causative agent. The initial doubts expressed about HIV being the cause of AIDS¹ because of the small numbers of T cells infected have been dispelled by a clearer understanding of the dynamics of infection which was generated by mathematical modelling of changes in viral load following proteinase inhibitor therapy.² More than 109 viral particles are produced each day, predominantly from recently infected T cells. Although the number of T cells destroyed by this process is controversial,³ it is likely that this high rate of destruction cannot be compensated for by increased rates of production, and T4 cell numbers therefore decline. It also seems that specific immune responsiveness to particular antigens

(measured by the V beta family repertoire) is depleted as the T4 cell numbers fall, leaving the patient open to a range of opportunistic infections.

The obverse of the question posed is why HIV infection does not progress to AIDS in a small proportion of patients (5-10%). This may represent the extreme of normal biological variability, but some of these individuals have deletions in the viral genome rendering it non virulent and others have a relatively vigorous and, more importantly, broad spectrum cytotoxic lymphocyte response to the virus which may keep replication in check for long periods.

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