The more time spent on listening, the less time spent on prescribing antibiotics in general practice

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Objective. To analyse the variation between primary care centres (PCCs) with regard to prescribing antibiotics and to investigate whether the variation can be explained by factors related to patient satisfaction and to socio-demographic characteristics of the populations in the catchment areas of the PCCs.

Methods. The frequency of prescription of antibiotics by GPs at the PCCs was used as the dependent variable in a multivariate regression analysis. Questionnaire data for patient satisfaction and register data for socio-demographic characteristics were used as explanatory variables. The study was set in a county in south-east Sweden, and 6734 patients consulting GPs at 39 out of the 41 PCCs in the county participated. Variables correlating with the frequency of antibiotics prescription at PCC level and with patient satisfaction were the main outcome measures.

Results. A seven-fold variation in the extent of the prescription of antibiotics between the PCCs was observed. In the multivariate analysis, a high antibiotic prescription rate relates to high overall patient satisfaction with GP consultation as well as to the share of males in the listed population but to low satisfaction with the time spent by the GP on listening to the patient.

Conclusion. A high frequency of prescription of antibiotics at a PCC may reflect a general disposition among GPs to give priority to maintaining good relations with the patients. However, a low level of prescription may be consistent with patient satisfaction if more time is spent on listening to and informing the patients. Thus more time spent on listening to the patients may reduce the prescription of antibiotics without reducing patient satisfaction.

Keywords. Antibiotics, consultations, patient satisfaction, prescriptions, primary health care.

Introduction

The emergence and spread of resistant bacteria is of growing concern in most countries and is related to high use of antibiotics in the community. In primary care, approximately 25% of consultations are related to infectious diseases and the use of antibiotics in primary care is therefore of interest.

Several studies have shown that GPs experience a demand from patients for drugs. The connection between patient expectations and the actual prescribing behaviour of the doctor is complex, but those patients who expect antibiotics are more likely to receive them. Many physicians acknowledge that they prescribe antibiotics to satisfy their patients, but it is not evident that patients become more satisfied if they receive antibiotics. Most studies of differences in the patterns of prescription of antibiotics are based on the analysis of individual differences between patients or doctors. However, the marked variation between geographical areas has not been analysed in relation to patient opinions about the care providers in the area. The aim of this study was to analyse differences between primary care centres (PCCs) in the prescription of antibiotics in relation to questionnaire data regarding patient satisfaction as well as socio-demographic characteristics of the populations in the areas of the PCCs.
Methods

Study setting
The study analyses the sale of antibiotics prescribed at the primary care centres in the county of Östergötland, situated in south-east Sweden with a population of about 420,000.2 All primary care in the region is managed by 41 PCCs, each with 4000 to 19,000 patients listed during 1998.7 The consumption of antibiotics in the county was 13.9 defined daily dose (DDD) per 1000 inhabitants and day, which was close to the national average in 1998.

Antibiotic prescription data
Data for all antibiotics (ATC-group J01) prescribed by doctors at PCCs and dispensed by the pharmacies was obtained from the National Corporation of Swedish Pharmacies. The dispensed drugs were registered at the pharmacies and the prescribing PCCs were identified by codes on the prescriptions. Antibiotic prescriptions were registered during the final six months of 1998. The frequency of prescription, measured in number of DDD per GP consultation, was used as dependent variable in the analysis.

Questionnaire data
A postal questionnaire was sent to a representative (consecutive and systematic) sample of 250 patients taken from those who consulted GPs during a period of six weeks in 1998 at 39 of the 41 PCCs. One PCC could not participate because of ongoing computer upgrade work and one PCC declined to participate. The total response rate among the patients was 69% (n = 6734/9750). The response rate at each PCC varied from 53 to 81%. In a multiple regression analysis, a high response rate at a PCC was predicted by a low rate of persons born outside Sweden in the population of their catchment area together with a high mean concerning general satisfaction with the GP consultation in the questionnaire.

The questionnaire included age, perceived health status (four response alternatives from ‘Entirely healthy’ to ‘Very ill’), satisfaction with the time the GP devoted to listening to the patient’s problem and overall satisfaction with the consultation (seven-graded response scale from ‘Very bad/dissatisfied’ to ‘Very good/satisfied’). The questionnaire results (mean, percentage) were calculated for each health centre.

Satisfactory validity properties of the questionnaire have been demonstrated in analyses of differences between groups of patients as well as between PCCs.7

Register data
The socio-demographic characteristics of the population in the catchment area and records of the listed people at each PCC were obtained from the county council’s central register. Three variables indicating socio-demographic status and the gender distribution were selected for the analysis. Since the use of antibiotics varied substantially in different age groups,2 the percentages of listed patients in the age groups below 20 years, 20–64 years and above 65 years were included as variables in the analysis.

Statistics
Eleven explanatory variables were selected from the questionnaire and registers, and were used in a multivariate regression analysis with the prescription of antibiotics at the PCC as dependent variable.

Results
On average, 6.0 DDD of antibiotics per 1000 inhabitants, per day, were prescribed in primary care, which constituted 43% of the total antibiotic usage in the county in 1998. A comparison of the different catchment areas of the PCCs revealed a seven-fold variation in antibiotic prescription, ranging from 0.36 to 2.6 DDD per GP consultation, with a mean of 1.8.

The characteristics of the PCCs selected as explanatory variables in the analysis are shown in Table 1. The multivariate analysis resulted in a regression model

<table>
<thead>
<tr>
<th>Variable per PCC</th>
<th>Measure/unit</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Years</td>
<td>30.0</td>
<td>56.2</td>
<td>47.0</td>
<td>5.02</td>
</tr>
<tr>
<td>Perceived health (mean)</td>
<td>Score 1–4</td>
<td>1.69</td>
<td>2.10</td>
<td>1.89</td>
<td>0.09</td>
</tr>
<tr>
<td>General satisfaction with the GP consultation (mean)</td>
<td>Score 1–7</td>
<td>5.30</td>
<td>6.42</td>
<td>5.90</td>
<td>0.30</td>
</tr>
<tr>
<td>Satisfaction with the time the GP spent on listening to the patient’s problem (mean)</td>
<td>Score 1–7</td>
<td>5.44</td>
<td>6.74</td>
<td>6.13</td>
<td>0.29</td>
</tr>
<tr>
<td>Register data of the population</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of income &lt;200’ SEK</td>
<td>%</td>
<td>65.4</td>
<td>86.4</td>
<td>77.0</td>
<td>5.53</td>
</tr>
<tr>
<td>Unmarried or divorced in the age group 40–64</td>
<td>%</td>
<td>17.6</td>
<td>48.9</td>
<td>28.1</td>
<td>8.66</td>
</tr>
<tr>
<td>Persons born outside Sweden</td>
<td>%</td>
<td>2.59</td>
<td>22.2</td>
<td>8.26</td>
<td>5.08</td>
</tr>
<tr>
<td>Listed persons aged 0–19</td>
<td>%</td>
<td>8.70</td>
<td>36.3</td>
<td>24.5</td>
<td>5.22</td>
</tr>
<tr>
<td>Listed persons aged 20–65</td>
<td>%</td>
<td>51.5</td>
<td>75.0</td>
<td>57.8</td>
<td>4.49</td>
</tr>
<tr>
<td>Listed persons aged &gt;65</td>
<td>%</td>
<td>5.51</td>
<td>25.3</td>
<td>17.7</td>
<td>4.70</td>
</tr>
<tr>
<td>Rate of males among listed persons</td>
<td>%</td>
<td>45.8</td>
<td>57.6</td>
<td>49.8</td>
<td>1.8</td>
</tr>
</tbody>
</table>
in which a high antibiotic prescription rate was predicted by a high overall patient satisfaction with the GP consultations and a high percentage of males among the listed population, but also by a low satisfaction with the amount of time the GP spent on listening. The total adjusted R-square was 0.46.

Discussion

The variation in number of antibiotic prescriptions between the different PCCs in this study was substantial. Three variables, general patient satisfaction, GPs’ time to listen and percentage of males, explained as much as 46% of the variation between different PCCs.

The connections between patient expectations, prescription of antibiotics and patient satisfaction are complex. In this study, the multiple regressions showed that patients at PCCs with greater prescription of antibiotics were more satisfied with GP consultations. However, in this study, ‘patient satisfaction’ referred to all patients, not only to those who received antibiotics. This means that the results must be given a wider interpretation, e.g. PCCs where doctors were more willing to prescribe antibiotics had a greater number of satisfied patients. This can partly be due to the actual prescription of antibiotics but may also reflect a more general disposition among GPs to give priority to maintaining good relations with their patients.

The present study also showed that the prescription of antibiotics was lower at PCCs where the patients were more satisfied with the amount of time the GPs spent on listening to their problems. Other studies have reported that doctors found it difficult and time-consuming to explain to the patients why they did not need antibiotics.5,6 Longer consultation time has in previous studies also been found to be related to both lower prescription of antibiotics6 and higher patient satisfaction.9 The variable of satisfaction with the amount of time the GPs spent on listening used here is not necessarily primarily related to the actual listening time but rather to the quality of listening. The results are interesting since the variable of the GPs’ time spent on listening to the patients’ problems is comparable with other variables found to be related to patient satisfaction, e.g. information provision by the physician and time spent on discussing treatment effects, and may also be an indication of a more patient-centred consultation style.10

Several studies of the prescription of drugs in general and antibiotics in particular are based on analyses of differences between individuals (patients and/or GPs). Our results, based on analyses of differences between PCCs, indicate that a more patient-centred consultation style may help reduce the prescription of drugs like antibiotics without reducing the patient satisfaction.

Acknowledgement

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References