Chapter 2 A cross-sectional study of prescribing patterns in chronic psychiatric patients living in sheltered housing facilities

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Abstract

Objective
This study aimed to analyze prescribing patterns of chronic psychiatric patients living in sheltered housing facilities, to identify the extent of polypharmacy, and to estimate associated risks in this patient group.

Methods
In a retrospective cross-sectional study the prescription data of 323 chronic psychiatric patients (average age: 48.5 years) living in sheltered housing facilities in Rotterdam, The Netherlands were analyzed. Prescription data were obtained from pharmacy dispensing records.

Results
Patients received on average 4.6 drugs (95% CI, 4.3 - 4.9). The most frequently prescribed drugs were as expected antipsychotics, benzodiazepines, and antimuscarinic drugs. Overall 25% (n=81) of patients received two or more antipsychotic drugs. A high proportion of patients (38%, n=124) received one benzodiazepine and 15% (n=50) received two or more benzodiazepines.

Conclusion
Patients in our study received a worryingly high number of drugs and a quarter of the population was subject to antipsychotic polypharmacy. This increases the risk that drug-drug interactions, adverse drug reactions, and noncompliance occur. Our study indicated potentially low quality of prescribing and showed the need for reviewing and special monitoring of pharmacotherapy in this patient group.
Introduction

Analyzing prescribing practices of antipsychotic drugs has been important in investigating deviations in medication use from evidence-based guidelines. A problem which has been repeatedly highlighted in schizophrenic patients is the simultaneous use of more than one antipsychotic. Although this may be justified in some patients, such prescribing remains controversial.\textsuperscript{1-3} Reported rates range between 5% and more than 90%.\textsuperscript{4-7} These wide variations may be due to changes in prescribing over time,\textsuperscript{8} differences between countries due to local prescribing traditions and cultural factors,\textsuperscript{5,9} patient populations, and care settings.\textsuperscript{9} For example, relatively low rates of polypharmacy have been reported for patients treated in the ambulatory setting.\textsuperscript{10-15}

Whilst there have been many studies on prescribing patterns in ambulatory or hospital care, little work has been done on patients living in residential care or sheltered housing facilities. We identified only one recent study from Italy\textsuperscript{16} and one study from the United States analyzing data from the 1970s and 1980s.\textsuperscript{17} Changes within mental health care suggest that a rising proportion of patients are being cared for in sheltered housing facilities.\textsuperscript{18} Recent data from the Netherlands show that about 23% of all institutionalised patients live in sheltered housing facilities.\textsuperscript{18} This emphasizes the need to investigate prescribing for this patient population.

Prescribing practices may be analyzed on three different levels.\textsuperscript{19} Level one is a simple review of the prescribed medication, often based on pharmacy dispensing data. Level three is a full clinical medication review which requires medical notes and information on patient's views and experiences with medication use. Level one is easy to perform and is, therefore, particularly useful to highlight potential high risk areas which need further in-depth review.\textsuperscript{19} Therefore, the present study was undertaken to analyze prescribing patterns in chronic psychiatric patients in residential care. We aimed to identify the extent of polypharmacy and estimate associated risks in this patient group.

Methods

In a retrospective cross-sectional descriptive study, the prescription data of 323 chronic psychiatric patients (average age: 48,5 years) from the years 2003-2004 were analyzed. Data were obtained from pharmacy dispensing records. Patients lived in 20 different sheltered
housing facilities in Rotterdam, The Netherlands. Patients suffered from chronic psychiatric diseases, such as schizophrenia, chronic mood disorder, and/or personality disorder. They lived voluntarily in these facilities when they were not able to take care of their everyday life, in most cases after discharge from a psychiatric hospital. A nurse was constantly present to provide help and support if required. The policy of the sheltered housing facilities was to support patients in their daily life, but not to treat them for psychiatric symptoms. Patients were treated by their general practitioners or psychiatric nurses and psychiatrists from several psychiatric facilities.

Polypharmacy
Prescription data were analyzed to identify most frequently prescribed drugs, the mean number of drugs prescribed per patient, the number and type of psychotropic drug classes prescribed, and the number of patients who received combinations of antipsychotic drugs. If a patient received the same drug in two different pharmaceutical forms (e.g., depot preparation and oral preparation) this was not defined as polypharmacy. The number of patients receiving more than one drug with sedative effects was identified. Low-potency antipsychotics, benzodiazepines, and antihistaminics were defined as medication with sedative effects.

Adverse drug reactions
We analyzed the profile of adverse drug reactions for each prescribed medication based on the most commonly used reference in The Netherlands. The following adverse drug reactions were selected: gastrointestinal side effects, hypotension, extrapyramidal side effects, anticholinergic side effects, diabetogenic effects, and weight gain. For each patient we counted the number of drugs he/she received known to cause these adverse drug reactions.

Drugs prescribed for potential adverse drug reactions
We analyzed the number of patients receiving medication which was most probably prescribed for prophylaxis or treatment of adverse drug reactions. The observed medications were gastro-protective drugs, antimuscarinic drugs used for extrapyramidal side effects, and antidiabetics. The drug profile of patients receiving antidiabetic medication was analyzed to identify inappropriately prescribed comedication.
Results

Patients received on average 4.6 drugs (95% CI, 4.3 - 4.9). The most frequently prescribed drugs were antipsychotics, benzodiazepines, and antimuscarinic drugs (figure 1).

Figure 1: Most frequently prescribed drugs

Table 1 shows type and number of psychotropic drug classes prescribed. The majority of patients (79%, n=255) received antipsychotic medication. Overall 25% (n=81) of patients received two or more antipsychotic drugs. A high proportion of patients (38%, n=124) received one benzodiazepine, and 15% (n=50) received two or more benzodiazepines. Further analysis showed that 66% (n=214) of the patients received medication with sedative effects. 22% (n=72) of the patients received two drugs, and 9% (n=29) of the patients received three or more drugs with sedative effects.

Table 1: Number of patients (%) receiving drugs from different psychotropic drug classes (n=323 patients)

<table>
<thead>
<tr>
<th>Drug class</th>
<th>One drug</th>
<th>Two or more drugs</th>
</tr>
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<tbody>
<tr>
<td>Antipsychotic drugs</td>
<td>174 (54%)</td>
<td>81 (25%)</td>
</tr>
<tr>
<td>Mood stabilizers</td>
<td>54 (17%)</td>
<td>11 (3%)</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>120 (37%)</td>
<td>10 (0%)</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>124 (38%)</td>
<td>50 (15%)</td>
</tr>
</tbody>
</table>

The analysis of the profiles of adverse drug reactions (Table 2) showed that almost all patients received at least one drug known to cause gastrointestinal side effects such as constipation, dyspepsia or nausea and 36% (n=115) of patients received four or more drugs.
known to cause such side effects. More than half of the patients (54%, n=173) received two or more drugs with potential hypotensive effects. Drugs known to cause extrapyramidal symptoms (including atypical antipsychotics) or tremor were often concomitantly prescribed: 54% (n=176) patients received two or more drugs known to cause this adverse drug reaction. More than one drug with potential anticholinergic side effects were prescribed for 37% (n=120) of the patients. Nearly half of all patients (49%, n=159) received at least one drug with potential diabetogenic side effects and 61% (n=197) of patients received two or more drugs with weight gain as a side effect.

In total 15% (n=50) of patients were prescribed gastroprotective medication (11%, n=37) proton pump inhibitors, 4% (n=14) H$_2$-receptor antagonists. Overall, 28% (n=89) patients received antimuscarinic drugs, mostly trihexyphenidyl or biperiden which are used to treat extrapyramidal symptoms. In total, 11% of the patients were using antidiabetic medication. Of these 36 patients, 18 patients had concomitant prescriptions for medication with diabetogenic side effects, as for example clozapine.

Table 2: Number of patients with cumulative risk to suffer from adverse drug reactions

<table>
<thead>
<tr>
<th>Type of adverse drug reaction</th>
<th>Number of patients (%) who were prescribed 1, 2, 3, 4 or more than 4 drugs concomitantly, which are known to cause the adverse drug reaction (n=323 patients)$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Gastrointestinal symptoms</td>
<td>62 (19%)</td>
</tr>
<tr>
<td>(constipation, dyspepsia,</td>
<td></td>
</tr>
<tr>
<td>nausea)</td>
<td></td>
</tr>
<tr>
<td>Hypotension</td>
<td>107 (33%)</td>
</tr>
<tr>
<td>Extrapyramidal symptoms and</td>
<td>119 (37%)</td>
</tr>
<tr>
<td>tremor</td>
<td></td>
</tr>
<tr>
<td>Anticholinergic effects</td>
<td>117 (36%)</td>
</tr>
<tr>
<td>Weight gain</td>
<td>87 (27%)</td>
</tr>
<tr>
<td>Diabetogenic effects</td>
<td>139 (43%)</td>
</tr>
</tbody>
</table>

$^a$ categories are mutually exclusive, i.e. patients receiving 3 drugs causing gastrointestinal symptoms are not included in the category of patients receiving 2 drugs.

**Discussion**

Chronic psychiatric patients living in sheltered housing facilities in Rotterdam received on average 4.6 drugs and a quarter of patients were subject to polypharmacy of antipsychotics. This percentage polypharmacy is at the high end of reported usage in the ambulatory settings$^{10-15}$ and similar to the recent Italian study carried out in residential patients.$^{16}$ Some of the polypharmacy may be due to switching attempts which sometimes result in the patient staying on both antipsychotics or theoretical rationales which are advocated by some.$^3$
Nevertheless, there is still little evidence that benefits outweigh the risks of this practice.\textsuperscript{1,2} Polypharmacy with other drugs was also noted, such as the frequent prescribing of medication with sedative effects. Whilst this may be indicated, the prescribing of more benzodiazepines at the same time often carries avoidable risks, such as dependency, misuse and oversedation. Due to the cross-sectional design of our study we could not estimate the amount of inappropriate long-term prescribing of benzodiazepines. However, in the literature it is suggested that inappropriate prescribing of benzodiazepines occurs frequently. For example one study conducted in general practitioners in the Netherlands found that only 4\% of the patients who received benzodiazepines received them according to guidelines.\textsuperscript{21}

Patients in our study received a worringly high number of drugs (on average 4.6 drugs). This was considerably higher than the average 2.7 drugs per patient found in the Italian study.\textsuperscript{16} It is difficult to explain the difference. In our study, a lower percentage of patients were prescribed benzodiazepines (53\% versus 70\% in the Italian study), but a higher percentage were prescribed antidepressants (37\% versus 14\% in the Italian study). The high number of drugs prescribed per patient certainly increases the risk that drug-drug interactions,\textsuperscript{22} adverse drug reactions, and noncompliance occur.\textsuperscript{23} Based on our data, in particular gastrointestinal side effects may occur frequently. Not surprisingly, a considerable proportion of patients received protective medication such as proton pump inhibitors; but a recent study suggested undertreatment of dyspepsia occurs frequently.\textsuperscript{24} Furthermore, we found many patients to have a high cumulative risk of suffering from extrapyramidal symptoms. Additionally, a high percentage of patients received medication with sedative effects as well as drugs with hypotensive effects. It is known that such combinations increase the risk of falls and hip fractures in the elderly,\textsuperscript{25,26} and this needs to be investigated in psychiatric patients. Finally, the majority of patients were prescribed medication with diabetogenic side effects and/or medication causing weight gain. Guidelines on monitoring the well-known metabolic risks in schizophrenic patients\textsuperscript{27,28} need to be implemented in daily practice.\textsuperscript{29,30}

In our study we were restricted to the analysis of prescribing data and it was not possible to collect data on patient’s diagnosis, duration of illness, severity of disease, and patient adherence to medication. We estimated for every patient a cumulative risk of side effects, without knowing if they actually occurred. Furthermore, we have only assessed prescribing in a limited sample of patients from one region. However, because of the scarcity of data on prescribing for chronic psychiatric patients in residential care, our study is important in indicating potentially low quality of prescribing and monitoring needs.
References


