Effects of educational outreach visits on prescribing of benzodiazepines and antipsychotic drugs to elderly patients in primary health care in southern Sweden

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**Background.** Different methods have previously been tested to affect GPs’ prescribing habits. Attention has been drawn to benzodiazepines and antipsychotic drugs that are associated with several adverse effects in the elderly.

**Objective.** To evaluate if educational outreach visits to GP practices can affect the prescribing of benzodiazepines and antipsychotic drugs to the elderly and to evaluate the opinions of the participating GPs on such education.

**Methods.** In the county of Skåne, Sweden, 41 GP practices were invited to participate in educational outreach visits. Fifteen GP practices accepted the invitation. Practices were randomised to active (8 practices, 23 physicians) and control group (7 practices, 31 physicians). After the educational outreach visits prescribing of benzodiazepines and antipsychotic drugs to patients 65 years or older were measured for 1 year. The control group participated in the education after the study period. The opinions of GPs on educational outreach visits were evaluated.

**Results.** One year after the educational outreach visits there were significant decreases in the active group compared to control group in the prescribing of medium- and long-acting benzodiazepines and total benzodiazepines but not so for antipsychotic drugs.

**Conclusions.** Educational outreach visits can be effective in modifying GPs’ prescribing habits. We have shown this to be so for prescribing of benzodiazepines to elderly patients in primary health care. Educational outreach visits are also very well appreciated by participating GPs.

**Keywords.** ageing, family medicine, postgraduate education, prescribing.

**Introduction**

In Sweden about 50% of all drugs are prescribed by GPs.\(^1\) These GPs obtain most of their information on drug treatment from pharmaceutical companies.\(^2\) With rising drug-costs more producer-independent information has been requested. In a Cochrane review on educational outreach visits the authors concluded that these appear to be a promising approach to modifying health professionals’ behaviour, especially prescribing.\(^3\) In another review of the effect of continuing medical education (CME) strategies where studies from 1974 to 1994 were evaluated the authors concluded that effective CME such as systematic practice-based interventions and outreach visits are seldom used compared with less effective methods such as conferences.\(^4\) Of later studies on educational interventions in family practice some have\(^5–7\) and some have not\(^8,9\) shown improvements in outcome measures. Studies that measured the GPs’ knowledge after educational intervention have shown positive effects.\(^6,10\)

Benzodiazepines (BDZ) are widely used and their use is highest among the elderly.\(^11\) In southern Sweden...
(Skåne) patients 65 years and older use 84.2 defined daily doses (DDD)/1000 inhabitants compared with 27.4 DDD/1000 inhabitants for all age groups. BDZ have a wide range of CNS effects such as sedation, drowsiness, memory difficulties and lack of coordination. The elderly experience excessive sedation from BDZ compared with younger individuals. In a study on 308 patients with suspected dementia, dementia was attributed in 13 patients to chronic treatment with a single BDZ. The prolonged half-life of many BDZ in the elderly increases the risk of accumulation, which could cause the serum concentration to reach a level where a delirium is induced. The strongest evidence for BDZ-related impaired cognition in the elderly is from a study that documented the improvement of cognitive deficits upon drug withdrawal. According to one study of more than 400 hospitalised patients the relative risk of developing cognitive impairment was 3.5 (95% CI: 1.4–8.8) for those who reported taking BDZ in daily doses equivalent to 5 mg or more of diazepam. Reducing BDZ use by elderly patients is important for several reasons. BDZ use by elderly patients is not only associated with cognitive side effects, but also increases the risk of hip fractures. According to an American study with BDZ appears to increase the risk of hip fractures even at modest doses. These fractures lead to hospitalisation costs. In a European study it was estimated that costs of accidental injuries related to BDZ use in the EU varied between Euro 1.5 and 2.2 billion each year. More than 90% of these costs were in the elderly with fractures as the major contributor.

Antipsychotic drugs are often used for the treatment of behavioural symptoms in demented persons. These drugs are associated with several adverse effects, such as extrapyramidal and anticholinergic effects including delirium. Antipsychotic drugs have long been reported to cause delirium. Blockade of α-receptors is a common effect among these drugs, can cause orthostatic reactions, which further increase the risk. All traditional antipsychotic drugs have been reported to increase the risk of delirium. In one study on patients who were transferred from the psychiatric ward to the medical ward because of delirium, 31% of cases were due to low-potency antipsychotic agents.

The aim of this study was to evaluate whether educational outreach visits to GP practices can affect the prescribing of BDZ and antipsychotic drugs to the elderly and to evaluate the opinions of the participating GPs towards such education.

Material and methods

Subjects and practices
The committee for research ethics at the University of Lund gave their approval to the study. Each GP gave his or her informed consent to participation. All (41) GP practices in two districts of the county of Skåne in the south of Sweden were offered group-education programmes on “drug treatment that may cause confusion in the elderly” by a physician (PM) and a pharmacist (AB). Among the 15 GP practices that accepted eight were randomised to active education and seven to control group (Fig. 1). Characteristics of the practices are described in Table 1. For the active group the group-education was held two times at each centre from October–December 2000. The prescribing of BDZ and antipsychotic drugs was then monitored during the period October 1, 2000–December, 2001 for the active and the control groups. The control group participated in the education after the study period.

Outreach visit
The physician and the pharmacist visited each practice twice with an interval of 2–8 weeks. The first meeting dealt with different causes of confusion in the elderly.
These causes included medications but also other reasons e.g. infections and other illnesses. Literature as well as actual cases were discussed. The second meeting dealt with the effects of BDZ and psychotropic drugs in the elderly. Special attention was drawn to the risks of BDZ with medium- or long-acting duration of action. Medium-acting BDZ prescribed in Sweden are alprazolam, nitrazepam and flunitrazepam whereas diazepam is the only long-acting BDZ. The main message was that these drugs only should be used in the elderly after the potential disadvantages have been considered. We did however stress that it is not easy to withdraw long-term therapies. If trying to do so we recommended thorough evaluation of the effects. There were no discussions about what prescribing was going to be measured or when. Actual cases were discussed and commented on. After the second visit the physicians’ opinions were evaluated using an anonymous questionnaire. The questionnaire consisted of six questions that could be answered by selecting a number on a scale of 1–10, where 1 mean strongly disagree and 10 mean strongly agree (Table 2). The questionnaire was constructed based on a questionnaire used in a similar study.6 The opinions were evaluated both in the active and the control groups.

**Table 1 Characteristic of primary care centres included in the study**

<table>
<thead>
<tr>
<th>Centre number</th>
<th>Active group. Number of GPs</th>
<th>Centre number</th>
<th>Control group. Number of GPs</th>
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<td>Median</td>
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<td>Median</td>
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**Results**

**Characteristics of the practices**
The participating practices were situated in villages or small towns except one in the control group that was in a city of 100 000 inhabitants. The centres were all publicly financed. The number of GPs varied from one to six across the practices (Table 1).

**Prescription**

One year after the educational outreach visits there was a decrease in prescribing of medium- and long-acting benzodiazepines (25.80%) and total BDP (26.63%) in the active group compared with the control group. These decreases were significant, \( P < 0.05 \) (Table 3). There were significant decreases after 9 months but not after 3 months or 6 months. For antipsychotic drugs there were no significant differences between active and control group.

**Opinions of GPs**
The opinions of GPs on the educational programmes in this study were overall positive (Table 2). The participating physicians in general agreed with the statements that this education was relevant to their clinical work and that it improved their knowledge.

**Discussion**

We targeted our intervention to decrease prescribing of BDZ and antipsychotic drugs to elderly patients in general practice since these drugs could cause these patients many problems. For BDZ we succeeded. Since the use of BDZ is a risk factor for cognitive impairment and fractures, the reduction of these drugs among the elderly may have had positive health effects for these elderly patients. Our educational outreach visits did not, however, affect prescribing of antipsychotic drugs. This could be due to different reasons. Antipsychotic...
drugs are not prescribed by GPs in the same quantities as BDZ, therefore it is harder to detect any significant changes due to the educational programme. Since the number of prescriptions of antipsychotic drugs is low our study may not have had enough power to detect a difference in contrast to the prescribing of benzodiazepines. In Sweden patients often receive prescriptions for 1 year. Any effect of an intervention is not registered until a patient uses the new prescription. That means that any changes in the prescribing behaviour will not have an immediate effect on prescribing statistics. This is the reason for our measuring dispensed medications 1 year after the intervention. We intended to measure long-term (2 years) effects of educational outreach visits on GPs’ prescribing habits. In Sweden there was a change in the way prescribing statistics were collected from the autumn of 2002. Therefore, we could not measure any long-term effects.

In this study there are rather few participating practices and they were randomised to either active or control group. They are all localized in the same districts and we have no reasons to believe that there are any differences between practices in active and control group that may have affected the results.

We have not examined the cost effectiveness of this education programme but as stated previously the use of BDZ is associated with great hospitalisation costs. The physicians in our study chose to participate in this study. A method like this can of course only succeed among physicians willing to participate in the education programme. Educational outreach visits cannot be forced on anyone.

The GPs were overall positive towards this kind of education. These results are comparable to those in an Australian study on educational programmes. As stated previously GPs in Sweden obtained most of their information on drug treatments from pharmaceutical companies. This might explain their positive attitude towards producer-independent education. We also believe that educational outreach visits can be a favoured method since they are convenient for the GPs. In Sweden the authorities and the pharmaceutical companies recently have agreed on stricter regulations on educational programmes offered by the pharmaceutical companies.

In order to attract all interested we offered all participants the same education. The control group in our study also participated in the education although after the study period.

After 2002 when the prescribing statistics (due to new EAN-codes on prescriptions) changed it is only possible to prescribe medium- and long-acting BDZ for 3 months and these drugs can only be prescribed by a physician using a special personal prescription. This is one way that the authorities in Sweden try to influence the prescribing of BDZ in the same direction as we

### TABLE 2 GPs’ opinions on the educational outreach visits (active and control). Scale 1-10 where 1 means strongly disagree and 10 strongly agree (n=54)

| (1) Content was relevant to my clinical work | 9 | 10 | 10 | 2–10 |
| (2) The material was well presented          | 9 | 10 | 10 | 2–10 |
| (3) My questions were answered adequately   | 9 | 10 | 10 | 2–10 |
| (4) This education improved my knowledge     | 7 | 8  | 10 | 1–10 |
| (5) This education will lead to changes in my prescriptions of drugs | 6 | 8  | 9  | 1–10 |
| (6) In the future I would like to participate in this kind of education | 9 | 10 | 10 | 2–10 |

Values are presented as 25 percentile (Q1), 50 percentile (median) and 75 percentile (Q3).

### TABLE 3 Geometric mean differences, and 95% confidence intervals, in per cent are given for the active group minus the control, in prescribed defined daily doses (DDD)

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<td>BDZa</td>
<td>–17.48 (–37.96 to 9.75)</td>
<td>–18.26 (–38.54 to 8.70)</td>
<td>–27.87* (–45.77 to –4.08)</td>
<td>–25.80* (–44.20 to –1.32)</td>
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<tr>
<td>Medium- and long-acting BDZb</td>
<td>–17.31 (–39.31 to 12.66)</td>
<td>–17.18 (–39.21 to 12.84)</td>
<td>–28.27* (–47.36 to –2.29)</td>
<td>–26.63* (–46.15 to –0.03)</td>
</tr>
<tr>
<td>Antipsychotic drugs, active groupa</td>
<td>–20.33 (–52.64 to 34.06)</td>
<td>–14.79 (–49.36 to 43.35)</td>
<td>–21.00 (–53.05 to 32.89)</td>
<td>1.13 (–39.90 to 70.14)</td>
</tr>
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*a Benzodiazepines are drugs belonging to group N05BA + N05CD and antipsychotic drugs are those belonging to group N05A classified by therapeutic group based on the World Health Organisation Nordic Anatomical Therapeutic Chemical classification index (ATC) codes.

**Medium- and long-acting benzodiazepines are alprazolam, nitrazepam, flunitrazepam and diazepam.

*P<0.05.
intended with our educational outreach visits. Other educational programmes have been successful in modifying the prescribing of psychoactive drugs in nursing homes without adversely affecting the overall behaviour and level of functioning of the residents. Of educational outreach visits aimed at reducing BDZ some have succeeded whereas others have not. In this study we have shown that educational outreach visits are well appreciated by GPs and could influence their prescribing habits. This could thus be one way to reduce suffering and costs due to the use of BDZ by elderly patients. We do not know if our method is the best intervention. We welcome studies that compare the outcome of different educational methods.

Acknowledgements

The authors thank pharmacists Christer Luthman and Zoltan Nagy, Apoteket AB, for prescription statistics. We also want to thank the participating GPs for their participation. We thank the department of Primary Care Research and Development in the county of Skåne, Apoteket AB and the Faculty of Medicine, Lund University, for financial support.

References