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Research report

Benzodiazepine and cyclopyrrolone reduction in general practice – Does this lead to change in the use of antidepressants? A study based on a Danish population

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ABSTRACT

Background: The consumption of benzodiazepines and cyclopyrrolones has in recent years attracted considerable interest due to serious side effects. In twelve health care practices in Denmark a few simple rules to reduce the consumption were established. Telephone recipes were abolished, and prescriptions were issued for only a single month's usage and only following personal consultation. These rules are generally in accordance with recommendations applicable in, for example, England, Norway and Denmark. After 15 months, consumption was roughly halved.

There is a general lack of knowledge about whether an intervention as described above leads to a substitution with other medicines. Here, especially antidepressants are in the spotlight.

Methods: In the twelve health care practices, the consumption of antidepressants before, during and after the intervention was followed.

Results: The total consumption of antidepressants rose by 5.2% per year during the 18 month observation period. This should be compared to the fact that the county had an increase of 8.6% per year during the same period. This increase occurred mainly in the group of selective serotonin reuptake inhibitors.

Limitations: The study does not provide information about prescription changes for individual users, or for changes in the number of users. The study is limited to the total prescribed volume of antidepressants.

Conclusion: The average prescription volume for the twelve health care practices corresponds to a relative decline. Fears that an intervention of the type mentioned above would lead to an uncontrollable increase in the consumption of antidepressants are unfounded.

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The consumption of benzodiazepines and cyclopyrrolones is a global problem and it is in sharp contrast to the existing regulations in this area. The regulations in, for example, Denmark, Norway and England are almost identical ([Addictive drugs; Communication regarding the prescription of addictive drugs, 2008](#); [Benzodiazepines warning, Chief Medical Officer's Update 37, Patient Safety, 2004](#)). In none of these countries

may these medications be used for more than a few weeks without a detailed assessment.

Since the introduction of these regulations, it has never been determined in the literature what actually would happen to the consumption of benzodiazepines and cyclopyrrolones, if these regulations were implemented. In addition, it has also not been examined which secondary effects these regulations would have on the prescription of, for example, antidepressants.

In 2004, a Danish intervention in general practices was conducted in two practices ([Jørgensen et al., 2006a,b](#); [Jørgensen and Toft, 2008a,b](#)), and in 2005 the intervention was extended to the entire municipality.

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The rules that were introduced were simple and easily implementable.

- Termination of telephone prescriptions for benzodiazepines and cyclopyrrolones.
- Prescriptions were issued only following personal consultation.
- The medications were issued for a maximum of 1 month's consumption.
- At the monthly consultation, future needs were discussed and a possible reduction in prescriptions was offered.

In the original two primary practices the reduction in benzodiazepine-anxiolytics was 85%, cyclopyrrolones 91% and benzodiazepine-hypnotics 83% over a 3¼-year period (Jørgensen, 2009a). In the larger population a reduction of 42%, 50% and 47% was observed over a period of 15 months (Jørgensen, 2007a,b).

In New York new regulations for the reduction of benzodiazepine were established in 1989 (Weintraub et al., 1991). These required that prescriptions of benzodiazepines be copied, while at the same time practitioners were required to acquire and purchase the prescription forms. Prescriptions were to be copied in triplicate on special, serialised forms. This reduced consumption by 30–60%. Subsequently, an increase in the prescription of alternative medication was observed. This led, among other things, to a 142% increase in the consumption of fluoxetine (Prozak), an increase of 33% above the national average. This was alarming, and gave the authorities food for thought.

In evaluating the effects of the primary intervention in Thyborøn, no increase in the ordination of antidepressants was reported (Jørgensen, 2009b), despite the fact that in Denmark as a whole, the volume of prescribed antidepressants increased by 8.4% from 2005–6. This study is published in order to elucidate whether a large scale intervention as described above will give rise to changes in the consumption of antidepressants, either generally or for individual classes of antidepressants.

1. Materials and methods

The data presented here comes from 15 out of 16 general practitioners covering 12 medical practices in the new Lemvig municipality. Only 1 practitioner did not participate because of age. These practitioners had a total of 20,831 patients, and approximately 1000 patients took part in the intervention (Jørgensen and Toft, 2008a). The two original practices began the intervention in 2004 and the remaining 10 practices followed after the second quarter of 2005. The practices' results are calculated as the average quarterly consumption in the year preceding the intervention, followed by consumption six quarters later.

The evaluation includes the total amount of antidepressants as well as the subgroups, all are defined in Table 1.

The Internet site www.Ordiprax.dk was used for these evaluations, since the data is easily available and covers the desired material. The material compiled in Ordiprax originates from data reported by pharmacies to the Drug Statistics Register of the Danish National Board of Health covering the sale of prescription drugs to individuals.

For each prescription handled by the pharmacy, the prescribing physician's personal code, the patient's registration number and the specific code regarding the drug in question, containing information covering the anatomical therapeutic

chemical (ATC) code, package size and total daily defined doses (DDD) in the package, were registered.

The average of the prescribed volume of antidepressants in the four quarters prior to the intervention is termed pre-intervention ("Before"). For practices 1 and 2, this covers the year 2003 while for the remaining practices this covers the period from the second quarter of 2004 to the first quarter of 2005. The prescribed volume of antidepressants six quarters later is described as post-intervention ("After"). For practices 1 and 2, this covers the second quarter of 2005 while for the remaining practices this covers the third quarter of 2006.

In order to enable comparison with the rest of the country, age- and gender-standardized data were chosen.

The intervention was accompanied by press publicity, waiting room posters and an informational circular for staff and patients. No special information regarding antidepressants was given to patients, staff or doctors, and no special initiatives for ordination in this area were implemented.

The annual average increase in the issuance of prescriptions of antidepressants for the county was calculated on the basis of quarterly figures for the period 2003 to 2006. County consumption is illustrated by a bar graph with error bars, indicating the least significant difference (LSD), $p=0.05$ calculated using Analysis of Variance (ANOVA) followed by Student–Newman–Keul's post ANOVA test.

2. Results

2.1. County results

The total increase in prescriptions of antidepressants at the county level shows a significant increase during the period 2003–6 of 8.6% on average per year (Fig. 1).

2.2. Municipality results

The total percentage reduction in benzodiazepines and cyclopyrrolones over six quarters is 50% for benzodiazepine-anxiolytics, 57% for cyclopyrrolone and benzodiazepine-hypnotics 55% (Fig. 2). The total reduction of benzodiazepines and cyclopyrrolones is 2395 DDD/1000 patients.

The increase in the total amount of prescribed antidepressants over 6 quarters was 7.8%, corresponding to an annual increase of 5.2%. This change is very unevenly distributed between individual practices, ranging from a decrease of 14% to an increase of 38% (Fig. 3). There was no correlation between practice size and the percentage change. The overall increase in prescribed antidepressants is 359 DDD per 1000 patients.

The volume of prescriptions in the groups NSMRI, NRIMA and RIMA is small, so it is not possible to draw conclusions from these groups.

In the SSRI group (Fig. 4) an increase in the volume of prescriptions was observed, with an increase of 9.2%, corresponding to an annual increase of 6.2%. SSRIs represent 72% of the total amount of antidepressants at the start of intervention and accounts for 85% of the increase in antidepressant consumption. In this group, it is especially Citalopram and Esitalopram that are represented. The numerical increase is 304 DDD per 1000 patients. Changes in individual practices range from a decrease of 15% to an increase of 44%.

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