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Intervention against Long-term use of Hypnotics/Sedatives in General Practice

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The aim of the study was to evaluate the efficiency of different strategies of intervention to reduce prescription of hypnotics/sedatives in general practice. All 356 general practitioners in the county of Aarhus, Denmark, were divided in three groups. One group received personal information at meetings, another received written material about proper use of hypnotics/sedatives and information about their own prescription rate, and the third group constituted a control group. The prescription rate was recorded before and after the intervention. There was a general decline in the prescription rate recordings, but there were no significant differences between the intervention groups and the control group.

Key words: family practice, benzodiazepines, hypnotics and sedatives, prescriptions, intervention, Denmark.

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INTRODUCTION

Compared with the other Nordic countries, the sale of hypnotics/sedatives in Denmark is large (1). From 1980 to 1988 the sale was reduced by 15.6% to 64.0 defined daily doses (DDD)/1000 inhabitants/day (2). The consumption is particularly large among the elderly, reaching 255 DDD/1000 inhabitants/day among women of 70 years or older (3). Many patients use benzodiazepine hypnotics/sedatives for long periods. In a Danish follow-up study as few as 8% of patients on long-term use stopped having further prescriptions in the follow-up year (4). This clinical practice contrasts with recommendations against daily use for more than a few weeks (5, 6) because of adverse reactions, dependence and symptoms on withdrawal (7, 8), and cessation of the hypnotic effect after use for more than a few weeks (9).

Several studies have shown that it is possible to change doctors' choice of drugs and prescription rates (10–12). The main conclusions of these studies are that mailed material has no effect, that visits by non-academic consultants (non-doctors or pharmacists) have only a minimal effect, while visits from pharmacists or physicians lead to a significant reduction in prescription rate and costs. The drugs used as indicators are mainly antibiotics and analgesics. To my knowledge there are only two previous studies on intervention against psychotropic drugs (in both cases diazepam). Both studies showed that it was possible to reduce the prescription rate, either by comparing the general practitioners' (GPs') expected prescription rate with the real rate (13, 14), or by educational visits by another physician (15).

The aims of the present study were to investigate the effect of two different strategies:

– to reduce the prescription rate of hypnotics/sedatives in general practice, and

– to alter the type of hypnotics/sedatives prescribed.

MATERIAL AND METHODS

Registered hypnotics/sedatives

The intervention was primarily directed against benzodiazepine hypnotics/sedatives which made up 93% and 78% of the sale of hypnotics/sedatives in Denmark and the county of Aarhus, respectively (personal information, Danish Statistics on Medicines). The benzodiazepines were classified as long-acting

Table I. *Prescribed defined daily dose (DDD) at the first registration, percent reduction at the second registration, median prescribed DDD/1000 patients/week at the first and second registration, and median difference in prescribed DDD/1000 patients/week between the two recordings.*

Intervention group	Prescribed DDD	Reduction percent	Median prescribed DDD/1000 patients/week registration number		Median difference in DDD/1000 patients/week
			1	2	
A (all)	67,869	15.0	441	369	−53
(+particip.)	29,109	18.5	419	355	−53
(−particip.)	38,760	12.3	453	374	−53
B	70,481	6.8	393	408	−4
C	65,856	16.7	369	348	−63
All	204,206	12.7	402	373	−53

or shorter-acting (16). In addition, the non-benzodiazepine hypnotic/sedative zoplicon was included, as well as the new benzodiazepine brotizolam in the second registration. Both were classified as shorter acting.

Demographic conditions

At the time of the study (January 1989), the county of Aarhus had 594184 inhabitants, 234467 male and 244907 female, aged 16 years or more. The lists of the participating GPs contained (October 1988) 224166 males and 235910 females aged 16 years or older.

Intervention

The County GPs were divided geographically into three groups, and the different interventions were decided by drawing lots. Thus: Group A GPs were invited by letter to participate in meetings on the proper use of hypnotics/sedatives. At the meetings, the GPs also received written information. If they did not answer the invitation the practice secretary was asked once to remind the GP about the invitation. Group B received mailed information about the proper use of hypnotics/sedatives, as well as information about their own prescription rate compared with other GPs in the county. Group C acted as a control group and received no information.

Registration of prescriptions

The prescription rates in the practices were registered during one week in January 1989, and again during one week in May 1989, one or two months after the intervention.

From the results of the first registration the prescription rate was calculated in DDD/1000 patients/day, and this information was sent to the GPs in group B in April 1989.

Participation and withdrawal of GPs

Of Aarhus County's 356 GPs (245 practices), there were 118 (87 practices) in groups A and B, and 120 GPs (71 practices) in group C.

Four practices with 6 GPs were excluded from group A: 1) Two partnership practices (2 GPs in each), from which >50% of the prescriptions went to a pharmacy not participating in the second registration, and 2) two newly started single-handed practices with an unknown number of patients. After the exclusions, group A comprised 112 GPs from 83 practices.

It was only possible to register the prescriptions of the practices, and not of the individual GPs. Among the GPs in group A, 10 from 10 partnership practices did not participate, but one or more of their partners did. In all, when these GPs were regarded as participants, 50 GPs (45%) from 33 practices (40%) participated in the information meetings.

There were no systematic drop-outs in the intervention group with respect to sex or age of GP, type of practice (single-handed or partnership), size of practice (number of patients), or prescription rate of hypnotics/sedatives. No correction was made for absence of GPs from their practices, because of holidays, for instance.

Table II. *Prescribed defined daily dose (DDD) of hypnotics/sedatives with long and shorter half-life in the three intervention groups, together with percentage of prescribed hypnotics/sedatives with long half-life at the first and second registration.*

Intervention group	Prescribed DDD				Percent long-half-lives	
	long half-lives		shorter half-lives			
	1st reg.	2nd reg.	1st reg.	2nd reg.	1st reg.	2nd reg.
A (all)	55,325	45,085	12,544	12,625	81.5	78.1
(+particip.)	24,805	18,935	4,304	4,785	85.2	79.8
(−particip.)	30,520	26,150	8,240	7,840	78.7	76.9
B	56,275	50,430	14,206	15,280	79.8	76.7
C	49,765	39,600	16,091	15,226	75.6	72.2
All	161,365	135,115	42,841	43,131	79.0	75.8

Participation and withdrawal of pharmacies

All 32 pharmacies in the county participated in the first registration, while two pharmacies (6%) withdrew from the second registration. Thus, 190 prescriptions in all (11397 DDD) were excluded, and the material from the first registration was reduced to 3263 prescriptions (204196 DDD). The second registration included 2776 prescriptions (178246 DDD).

Statistics

The material was processed by the BMDP program using the following procedures: Wilcoxon's, Mann-Whitney's and Kruskal-Wallis' tests, and linear regression analysis. The level of significance chosen was 5%.

Ethics

The study was approved by the Regional Scientific-Ethical Committee.

RESULTS

All hypnotics/sedatives

Table I shows that there were no significant differences in the prescribed DDD/1000 patients/week between the different groups before the intervention (Mann-Whitney's test). At the follow-up registration there were no significant differences between group A, or subgroups of A, and the control group (group C). On the other hand, group B prescribed significantly more hypnotics/sedatives than group C ($p=0.03$, Mann-Whitney's test).

The Table also shows the median prescribed DDD/1000 patients/week together with the median difference between the prescribed DDD/1000 patients/week at the two registrations. The median difference was negative in all groups and subgroups. The decline in the rate of prescription in the whole material from the first to the second registration was significant ($p=0.001$, Wilcoxon's test), and the difference was not significant only among non-participants in group A ($p=0.08$), and in group B ($p=0.58$), both Wilcoxon's test.

The analysis of the decline in the prescribed DDD/1000 patients/week from the first to the second registration showed no significant difference between the control group and either participating or non-participating GPs in group A, nor in group B (Mann-Whitney's test). Linear regression analysis confirmed these results. The mean differences between participants in groups A and C, and between groups B and C were −82.9 (95% confidence intervals: −191.6 to 25.5) and −52.8 (−72.8 to 74.2) DDD/1000 patients /week, respectively.

Change after half-life of hypnotics/sedatives

Table II shows the prescribed hypnotics/sedatives divided in long- and shorter-acting drugs. There was a reduction in the percentage of prescribed long-acting hypnotics/sedatives from the first to the second registration in all groups and subgroups. There was a tendency for a greater reduction in prescription rate of long-acting hypnotics/sedatives among participants in group A, but their initial level was higher than in the other groups.

The analysis of the distribution of long- and shorter-acting hypnotics/sedatives, analysed in the same way as the whole material, did not show any significant differences between the intervention groups and the control group.

DISCUSSION

The study showed that it was not possible to change the GPs' total prescription rate of hypnotics/sedatives, or distribution of long- and shorter-acting drugs, through mailed information material and information about prescription rate, or through their participation in a single information meeting about proper prescription and use.

There are at least four potential explanations for the negative results. First, the intervention may have been insufficient. Prescriptions of hypnotics/sedatives may be hard to change, harder than antibiotics for instance (10, 11), thus requiring more intense intervention. To change prescriptions of benzodiazepine hypnotics/sedatives may be even harder than to change prescriptions of benzodiazepine minor tranquillizers, since in a one year follow-up study of long-term use the rate of termination of the former was 8%, compared with 16% for the latter (4). It is likely that the information meetings, with participation of 4–12 GPs, were weaker than face-to-face meetings in their consultation rooms, as used in other studies (10, 11). The participating GPs only participated in one meeting each. Follow-up may be essential, to boost any effect from the single meeting (12).

Second, no change should be expected in the GPs' prescription rate if they are not convinced about the advantages of alternative strategies (sleeping-guidance) and preparations (shorter-acting benzodiazepines). In the present study, the meetings were taken by the professor in family medicine in the area, together with myself. We are both well known there, so I do not think it was because they did not believe in our message.

Third, it is posible that the withdrawals in group A resulted in the fact that real differences were ignored (type 2 error risk). Confidence intervals were quite wide because of variation in GP's prescription rates. A longer registration period (more than one week) was desirable but not possible, because the pharmacists did not want to participate for longer periods. Thus, variation in GPs' prescription rate could not be reduced further.

Finally, the effect of the intervention could be masked by the Hawthorne effect, i.e. the effect of being under study on the persons being studied. It cannot be excluded that GPs in the control group were aware of the intervention and thus changed prescription behaviour. Yet this interaction of the control group was minimized through the design of the study, in that the three groups of GPs were geographically limited.

Aarhus county is representative for the whole of Denmark with respect to age and sex distribution of the population. The sale of hypnotics/sedatives in the county was 14% over the mean for the whole country in 1988, and the proportion of hypnotics/sedatives belonging to the benzodiazepines was lower. Between the two registrations there was a considerable reduction in prescription rate. Previous information has indicated that there is no significant seasonal variation (personal information, Danish Statistics on Medicines), but this needs further investigation. There was a low participation rate of GPs in Group A, but no systematic drop out. The participation rate might be raised by holding the meeting in the daytime instead of in the evening, with financial support from the health authorities to cover lost working time.

Danish GPs are aware that their prescription rate of psychotropic drugs is high, and they have assumed the main responsibility for this (17). Those findings suggested that there was a good chance of changing prescribing habits. In addition, several studies carried out by GPs in their own practices have shown that long-term use of benzodiazepines can be reduced (18, 19). The GPs who carried out those studies were particularly interested, in contrast to the GPs in the present study. Still, there are no controlled large scale studies in the medical literature that show whether it is posible to reduce the inappropriate prescription and use of hypnotics/sedatives.

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