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Benzodiazepines: Are We Overprescribing?

SUMMARY

The authors made a survey of benzodiazepine use in the Family Practice Units at Toronto General Hospital and report the findings. They have examined, among other factors, drugs used, reasons for use, and perceived withdrawal symptoms. The results indicated that 24.3% of respondents had taken benzodiazepines in the previous year, and 12.2% in the previous two weeks. There was no difference in the percentage of use of benzodiazepines by males and females. This study confirms that diazepam was the most common drug used in all age ranges. Finally, 6.1% of benzodiazepine users stated that they had attempted an overdose. (*Can Fam Physician* 1987; 33:927-934.)

RÉSUMÉ

Les auteurs ont effectué une enquête concernant l'utilisation des benzodiazépines dans les unités de pratique familiale reliées au Toronto General Hospital et font état de leurs constatations. Ils ont examiné, entre autres facteurs, les médicaments utilisés, les raisons invoquées et les symptômes de sevrage perçus. Les résultats indiquent que 24.3% des répondants ont pris des benzodiazépines au cours de l'année précédente et que 12.2% de ceux-ci en ont utilisé au cours des deux dernières semaines. On n'a pas constaté de différence dans le pourcentage d'utilisation des benzodiazépines entre les hommes et les femmes. Cette étude confirme que, dans tous les groupes d'âge, le diazépam fut le médicament le plus fréquemment prescrit. Finalement, 6.1% des utilisateurs de benzodiazépines ont mentionné être allés jusqu'à l'intoxication.

Key words: benzodiazepine prescribing, drug use, drug abuse

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BENZODIAZEPINES, it has been claimed, are the most frequently prescribed drugs in the world.¹ The Annual Ontario Prescription Survey (1979) shows that from 1970 to 1978, prescriptions for minor tranquilizers, as a percentage of all prescriptions for psychotropic medications, had increased from 31% to 44%. The increase was largely accounted for by an increase in prescriptions for benzodiazepines.² In 1983, the authors of a provincial government review of the use of benzodiazepines reported that from 1977 to 1982, there was a decrease in the use of benzodiazepine

tranquillizers and an increase in the use of benzodiazepine hypnotics. Overall, the total use of benzodiazepines had not changed.³ With such extensive use of the benzodiazepines, the potential for misuse and abuse becomes high. Several studies have addressed this problem.⁴⁻⁶

The family physician is in a unique position as a primary care giver to control the use of these drugs and to explore with his or her patients alternative means to cope with their anxiety. Many self-report surveys have been done to estimate the prevalence and patterns of use of drugs and alcohol. The validity and reliability of self-reported drug-use surveys have been studied, and these studies indicate that self-reported drug use repre-

sents an underestimate of true use.⁷⁻⁹ Self-reported alcohol use was studied by Pernanen, who reported similar findings.¹⁰

Self-report surveys have many specific limitations in that they are subject to interviewer bias, to problems of recall, and, often, to difficulties in proving the validity of the data. They do, however, provide correlational relationships between personal habits and health, though they do not contribute to our understanding of the reasons for particular associations.¹¹

The present study is a survey of family-practice patients and as such omits institutionalized people, such as those in prisons, hospitals or military establishments. In addition, those who visit their family physicians more often have a higher probability of being included in the sample. Since the use of benzodiazepines can cause a short-term memory loss, the problem of recall in our study will be even greater than usual.¹²⁻¹³

The purpose of our study was to determine the prevalence and patterns of use of benzodiazepines in the Family Practice Units at the Toronto General Hospital. Specifically, questions were asked about types of benzodiazepines used, the sources from which the drugs were obtained, reasons for use, tolerance, perceived withdrawal symptoms, whether users felt that their use was a problem, and overdose attempts.

A comparison was made of demographic characteristics of non-users and users. Those who had taken a tranquilizer at least once in the past 12 months (not including pre-operative patients) were classified as users.

Method

Six hundred questionnaires were distributed in the Family Practice Units of the Toronto General Hospital. Two hundred questionnaires each were given to Team 1, Team 2, both located within the hospital, and to the St. George Health Centre, located several blocks from the hospital.

The questionnaires were distributed to each patient who had not previously filled one out as part of a regular visit to the doctor. No age restrictions were involved. In the introductory paragraph of the questionnaire, the participants were asked not to identify themselves in any way and to place completed questionnaires

in the box provided at the front desk. The first section of the questionnaire included general demographic questions. Those who stated that they had taken a tranquilizer or sleeping pill in the preceding 12 months (not including any administered pre-operatively) were asked to complete the second section of the questionnaire, which included specific questions about their drug use.

Of the 600 questionnaires handed out, 510 were returned. The response rate was 85%. Of the 510 respondents, 135 stated that they had taken a tranquilizer or sleeping pill with in the last 12 months. Those who considered medications other than benzodiazepines to be tranquilizers (i.e., antihistamines, neuroleptics or antidepressants) were omitted. There were 11 of these patients. The data were analysed by a difference-of-proportions test (2-tailed Z value) to measure significance.

The patients surveyed during the study are typical of those seen in a family practice unit. The majority (61.6%) were in the 21-40 age range, 22.0% in the 41-60 age range, and 12.2% in the 61-80 range. A few patients remained outside the 20-80 age range: 3.1% were under 20 years of age, and 1.0% were over 80 years. The ratio of females to males was 70:30. The majority of patients (56.3%) considered themselves professionals by occupation; 29.7% held clerk/secretarial positions; 7.2% were the skilled tradespersons, and 6.7% were labourers. Of our respondents, 11.9% were unemployed, 62.1% were working full time, 13.0% worked part time, 10.5% were housewives, and 2.5% were retired.

Results

In this study, 24.3% of respondents claimed to have used tranquilizers or sleeping pills at least once in the previous 12 months. Of these respondents 50% reported use within the previous two weeks. The sex of respondents was not significant. The proportion of male to female respondents who used benzodiazepines (30.0:70.0) was the same as the proportion that did not use them (30.3:69.7). In addition, in no age range, was there any statistical difference in the number of males and females who reported use. When questioned about the benzodiazepine

used, 55.4% of users reported having used diazepam; 44.6% gave the trade name "Valium". Of all tranquilizer users, 52.2% of those aged 21-40, 66.6% of those aged 41-60, and 60.9% of those aged 61-80 were using diazepam (Table 1). Lorazepam was the second most commonly used benzodiazepine (19.0%) followed by flurazepam (10.7%), triazolam (9.9%), and oxazepam (8.3%). Only 3.3% of respondents used chlorthalidopoxide (N=121, Table 2). The respondents who could not recall the name of their tranquilizer or sleeping pill totalled 11.6%. It is possible that 7.5% of this group would be identified as users of antihistamines, neuroleptics or antidepressants if the names of all drugs were available. This possibility was disregarded in our analysis because of the small number of respondents (N=0.65) involved.

The benzodiazepines were obtained by prescription by 84.4% of users, and for 80.6% of users, they were prescribed by the family physician. Although it is difficult to substantiate the response in a teaching setting involving changing residents, 76.4% of respondents stated that they always obtained their benzodiazepines from the same physician. Prescription renewals were common: close to 32% of respondents had had more than four renewals, although more than 40% had had none (Table 3).

The reasons listed by patients at the time of the study for their use of benzodiazepines included insomnia (55.3%), stresses of daily living (26.3%), irritability or nervousness (22.8%), acute anxiety (21.1%), depression (18.4%), backache or other muscle spasm (10.5%), headache (7.9%), night before an event causing unusual stress (7.9%), heart problem (3.6%), jet lag (2.6%), and fun

Table 1
Percentage of Benzodiazepine Users Who Reported Using Diazepam by Age

Age	Diazepam	Other Benzodiazepine	
21-40	52.2	47.8	N = 46
41-60	66.6	33.4	N = 33
61-80	60.9	39.1	N = 23
			Total N = 112

Note: Age groups < 20 and > 80 were omitted because N = 1 in each group.

(0.9%) (N=114, Table 4). However, many (60.7%) of the respondents using benzodiazepines had discussed their current reasons for the use with their doctor. A significant proportion of all users (40%) were taking the benzodiazepines for a reason other than that for which their doctor had prescribed the drug.

Patients described a variety of symptoms experienced when their medication was discontinued. These are illustrated on Table 5; they include insomnia (68.0%), depression (32.0%), and nervousness or anxiety (32.0%).

We found that 11.5% of benzodiazepine users considered that their use was a problem, and 6.1% attempted to overdose on the drug.

Discussion

Although many of the findings in our study are consistent with those of other studies, we noted a few differences. Smart and Adlaf, in a household survey of Ontario adults found that 15.4% of the sample reported tranquillizer or sleeping-pill use in the previous year.¹⁴ A cross-national comparison study made by Balter found that prevalence of use in the preceding year varied from 17.6% in Belgium to 7.4% in the Netherlands. The reported use in the United States was 12.9%.¹⁵

In our study 24.3% of respondents claimed to have used tranquillizers or sleeping pills in the previous year,

and of these users, 50% reported use within the previous two weeks. The 1981 Canada Health Survey, which had a base of 40,000 people, found that 10% reported tranquillizer use in the previous year, and 4.8% reported use in the previous two weeks.¹⁶

Although both in our study and in the Canada Health Survey, approximately 50% of those who had taken tranquillizers in the previous year had also taken them in the previous two weeks, the number of respondents who reported use in the previous year was higher in our study than in other surveys. The difference in these statistics may derive from the sub-group of the population participating in our study. Because we studied patients seen in the family-practice department, those who visited their family physician more frequently had a higher probability of being included in the study sample.

In our survey we found no statistical difference in any age range between the males and females who reported using tranquillizers and sleeping pills. This finding contradicts the findings of several studies which show that adult females at each age level receive more prescriptions for psychotropic drugs than do males.^{17, 18} Both the 1981 Canada Health Survey and Smart and Adlaf found that the sex ratio was 2:1 in favour of females for use of tranquillizers and sleeping pills.^{16, 14} An Ontario study by Bass and another by Anderson showed that men and women with identical symptoms attending a family-practice clinic received a different number of prescriptions for benzodiazepines. The

women received a greater number, although there was no difference in the other therapies that they received.^{19, 20}

The most commonly prescribed benzodiazepine was diazepam (Valium); 55.4% of respondents reported its use. In fact, a higher proportion of those who used diazepam were in the 41-60 and over-60 age groups, compared to other benzodiazepine users. Diazepam has a long half-life. It can be found in the plasma for a mean period of 30 hours, and an actual range of 20 to 170 hours.²¹ Elderly persons metabolize most drugs more slowly than do younger persons; furthermore, there is an increased volume of distribution which increases a drug's half-life.^{22, 23} It has also been shown that adverse drug reactions in a hospitalized population occurred more frequently in the elderly age group.²⁴ All these factors may warrant either a decrease in dosage or a change to a shorter-acting benzodiazepine.

Divisions of opinion exist about the dose and time necessary to produce dependence on benzodiazepines, although there is no longer any disagreement that dependence of a physical or psychological nature can develop.²⁵ The major indication of dependence is the development of withdrawal symptoms which have been clearly established at therapeutic dose levels.²⁶⁻²⁸

Our study suggests that a large percentage of patients report withdrawal symptoms (21.7%), while Khan in a general practice survey of withdrawal symptoms, reported a 17% incidence.²⁹ The most common symptom

Table 2
Types of Benzodiazepines Used

Name	Percentage
Diazepam (Valium)	55.4
Lorazepam (Ativan)	19.0
Flurazepam (Dalmane)	10.7
Triazolam (Halcion)	9.9
Oxazepam (Serax)	8.3
Chlordiazepoxide	3.3
Do not recall	11.6

N = 121 (Respondents could identify more than one drug if applicable.)

Table 3
Number of Prescription Renewals in Benzodiazepine Users

Number	Percentage
> 4	31.8
3-4	5.6
1-2	20.6
0	41.1

N = 121

Table 4
Reasons for Benzodiazepine Use

Reasons	Percentage
Insomnia	55.3
Stresses of daily living	26.3
Irritability (Nervousness)	22.8
Acute anxiety	21.1
Depression	18.4
Backache or other muscle spasm	10.5
Headache	7.9
Night before an unusual stress	7.9
Heart problem	3.6
Jet lag	2.6
Fun	0.9

N = 114 (Respondents could identify more than one reason.)

Table 5
Perceived Withdrawal Symptoms

Symptoms	Percentage
Insomnia	68.0
Depression	32.0
Nervousness or anxiety	32.0
Sweating	24.0
Muscular pain and stiffness	24.0
Palpitations	16.0
Intolerance of loud noises or bright lights	16.0
Tremor	12.0
Numbness or tingling	4.0
Bad Dreams	4.0
Headache	4.0
Fainting	4.0
Dizziness	4.0

N = 25 (Respondents could identify more than one symptom.)

of withdrawal was insomnia. Some of the withdrawal symptoms can be attributed to the underlying anxiety that precipitated the use of the drug initially, though such anxiety is not the cause in all instances because in some cases withdrawal symptoms do not resemble those of anxiety (e.g., abrupt weight loss).³⁰ Mellor describes the symptom groups in diazepam withdrawal. He states that diazepam withdrawal can be distinguished from anxiety by the symptom groups, the presence of tremor and myoclonus, and the relief of symptoms by a test dose; a non-benzodiazepine tranquilizer such as hydroxyzine, on the other hand, has little effect.³¹ In our study, it is not possible to determine whether the symptoms reported indicate a physical dependence. However, the symptoms reported are those perceived by the patients on withdrawal and, thus, maintain benzodiazepine use.

In our study, 6.1% of drug users claimed to have overdosed on benzodiazepines. Many overdoses are impulsive acts, and the drugs used reflect their availability.^{32, 33} In a study of overdoses made in Toronto emergency departments, benzodiazepines accounted for 34% of overdoses, and half of these were taken in combination with other drugs.³⁴ Thus, although there are few reported cases of deaths with benzodiazepine overdose alone, its combination with other drugs may be lethal.

More important may be the psychomotor, learning and memory impairment that benzodiazepines can cause.^{12, 13} One of the first large-scale studies of motor impairment under "natural" conditions was made in Britain. The prescribed drugs used by people in the three months prior to injury or death while driving a car, motorcycle or bicycle were compared with those used by a large number of controls. There was a highly significant association between the use of minor tranquilizers and the risk of a serious road accident.³⁵ Binnie confirmed this finding.³⁶

Depression was the reason given for the use of benzodiazepines by 18.4% of the participants in our study. It is surprising that they should be used for this reason, as benzodiazepines can produce widespread depression of the central nervous system.³⁷ An aggravation of depressive symptoms has been

shown in some patients not treated concurrently with antidepressants.³⁸ Self-destructive ideation leading to successful suicide in a few cases has been attributed to diazepam therapy by several authors.^{39, 40}

In a study of prisoners at Millhaven Penitentiary, using prisoners as their own controls, it was found that violent or aggressive incidents were most frequent in those using benzodiazepines.⁴¹ Although there is some evidence that benzodiazepines may be of some use for depressive disorders in which anxiety is a major component, the adverse depressive effects should be kept in mind, and caution should be used in prescribing these drugs in these circumstances.^{25, 42, 43}

Several authors have addressed the use of benzodiazepines in family medicine, but all have used either a chart review or a review of prescriptions written, and not a survey of the patients themselves.^{19, 44-49}

Bass reviewed 233 patients in his department of Family Medicine who presented with specific emotional complaints. He found that the prescribing of minor tranquilizers significantly related to the frequency of visits to a physician, previous tranquilizer use, and female gender. He found too, that 35% of his patients after six months had received at least one prescription for minor tranquilizers.¹⁹

In a review of recorded prescriptions, Rosser found that prescribing of benzodiazepines per capita increased with increasing age. Diazepam was used approximately four times as frequently as chlordiazepoxide.⁴⁵ In a subsequent study of written prescriptions Rosser found a significant shift to shorter-acting benzodiazepines: over four years the use of the shorter-acting drugs rose to 80% from 16%. He also found a 15% decline in prescriptions for benzodiazepines between 1978 and 1982.⁴⁶

As a result of what we found in our study, we believe that benzodiazepines are being used too liberally in our family-practice unit. Benzodiazepines have a place in relieving acute anxiety in the short term, but because of their potential adverse effects, they should be used cautiously in the long term. This caution is especially important in the elderly, for whom shorter-acting benzodiazepines are preferable.

We must take the responsibility of offering our patients alternative ways

of dealing with their anxieties. Anxiety is, after all, a normal part of life. (C)

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Prodiem

Indications:

The relief of acute and obstinate constipation, the early stages of more severe simple constipation and constipation of the elderly caused by loss of muscle tone and neuromusculature reflex. For use in patients being weaned off harsh laxatives or where a straight bulk forming preparation has failed to provide regular bowel evacuation.

Contraindications:

The presence of nausea, vomiting, abdominal pain or symptoms of an acute abdomen or fecal impaction.

Precautions:

For patients with a history of esophageal disorders. If mild cramping occurs, dosage should be reduced.

Dosage:

Adults - 1 to 2 level teaspoonfuls (5 g to 10 g) should be placed in the mouth and swallowed unchewed with at least 240 ml of any cool beverage including juice, milk or water. This dose may be taken before breakfast and/or in the evening depending on the condition being treated, its severity and individual responsiveness.

Children - For children aged 6 to 12 years, the dosage is half the adult dose.

Supplied:

Each 5g (1 level teaspoonful) of dark brown minty-tasting granules contains 2.71g of psyllium hydrophilic mucilloid and .62g of senna pod, 1.5 mg of sodium, 30 mg of potassium and furnishes 3.5 calories. Available in 100g and 250g canisters.

Prodiem Plain

Indications:

The relief of simple, chronic and spastic constipation and for constipation associated with pregnancy, convalescence and advanced age. For use in special diets lacking in residue fibre and in the management of constipation associated with irritable bowel syndrome, diverticulitis, hemorrhoids and anal fissures.

Contraindications:

The presence of nausea, vomiting, abdominal pain or symptoms of an acute abdomen or fecal impaction.

Precautions:

For patients with a history of esophageal disorders.

Dosage:

Adults - 1 to 2 level teaspoonfuls (5g to 10g) should be placed in the mouth and swallowed unchewed with at least 240 ml of any cool beverage including juice, milk or water. This dose may be taken before breakfast and/or in the evening, depending on the condition being treated, its severity and individual responsiveness.

Children - For children aged 6 to 12 years, the dosage is half the adult dose.

Supplied:

Each 5g (1 level teaspoonful) of light brown minty-tasting granules contains 3.25g of psyllium hydrophilic mucilloid, 1.5 mg of sodium, 30 mg of potassium and furnishes 3.5 calories. Available in 100g and 250g canisters.

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