

Benzodiazepine Utilization in a Family Medicine Residency Program

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A study was conducted to determine the benzodiazepine-prescribing habits of residents in a family medicine training program. Data were collected from medication profiles of all patients seen at the Family Practice Center from July 1975 to February 1981. Additional demographic data (ie, age, sex) were collected on patients prescribed benzodiazepines, and prescribing behavior was validated according to the Psychopharmacological Screening Criteria Development Project. Of 7,802 patients only 110 (1.4 percent) had been prescribed a benzodiazepine. Female patients (61 percent) received benzodiazepines more frequently than did male patients (39 percent). Diazepam, with 94 prescriptions, was the most frequently utilized benzodiazepine, and flurazepam was next with 18 prescriptions. Eighty-four percent of the benzodiazepines were prescribed for valid indications. Minimal or no documentation could be determined for the remaining 16 percent. Significantly higher dosages of diazepam were prescribed for skeletal muscle injury or spasm than for anxiety neuroses. Seventy-one percent of the patients prescribed diazepam and 78 percent of the patients prescribed flurazepam received therapy for less than one month's duration. Data indicate that benzodiazepines were prescribed relatively infrequently at the Family Practice Center.

The benzodiazepines remain the most commonly prescribed antianxiety agents in worldwide clinical practice, despite controversies over their appropriate use. In reviewing several sociologic studies conducted in the United States and abroad, several trends in prescribing patterns have been noted: (1) population percentages are similar in the United States and Europe, (2) nonpsychiatrists were the most frequent prescribers, (3)

women were prescribed these drugs more frequently than men, and (4) age groups of those who received prescriptions were similar.¹

Perhaps a greater issue is what constitutes "appropriate use." Anxiety commonly occurs with many mental and physical disorders and can present a diagnostic and therapeutic dilemma. Several authorities suggest that benzodiazepine use is generally conservative and appropriate but that prescribing is often casual and poorly monitored.¹ Despite these and other continuing controversies, there remains little doubt that medical personnel and consumers are increasingly aware of the potential for misuse and abuse of these agents. It is likely that adverse publicity concerning benzodi-

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azepines may be leading to a prescribing and medicating phobia among physicians and patients, respectively.

Because physicians in training may be sensitized to these issues, observations of their prescribing habits should yield clues on future benzodiazepine use. Consequently, the benzodiazepine-prescribing habits of family medicine residents were retrospectively reviewed in order to gain insight into future usage patterns.

Methods

The study was conducted at the University of North Dakota Family Practice Center, Fargo branch. The Family Practice Center is a site for training family medicine residents and a cooperative site for the training of senior pharmacy students on clinical clerkship rotations. A variety of family structures is seen in the center patients: small nuclear graduate student families, typical nuclear middle-class families, single-parent families, lower-class, broken-home, single-parent families, and occasional extended family groupings. Social characteristics vary from upper middle class to lower class, with the chief concentration being in the lower middle to middle middle class. Primarily, white collar workers with a good percentage of blue collar workers are seen. General education level is higher than average. The population is somewhat skewed toward the younger age group, but the age distribution is now approaching that of a normal population.

The data were collected from the records of patient profiles that are maintained in the clinic pharmacy. All profiles of patients seen at the center from July 1975 to February 1981 were reviewed. While not all patients who visit the center have prescriptions filled at the clinic pharmacy, all prescriptions are duplicated and the copy recorded on the patient's individual medication profile. Patient profiles were reviewed to determine the overall usage and prescribing patterns of benzodiazepines. All patients who had been given a prescription for benzodiazepines were further evaluated by complete chart review. Data on patient's age, sex, drug prescribed, dose, dosage schedule, duration, concomitant drug therapy, and diagnosis were collected.

Prescribing habits of the residents were then validated by selected criteria as suggested by the

Psychopharmacological Screening Criteria Development Project.² These criteria included (1) anxiety associated with neuroses, (2) anxiety associated with psychophysiological disorders, (3) anxiety associated with physical illness, (4) anxiety associated with alcoholism and withdrawal. Because many patients are prescribed various benzodiazepines for skeletal muscle injury or spasm, skeletal muscle injury was added as an additional criterion.

Results

Of the 7,802 new patients seen at the center from July 1975 to February 1981, 110 patients (1.4 percent) had been prescribed a benzodiazepine. The mean age was 40.0 years with a range of 18 to 82 years. Of the 110 patients who were prescribed benzodiazepines, 67 were female (61 percent) and 43 were male (39 percent). Only three of the available benzodiazepine formulations were prescribed. If patients were prescribed more than one benzodiazepine concomitantly, they were counted in each of the drug categories. Diazepam, the most frequently utilized agent, was prescribed to 94 patients. Eighteen patients received flurazepam, one received chlordiazepoxide hydrochloride and clindinium bromide combination, and three patients received a combination of diazepam and flurazepam.

In each case in which residents prescribed flurazepam, adequate documentation of hypnotic indications were given. Chlordiazepoxide and clindinium bromide combination was prescribed for one patient, with chart documentation that it was being used as adjunctive therapy for peptic ulcer disease. Seventy-nine patients (84.0 percent) were prescribed diazepam for indications outlined in the methods. For the remaining 15 patients (15.8 percent), minimal or no documentation could be determined upon retrospective chart review. Table 1 illustrates a breakdown of the number of patients receiving diazepam according to the indications.

Seventy-eight of the 94 patients receiving diazepam prescriptions were evaluated to determine mean daily dosage. Sixteen other patients on diazepam were not included in the analysis because they were given the drug on an as needed basis. The mean daily dose of diazepam was 12.3 ± 6.5 mg/d with a range of 2 to 30 mg/d. Additionally, 35 patients (45 percent) received less than 10 mg/d.

Table 1. Profile of Diazepam Usage

	No. (%)	Mean Daily Dose (mg/d)
Anxiety associated with neuroses	17 (18.0)	12.5 ± 5.0
Anxiety associated with psychophysiological disorders	3 (3.2)	5.7 ± 4.0
Anxiety associated with physical illness	20 (21)	13.6 ± 7.5
Anxiety associated with alcoholism and withdrawal	3 (3.2)	12.5 ± 3.5
Skeletal muscle injury	36 (37.9)	15.1 ± 6.5*
No reason given	15 (15.8)	8.2 ± 4.6

*Daily doses are significantly larger than compared indications (Student's *t* test, $P < 0.001$)

None of the patients over the age of 65 years received dosages higher than the suggested range (2.5 to 20 mg/d). Flurazepam was prescribed in either 15 mg or 30 mg daily dosages.

Comparison between dosages prescribed and indications were performed to examine whether patients received higher daily doses of diazepam for skeletal muscle injury or spasticity. Diazepam doses prescribed for anxiety associated with neuroses, psychological disorders, physical illness, and alcoholism and withdrawal were compared with doses prescribed for skeletal muscle injury or spasm with the use of Student's *t* test. These data indicated that significantly higher doses were prescribed for skeletal muscle injury or spasticity ($P < 0.001$, 81 *df*).

Residents tended to prescribe both diazepam and flurazepam for short periods of time in accordance with suggested therapy. Seventy-one percent of the patients prescribed diazepam and 78 percent of patients prescribed flurazepam received therapy for less than a one-month duration. The majority of patients (64 percent) received multiple daily doses. Less than 10 percent took the drug as a single daily dose.

Discussion

The findings of this study indicate that benzodiazepines in general were prescribed relatively infrequently at the Family Practice Center. Several dissimilarities were observed when comparison was made with several other studies.^{3,4} In a study by Hesbacher et al,⁵ 47 percent of their family

practice patients expressed some emotional problems during the two years prior to being surveyed, which represents a relatively high frequency of psychic stress in family practice patients. In addition, 24 percent of their population had taken some form of psychotropic medication at the time of the survey.⁶ Two other surveys observed similar results, with approximately 15 percent of the patients reporting anxiolytic drug use during a one-year period.^{7,8} Recently, Hasday and Karch⁹ reported a 7.3 percent overall utilization in a large family medicine clinic. However, data on patients receiving combination products or flurazepam were not included. Although the overall result of 1.4 percent utilization in this study is low in comparison with other studies, it is difficult to draw comparisons between different patient populations. Additionally, this study represents data on all patients seen at the Family Practice Center and becomes skewed because of inclusion of pediatric patients.

Information on benzodiazepine use does not reveal if these agents are being used appropriately. Residents prescribed nearly 60 percent of the benzodiazepines for adjunctive treatment of physical illness, whereas only 25 percent were prescribed for mental disorders. This supports previous data by Parry et al, who found that 63 percent of minor tranquilizers were prescribed for a variety of medical illnesses.⁴ The relatively high use pattern of benzodiazepines in patients with physical illness raises the question of whether the use of anxiolytics in medical disorders is appropriate. This question remains unanswered, since no good scientific

data supporting or refuting the beneficial effects of benzodiazepines in medical illness exist.

As has been found elsewhere, drug use was nearly twice as high among women as in men. These data agree with studies suggesting a higher incidence of psychic stress in women.⁵⁻⁹

No patients received dosages greater than those recommended.² Higher dosages (30 mg/d) have been suggested for treatment of skeletal muscle injury.¹⁰ Family Practice Center patients received significantly higher dosages when treated for skeletal muscle injury; however, there was a large amount of overlap, with many patients receiving smaller daily doses. If residents were aware of information dictating higher dosages for skeletal muscle injury, the trend for mean daily doses would have been higher.

Only nine patients (9.5 percent) in this study received diazepam as a single daily dose at bedtime, with 69 patients (74 percent) receiving the drug at traditional multiple daily intervals. The pharmacokinetic characteristics of diazepam make it quite suitable to be taken once daily, especially in patients receiving long-term chronic therapy.¹¹ However, controversy exists as to whether the same clinical response is obtained if a single daily dose is used. Many patients given large bedtime doses of long half-life benzodiazepines experience morning hangover. Additionally, some patients do not perceive the same benefit from taking medication on a once daily basis. There is little doubt that dosage regimens should be individualized according to patient response, including the usual placebo response that occurs. Unfortunately, information on whether residents individualized dosages based on pharmacokinetic characteristics, clinical response, and side-effects could not be extracted.

In evaluating the data, it seems apparent that residents prescribed benzodiazepines for relatively short periods of time and with frequent patient follow-up. While controversy remains as to whether long-term use of benzodiazepines are indicated for chronic anxiety, many (50 percent) chronically anxious patients do not appear to be in need of long-term treatment.¹² Therefore, periodic assessment of each patient's need for maintenance therapy seems prudent in light of evidence suggesting potential addiction and withdrawal syndromes from long-term use.

These findings indicate that the family medicine residents prescribed benzodiazepine agents with

relative conservatism. Many factors may be responsible for this low utilization, the most apparent being differences in patient populations. Other important factors that require further study include resident attitudes toward the use of benzodiazepines and the belief among many physicians that their training in anxiety management is inadequate.¹³ Also of importance is the acquired knowledge of benzodiazepine pharmacology and the attitude of the instructor projected to the medical student during basic science training. Information regarding the psychological aspect of benzodiazepine-prescribing behavior by family medicine residents would be of particular interest in view of highly visible and often negative publicity. If indeed a "benzodiazepine-prescribing phobia" exists among family medicine residents, there should be further reductions in future utilization. On the other hand, the question must be raised as to whether other forms of therapy are being used in place of benzodiazepines (ie, counseling or tricyclic antidepressants) and whether these modes of therapy offer higher efficacy, risk, and cost to benefit ratios. Factors influencing resident prescribing behavior are numerous and complex, and further study of such behavior may lead to interesting information regarding future prescribing patterns.

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