No End in Sight: Benzodiazepine Use in Older Adults in the United States

Donovan T. Maust, MD, MS,†‡ Helen C. Kales, MD,*†‡ Ilse R. Wiechers, MD, MPP, MHS,§¶ Frederic C. Blow, PhD,*†‡ and Mark Olfson, MD, MPH**†† *

OBJECTIVES: To establish the rate of new and continuation of benzodiazepine use in older adults seen by nonpsychiatrist physicians and to identify subpopulations at risk of new and continuation benzodiazepine use.

DESIGN: Cross-sectional analysis.

SETTING: National Ambulatory Medical Care Survey (2007–10).

PARTICIPANTS: Adults visiting office-based nonpsychiatrist physicians (n = 98,818) who were prescribed a benzodiazepine (new or continuation).

MEASUREMENTS: Percentage of benzodiazepine visits of all outpatient encounters according to patient age and corresponding annual visit rate per 1,000 population. Analysis was then limited to adults aged 65 and older, demographic, clinical, and visits characteristics were used to compare visits of benzodiazepine users with those of nonusers and visits of continuation users with those of new users.

RESULTS: The overall proportion of benzodiazepine visits ranged from 3.2% (95% confidence interval (CI) = 2.7–3.7) of those aged 18 to 34 to 6.6% (95% CI = 5.8–7.6) of those aged 80 and older, and the proportion of continuation visits increased with age, rising to 90.2% (95% CI = 86.2–93.1) of those aged 80 and older. The population-based visit rate ranged from 61.7 (95% CI = 50.7–72.7) per 1,000 persons in the youngest adults to 463.7 (95% CI = 385.4–542.0) in those aged 80 and older. Only 16.0% (95% CI = 13.5–18.8) of continuation users had any mental health diagnosis. Of all benzodiazepine users, fewer than 1% (95% CI = .4–1.8) were provided or referred to psychotherapy, and 10.0% (95% CI = 7. 2–13.3) were also prescribed an opioid.

CONCLUSION: In the United States, few older adult benzodiazepine users receive a clinical mental health diagnosis, and almost none are provided or referred to psychotherapy. Prescribing to older adults continues despite decades of evidence documenting safety concerns, effective alternative treatments, and effective methods for tapering even chronic users. **J Am Geriatr Soc 64:2546–2553, 2016.**

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From the *Department of Psychiatry; †Institute for Healthcare Policy and Innovation, University of Michigan; ‡Center for Clinical Management Research, Veterans Affairs Ann Arbor Healthcare System, Ann Arbor, Michigan; §Northeast Program Evaluation Center, Office of Mental Health Operations, U.S. Department of Veterans Affairs, West Haven; ¶Department of Psychiatry, School of Medicine, Yale University, New Haven, Connecticut; **Department of Psychiatry, College of Physicians and Surgeons, Columbia University; and ††New York State Psychiatric Institute, New York, New York.

Address correspondence to Donovan T. Maust, Department of Psychiatry, 2800 Plymouth Rd., NCRC Building 16, Room 222W, Ann Arbor, MI 48109. E-mail: maustd@umich.edu

Benzodiazepine use in the United States is common and increases with age. In a recent analysis, 8.7% of U.S. adults aged 65–80 were prescribed benzodiazepines over the course of 1 year.[1] Benzodiazepines are most commonly used for anxiety and insomnia, even though psychotherapy and alternative medications are recommended preferentially.[2–4] Use is a particular concern in older adults, given associations between benzodiazepines and a variety of adverse outcomes, including falls,[5] fractures,[6] motor vehicle accidents,[7] impaired cognition,[8,9] and dementia.[10] Due to the accumulation of health and safety concerns in older adults, the American Geriatrics Society (AGS) Beers Criteria include a strong recommendation to avoid any type of benzodiazepine for the treatment of insomnia or agitation, allowing that use may be appropriate for a few select indications, including severe generalized anxiety disorder unresponsive to other therapies.[11] As part of the Choosing Wisely Campaign, the AGS identified use of benzodiazepines in older adults as one of 10 things physicians and patients should question.[12]

A recent analysis of national benzodiazepine prescribing highlighted a rate of long-term use (≥120 days of medication dispensed during the year) that increased with age, growing to nearly one-third of use in those aged 65 to 80. This high rate in older adults at particular risk of harm

reflects the challenges that patients and providers face regarding discontinuing long-term benzodiazepines.[13,14] In addition to considering whether use is short or long term, interventions to reduce benzodiazepine use in older adults may need to be customized for factors such as indication for the prescription and patient engagement in psychotherapy. Prior studies based on self-report of regional samples have suggested that insomnia[15] and anxiety[16] are the primary reasons for a benzodiazepine prescription, although the studies differed as to which indication was most common. The extent to which benzodiazepine users engage in psychotherapy is critical, because psychotherapy has been shown to be effective in facilitating benzodiazepine taper,[17] especially in older adults whose indication for use is insomnia.[18,19]

Prior work on prevalence of benzodiazepine use in the United States is based on data collected more than 20 years ago,[20–22] and the recent national prescription analysis had limited encounter-level clinical information.[1] To the knowledge of the authors of the current study, there are no previous studies of benzodiazepine use that include information about psychotherapy. This article uses data from the National Ambulatory Medical Care Survey (NAMCS), a representative survey of visits to all office-based physicians in the United States. Nonpsychiatric physicians, who provide the vast majority of benzodiazepine prescriptions to adults, including nearly 95% of those to older adults, were focused on.[1] The proportion and population-based rate of visits at which a benzodiazepine is prescribed in adult outpatient visits are described, stratified according to age group. Demographic, clinical, and visit characteristics associated with benzodiazepine use were examined to identify clinical subpopulations at risk of benzodiazepine therapy and on whom to focus discontinuation initiatives. Finally, how continuation benzodiazepine users differ from new users was examined, to focus efforts that limit conversion to long-term use.

METHODS

Sample

These analyses used NAMCS (administered by the National Center for Health Statistics (NCHS) from 2007 to 2010. NAMCS is a national probability sample survey of office-based physicians designed to "provide objective, reliable information about the provision and use of ambulatory medical care services in the United States."[23] Physicians are sampled from the American Medical Association and American Osteopathic Association master files. The specialties of anesthesiology, pathology, and radiology are excluded from the survey, as are encounters such as house calls or those to institutional settings (e.g., nursing homes).

Each physician is randomly assigned to a 1-week reporting period, with data collected from a systematic random sample of visits during that week. The physician or office staff record data on patient age, sex, and race and ethnicity for selected visits on a standardized form. The overall physician response rate over the 4 years ranged from 58.3% to 62.1% and yielded a total of 125,029 encounters. Adjusting for survey design elements allows analyses to represent total annual visits to U.S. office-based physicians.[24]

Benzodiazepines and Other Medications

Survey data include information on up to eight medications that are prescribed, ordered, supplied, administered, or continued during each visit. Visits were considered benzodiazepine visits if the medication list included any of the following: alprazolam, chlordiazepoxide, clonazepam, clorazepate, diazepam, estazolam, flurazepam, halazepam, lorazepam, midazolam, oxazepam, prazepam, quazepam, temazepam, or triazolam. Each visit was classified as to whether the benzodiazepine was newly prescribed at that visit or continued (previously prescribed), as well as whether other common psychotropic medications were prescribed (new or ongoing), including antidepressants, antipsychotics, and opioids (Table S1). The total number of continued medications at the visit was also calculated (excluding benzodiazepines).

Diagnosis and Reason for Visit

Up to three visit diagnoses were recorded (using the *International Classification of Diseases, Ninth Revision, Clinical Modification*) along with up to three things the patient described as the most important reason for the visit, which survey field staff coded using a classification system developed at NCHS.[25] Encounters were identified as being for anxiety, insomnia, depression, substance use disorders, dementia, and any mental health diagnosis or reason for visit (Table S2).

Beyond the three or fewer specific visit-related diagnoses, NAMCS collects data on several chronic conditions at all visits, which were included to more fully capture medical comorbidity: asthma or chronic obstructive pulmonary disease, cerebrovascular or ischemic heart disease, hypertension or hyperlipidemia, congestive heart failure, obesity, osteoporosis, and tobacco use.

Provider and Visit Characteristics

NAMCS classifies providers into 15 specialty groups. Analysis was limited to nonpsychiatric providers, grouped as family medicine, internal medicine, and other specialty. Other visit-related information used for analysis included whether the visit was a return visit, how many times the patient had been seen in the previous 12 months, whether the visit was to address a chronic problem; whether a return visit was scheduled, whether psychotherapy or other mental health counseling was provided or ordered, whether stress management health education was provided or ordered, and visit duration (minutes of face-to-face contact).

Statistical Methods

The sample was limited to visits to nonpsychiatrist physicians by people aged 18 and older from 2007 to 2010 (n = 98,818) stratified according to age (18–34, 35–49, 50–64, 65–79, ≥80). National benzodiazepine visit estimates and corresponding 95% confidence intervals (CIs) were generated. Analyses were adjusted using survey design elements that NCHS provides for visit weight, clustering within physician practice, and stratification to allow

national inferences.[24] Survey years were combined as NCHS recommend to produce more-reliable annual visit rate estimates.[26] The proportion that these benzodiazepine visits represented of all office-based physicians' visits and the proportion of visits that were new versus continuation treatment were estimated. Using denominators (noninstitutionalized population for each age group) obtained from U.S. Census estimates,[27] annual visit rates per 1,000 population were generated.

Analysis was then limited to adults aged 65 and older (n = 32,544), and logistic regression was used to test the association between individual characteristics and benzodiazepine therapy. Any benzodiazepine prescribing (dependent variable: 0 = nonuser, 1 = user) and type of prescribing (dependent variable: 0 = new, 1 = continuation) were compared. Multivariable logistic regression was used to adjust for anxiety and insomnia, the most-common clinical indications for which benzodiazepines are prescribed.

People may have multiple conditions addressed during a visit, but NAMCS collects information on only up to three diagnoses and three self-reported visit reasons. A sensitivity analysis of the association between diagnoses and visit types was conducted by limiting analysis to visits with two or fewer diagnoses or self-reported reasons for visit (Tables S3, 4). Analyses were conducted using Stata version 13.1 (Stata Corp., College Station, TX) using two-sided tests with α = .05.

RESULTS

Benzodiazepines were prescribed at 5.6% (95% CI = 5.2–6.0%) of adult outpatient physician visits, representing approximately 20.4 (95% CI = 17.0–23.9) million visits annually. The percentage of visits at which new benzodiazepines were prescribed decreased with age, and continuation benzodiazepine use accounted for an increasingly large proportion (Table 1). The per-population benzodiazepine visit rate per 1,000 persons was lowest for young adults (61.7, 95% CI = 50.7–72.7) and increased markedly with age to 463.7 (95% CI = 385.4–542.0) in the oldest adults (Figure 1). The rate of new benzodiazepine visits was relatively constant across age groups; the increase in the overall benzodiazepine visit rate of older

adults was largely due to the increasing rate of continuation visits.

Benzodiazepine users were more likely to be older and female than nonusers (Table 2). Benzodiazepine users had higher rates of mental health diagnoses or reasons for visits, although overall, few visits had such diagnoses (Table 3); 8.2% (95% CI = 6.4–10.5%) of benzodiazepine users had anxiety as a diagnosis or visit reason, and 3.5% (95% CI = 2.5–4.9%) reported insomnia. In the sensitivity analysis limited to visits with two or fewer diagnoses or visit reasons, similar associations between diagnosis and benzodiazepine use were observed (Table S3).

More than one-quarter (95% CI = 24.6–29.3%) of visits by individuals prescribed benzodiazepines included a prescription for an antidepressant and 10.0% (95% CI = 7.4–13.3%) for an opioid. A small proportion of benzodiazepine visits included psychotherapy (0.8%, 95% CI = 0.4–1.8%) or stress management health education (3.6%, 95% CI = 2.2–5.9%).

Older adults prescribed a benzodiazepine appeared to be more medically ill, with higher proportions of chronic conditions, more visits within the past 12 months, and receipt of more prescription medications.

There was no association according to age or sex between continuation and new benzodiazepine visits (Table 2), although the odds of continuation use at a visit for a non-Hispanic black person were significantly lower than for a non-Hispanic white person, because the proportion of new benzodiazepine use by non-Hispanic black individuals was higher than continuation use. Visits by continuation and new users were largely similar across clinical and visit characteristics, but visits by continuation benzodiazepine users were far less likely to have any mental health diagnosis, anxiety, or insomnia (Table 4). When comparisons between new and continuation visits were limited to visits with two or fewer diagnoses or reasons (Table S4), the overall difference and statistical significance was little changed from results in the full sample.

Individuals at a continuation visit were more likely than those at a new benzodiazepine visit to receive an antidepressant, equally likely to receive or be referred to psychotherapy, and less likely to receive stress management health education.

Table 1. Benzodiazepine Visits of All Adults, According to Age, to Office-Based Nonpsychiatric Physicians in the United States from 2007 to 2010 (N = 98,818)

Visits	18–34	35–49	50–64	65–79	≥80	F	P-Value
Overall, n	17,156	21,447	27,671	22,895	9,649		
Benzodiazepine, n	547	1,271	1,639	1,194	554		
Benzodiazepine, %[a] (95% CI)	3.2 (2.7–3.7)	6.2 (5.7–6.8)	6.2 (5.6–6.9)	5.6 (4.9–6.3)	6.6 (5.8–7.6)	23.8	<.001
Continuation, %[b] (95% CI)	70.3 (64.0–75.9)	80.0 (76.9–82.8)	83.4 (78.6–87.2)	86.3 (81.7–90.0)	90.2 (86.2–93.1)	9.3	<.001
New, % (95% CI)	29.8 (24.1–36.1)	20.0 (17.3–23.1)	16.6 (12.8–21.4)	13.7 (10.1–18.3)	9.8 (6.9–13.9)		

[a] Weighted percentage of overall visits.
[b] Weighted percentage of all benzodiazepine visits (e.g., of encounters at which a benzodiazepine was prescribed for those aged 18–34, 70.3% were continuation prescriptions). New and continuation percentages within age groups may not add to 100% because of rounding.
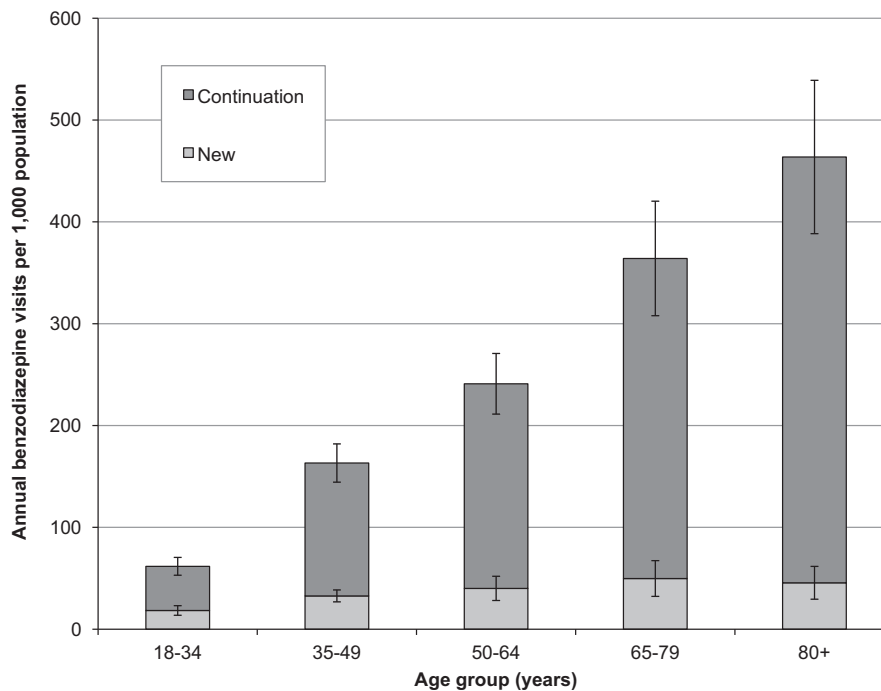CI = confidence interval.

Figure 1. Annual population-based visit rates according to age group for new and continuation benzodiazepine use by patients of nonpsychiatrist physicians in the United States from 2007 to 2010 (n = 5,205).

Continuation users were taking a larger number of other medications but had a level of medical comorbidity similar to that of new users with the exception of asthma or chronic obstructive pulmonary disease (COPD), which was more common in continuation visits. There were no statistically significant differences between the new and continuation groups according to provider type or other visit characteristics.

DISCUSSION

These analyses demonstrate that the population-based rate of new benzodiazepine use in U.S. office-based medical practice is generally consistent across adult age groups. Despite evidence of the harms associated with benzodiazepine use in older adults, efficacy of alternative pharmacotherapy and psychotherapy,[2–4,28] and professional guidelines advising against benzodiazepines,[11,12] initiation continues unabated, and continuation prescriptions account for a growing proportion of use with older age.

Prior work has suggested that benzodiazepine use in older adults is primarily for anxiety or insomnia.[15,16,22] The current findings confirm that anxiety and insomnia are the most common diagnoses and reasons reported for a benzodiazepine visit, at 21.3% and 11.6%, respectively, of new benzodiazepine visits, although there was no mental health–related diagnosis or reason for visit reported in more than 80% of all benzodiazepine visits and in nearly 60% of visits at which a new benzodiazepine was started. It may be that some benzodiazepines are started for brief stress or adjustment reactions that clinicians are not recording as a diagnosis. In a previous analysis of community-dwelling individuals newly started on an anxiolytic, the most common reason reported after anxiety or insomnia was "stressful life event, adjustment, [or] grief,"[16]

although if the individuals reported a visit reason such as stress or tension, this should have been captured in the survey data (Table S2, code 1100.0). Another possibility is that older adults may report not anxiety but instead a variety of somatic symptoms.[29] Providers may conceptualize and treat such symptoms as anxiety but not label them as such. The continuation benzodiazepine user appears to be taking "benzodiazepine[s] for less specific indications" than well-defined psychiatric disorders, as noted previously.[22]

What is perhaps most notable—and has not previously been reported to the knowledge of the authors—is the extremely small proportion of individuals who received or were referred to psychotherapy. Cognitive behavioral therapy,[28,30] short-term psychodynamic therapy,[31] and other psychosocial treatments[29] are all effective for anxiety disorders, and cognitive behavioral therapy is effective for insomnia.[4] Despite the efficacy of psychotherapy to treat the most common conditions for which benzodiazepines are prescribed, fewer than 1% of overall and new benzodiazepine visits included provision of or referral to psychotherapy. Nonpsychiatrist physicians may benefit from additional education about the effectiveness of evidence-based psychotherapies and, perhaps more importantly, improved access for their patients to such treatments. NAMCS may underestimate the provision of psychotherapy, because people may be engaged in psychotherapy with another provider, or psychotherapy may have been previously discussed or attempted. In addition, nonphysician providers provide a significant amount of psychotherapy, which NAMCS does not capture. Nevertheless, adults aged 65 and older have the lowest rates of psychotherapy use of any age group, and the NAMCS-based rate is similar to a previous analysis of psychotherapy using data from the Medical Expenditure Panel Survey.[32]

Table 2. Association Between Demographic Characteristics and Benzodiazepine Use (n = 32,544) or Continuation of Benzodiazepine Use (n = 1,748) of Older Adult Patients of Nonpsychiatrist Physicians in the United States from 2007 to 2010

Characteristic	Visits with a Benzodiazepine, n = 1,748	Visits without a Benzodiazepine, n = 30,796	Adjusted[a] Odds Ratio[b] (95% Confidence Interval)	P-Value	Continuation of Benzodiazepine, n = 1,559	New Benzodiazepine, n = 189	P-Value	Adjusted[a] Odds Ratio[c] (95% Confidence Interval)
Age								
65–74 (reference), %	45.3	50.0	1.00		44.8	49.0		1.00
75–84	38.5	37.0	1.16 (1.01–1.33)	.05	38.0	41.6	.99	0.95 (0.62–1.45)
≥85	16.2	13.0	1.40 (1.12–1.77)	.006	17.2	9.3	.09	1.96 (0.82–4.67)
Sex								
Male (reference)	31.7	43.7	1.00		31.2	35.2		1.00
Female	68.3	56.3	1.61 (1.38–1.88)	<.001	68.8	64.8	.55	1.21 (0.66–2.22)
Ethnicity								
Non-Hispanic white (reference)	82.5	79.8	1.00		83.6	75.3		1.00
Non-Hispanic black	7.1	8.1	0.87 (0.67–1.13)	.29	6.2	13.6	.009	0.38 (0.18–0.78)
Hispanic	8.3	8.9	0.99 (0.76–1.30)	.96	8.4	7.4	.96	1.14 (0.45–2.90)
Other	2.1	4.0	0.52 (0.33–0.82)	.005	1.9	3.7	.11	0.39 (0.15–1.06)

[a] Adjusted for diagnosis or reason for visit of anxiety and insomnia.
[b] Odds of benzodiazepine use.
[c] Odds of continuation of benzodiazepine use.

In addition to psychotherapy as an alternative to benzodiazepines, selective-serotonin reuptake inhibitors are considered first-line pharmacotherapy for anxiety disorders.[33,34] Among all benzodiazepine visits, just one-quarter of individuals were taking an antidepressant. The low proportion of participants receiving psychotherapy and the low proportion of those taking antidepressants suggest that older adults are not receiving treatments that are more appropriate and safer than benzodiazepines.

Nearly 10% of those prescribed a benzodiazepine were also prescribed an opioid, and co-prescription of antipsychotics occurred in 3% of older adults. Co-prescribing of such central nervous system–active medications is associated with cognitive decline,[35] and use singly[5,6,36] or in combination[11] is associated with greater risk of falls and fractures. An added concern is their role in pharmaceutical overdose deaths. Individually, opioids and benzodiazepines are involved in more than 75% of pharmaceutical overdose deaths.[37] In opioid-related deaths, which are the leading type of pharmaceutical death, benzodiazepines are the most commonly co-prescribed medication, involved in 30% of deaths. Although combination use of these agents may be appropriate in select populations, use should be considered only after fully discussing potential risks, benefits, and alternatives.

There were few differences in other clinical characteristics between new and continuation benzodiazepine users. A larger proportion of continuation users have asthma or COPD, which is consistent with the high prevalence of anxiety disorders in individuals with chronic respiratory problems,[38] although it is also possible that respiratory symptoms may be misattributed to anxiety, leading to benzodiazepine treatment. Nonetheless, use of benzodiazepines in individuals with COPD is troubling given the association with mortality.[39]

Likewise, there are few visit characteristics that distinguish between benzodiazepine users and nonusers or new and continuation users. Visits with benzodiazepine users were slightly longer than those with nonusers, and new visits were slightly longer than continuation visits, but neither comparison was statistically significant or clinically meaningful. There was no difference according to visit disposition or whether the individual was established with the practice. Those taking a benzodiazepine had had more visits in the prior 12 months than nonusers, which is consistent with their higher overall medical comorbidity, but there was no difference between new and continuation benzodiazepine users.

This work has several limitations. First, individual-level clinical assessments of current symptoms and function were not available. Second, visit diagnoses were limited to three, so in individuals with more active problems, there may be information bias that affects the various benzodiazepine groups differently. However, when limiting analysis to encounters with no more than two diagnoses or visit reasons, the associations between diagnoses and benzodiazepine use were virtually unchanged. Third, NAMCS does not account for whether a prescribed medication is taken regularly versus as needed, so it is possible that the extent of use is overestimated. However, because only eight medications are recorded, benzodiazepine use may also be underestimated. Fourth, because NAMCS is a

Table 3. Association Between Clinical and Visit Characteristics and Benzodiazepine Use in Older Adult Patients of Nonpsychiatrist Physicians in the United States from 2007 to 2010 (n = 32,544)

Characteristic	Visits with a Benzodiazepine, n = 1,748	Visits without a Benzodiazepine, n = 30,796	P-Value	Adjusted[a] Odds Ratio[b] (95% Confidence Interval)
Clinical				
Diagnosis or visit complaint, %				
Anxiety	8.2	0.8	<.001	10.74 (7.69–15.00)
Insomnia	3.5	0.7	<.001	4.22 (2.82–6.30)
Depression	5.2	1.3	<.001	3.09 (2.12–4.52)
Dementia	0.5	0.5	.77	1.11 (0.46–2.67)
Substance use disorder	0.5	0.2	.11	1.68 (0.66–4.29)
Any mental health diagnosis	19.0	4.8	<.001	2.77 (2.17–3.54)
Medical condition				
Asthma, chronic obstructive pulmonary disease	18.2	11.7	<.001	1.71 (1.38–2.11)
Cerebrovascular accident, coronary artery disease	16.7	13.6	.005	1.28 (1.09–1.52)
Hypertension, HL	67.5	58.2	<.001	1.50 (1.26–1.78)
Congestive heart failure	5.7	5.0	.27	1.17 (0.92–1.49)
Obesity	5.4	5.9	.54	0.94 (0.69–1.29)
Osteoporosis	9.8	6.3	<.001	1.56 (1.26–1.93)
Tobacco use	8.8	5.7	<.001	1.57 (1.22–2.02)
Other psychotropic medication				
Antidepressant	26.9	7.8	<.001	3.93 (3.40–4.55)
Antipsychotic	2.6	0.8	<.001	3.41 (2.16–5.39)
Opioid	10.0	2.9	<.001	3.71 (2.63–5.24)
Total continued medications, mean (SEM)	4.6 (0.1)	3.6 (0.1)	<.001	1.10 (1.10–1.16)
Visit				
Psychotherapy	0.9	0.3	.009	1.68 (0.74–3.82)
Stress management	3.6	1.2	<.001	2.04 (1.28–3.27)
Provider				
Family practice (reference)	24.5	18.0		1.00
Internal medicine	30.6	21.8	.75	1.05 (0.84–1.31)
Specialty	44.9	60.2	<.001	0.63 (0.51–0.77)
Return visit with provider (reference new patient)	91.8	90.1	.28	1.12 (0.84–1.50)
Visit for a chronic condition	56.0	52.7	.09	1.13 (0.97–1.32)
Visit disposition: scheduled follow-up	78.1	77.2	.56	1.05 (0.89–1.25)
Number of visits in past 12 months, mean (SEM)	5.2 (0.2)	4.3 (0.1)	<.001	1.03 (1.02–1.04)
Time with physician, minutes, mean (SEM)	20.9 (0.8)	19.9 (0.3)	.08	1.00 (1.00–1.01)

[a]Adjusted for diagnosis or reason for visit of anxiety and insomnia.
[b]Odds of benzodiazepine use.
SEM = standard error of the mean.

survey of office-based practice, it does not include physicians practicing in other settings. Although physician nonresponse might introduce bias into the results, the survey weights that NAMCS designed account for this to produce unbiased national estimates.[24] Finally, although the analysis was limited to nonpsychiatrist physicians, it is possible that psychiatrists initially prescribed some of the continuation benzodiazepines. Nevertheless, because nearly 95% of new benzodiazepines prescribed to older adults are from nonpsychiatrists,[1] it is likely that the psychiatrist-initiated group accounts for a small subset.

These nationally representative analyses largely confirm and update analyses using data from more than 20 years ago by demonstrating that benzodiazepine initiation continues into late life, continuation use increases with age, and benzodiazepines are prescribed for purposes other than clearly defined mental disorders.[22,40] How can continued use of a potentially harmful intervention, in the face of extensive evidence that alternatives are effective and safer, be explained? A previous study[13,14] of older adults who were chronic benzodiazepine users suggested

that people doubted that "[any]thing other than the benzodiazepine" would help and generally rejected the idea of psychological interventions. The majority of physicians "believed that attempting withdrawal would be time-consuming and likely futile." These attitudes are frustrating given the growing evidence that older adults, even those with chronic use, can successfully decrease and be tapered off benzodiazepines using interventions including cognitive behavioral therapy and direct-to-consumer educational techniques.[17–19,41] As attitudes about mental health disorders and treatment change, it may be that older adults will become more willing to consider psychotherapeutic treatment options. However, this will not be helpful if they have no access to specialty mental health services.[42]

Although people may be reluctant to stop long-term benzodiazepine use, a physician's fundamental responsibility is to the safety of his or her patient. The majority of use appears to be in the absence of a clearly defined mental disorder, with limited use of alternative and safer treatments such as antidepressants or psychotherapy. Although clicking "reorder" may limit short-term patient (and

Table 4. Association Between Clinical and Visit Characteristics and Continuation Versus New Benzodiazepine Use of Older Adult Patients of Nonpsychiatrist Physicians in the United States from 2007 to 2010 (n = 1,748)

Characteristic	Continuation Benzodiazepine, n = 1,559	New Benzodiazepine, n = 189	P-Value	Adjusted[a] Odds Ratio[b] (95% Confidence Interval)
Clinical				
Diagnosis or visit complaint, %				
Anxiety	6.4	21.3	<.001	0.29 (0.16–0.50)
Insomnia	2.3	11.6	<.001	0.22 (0.08–0.65)
Depression	5.0	6.4	.54	0.95 (0.37–2.47)
Dementia	0.6	0.2	.11	2.90 (0.58–14.54)
Substance use disorder	0.4	1.1	.35	0.43 (0.03–6.55)
Any mental health diagnosis	16.0	40.3	<.001	0.48 (0.26–0.89)
Medical condition				
Asthma, chronic obstructive pulmonary disease	19.2	10.6[d]	.05	1.80 (0.87–3.74)
Cerebrovascular accident, coronary artery disease	17.3	12.2	.20	1.30 (0.68–2.48)
Hypertension, hyperlipidemia	67.2	69.9	.54	0.85 (0.54–1.32)
Congestive heart failure	5.9	4.3	.62	1.22 (0.37–4.02)
Obesity	5.4	5.4	.99	0.89 (0.48–1.65)
Osteoporosis	9.5	11.8	.40	0.76 (0.43–1.35)
Tobacco use	8.7	9.3	.85	0.87 (0.43–1.75)
Other psychotropic medication				
Antidepressant	28.4	16.4	.007	2.05 (1.22–3.46)
Antipsychotic	2.8	1.2	.41	1.94 (0.26–14.67)
Opioid	8.7	19.3	.10	0.31 (0.10–0.96)
>1 benzodiazepine	3.8	7.9[d]	.03	0.46 (0.22–0.94)
Total continued medications, mean (SEM)	4.9 (0.1)	2.2 (0.3)	<.001	1.60 (1.41–1.84)
Visit				
Psychotherapy	0.9	1.0	.90	1.66 (0.23–12.03)
Stress management	2.8	9.0	.002	0.50 (0.19–1.34)
Provider				
Family practice (reference)	23.6	30.4		1.00
Internal medicine	31.0	27.8[d]	.17	1.38 (0.78–2.46)
Specialty	45.4	41.7	.31	1.08 (0.56–2.11)
Return visit with provider (reference new patient)	92.2	85.4	.24	2.56 (0.79–8.29)
Visit for a chronic condition	56.8	50.3	.22	1.42 (0.92–2.19)
Visit disposition: scheduled follow-up	79.1	71.3	.10	1.53 (0.87–2.70)
Number of visits in past 12 months, mean (SEM)	5.3 (0.2)	4.4 (0.4)	.13	1.04 (0.99–1.10)
Time with physician, minutes, mean (SEM)	20.6 (.9)	22.7 (1.4)	.30	0.99 (0.98–1.00)

[a]Adjusted for diagnosis or reason for visit of anxiety and insomnia.
[b]Odds of continuation of benzodiazepine use.
SEM = standard error of the mean.

provider) distress, there are critical concerns regarding the appropriateness and safety of most long-term benzodiazepine use in older adults in the United States. New strategies are needed to encourage patients and providers to discontinue potentially inappropriate benzodiazepine therapy.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Table S1. Antidepressants, antipsychotics, and opioids mentioned in the 2007–2010 National Ambulatory Medical Care Survey.

Table S2. ICD-9 and National Center for Health Statistics reason for visit codes used in the 2007–2010 National Ambulatory Medical Care Survey.

Table S3. Association of mental health diagnoses with benzodiazepine use among older adult patients of nonpsychiatrist physicians in the United States from 2007–2010. Visits limited to those with ≤2 diagnoses (n = 20,165).

Table S4. Association of mental health diagnoses with continuation benzodiazepine use among older adult patients of nonpsychiatrist physicians in the United States from 2007–2010. Visits limited to those with ≤2 diagnoses (n = 860).

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