Effect of Age on the Profile of Psychotropic Users: Results from the 2010 National Ambulatory Medical Care Survey

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OBJECTIVES: To describe the effect of age on psychotropic coprescribing, psychiatric diagnoses, and other clinical characteristics.

DESIGN: Analysis of the National Ambulatory Medical Care Survey.

SETTING: A national sample of outpatient visits to physicians (N = 2,406) in office-based practice in 2010.

PARTICIPANTS: Adults prescribed psychotropic medication (N = 31,229).

MEASUREMENTS: Office visits at which antidepressant, anxiolytic, sedative, hypnotic, antipsychotic, or mood stabilizer medications were prescribed were grouped according to participant age (21–64, ≥65) and then compared within each medication class on visit characteristics. and then compared according to variables including provider type, sex, and race; presence of diagnosed mental illness; prescription of other psychotropic agents; total number of chronic conditions; time spent with physician; and total number of medications.

RESULTS: In 2010, there were 90.3 million antidepressant office visits; 77.7 million anxiolytic/sedative/hypnotic visits; 15.5 million antipsychotic visits; and 9.5 million mood stabilizer visits. Nonpsychiatrists prescribed the majority of psychotropic medications for every class and age group; 17.3% of older adult antipsychotic visits and 44.9% of younger adult antipsychotic visits were to a psychiatrist (chi-square = 19.58, P = .001). Older adults in every medication class were less likely to have a diagnosed mental disorder.

CONCLUSION: Older adults prescribed psychotropic medication were less likely to have a diagnosed mental disorder than their younger counterparts. Efforts to promote quality prescribing should seek to minimize nonspecific use of psychotropic medication. **J Am Geriatr Soc 62:358–364, 2014.**

Key words: pharmacoepidemiology; psychotropic prescribing; National Ambulatory Medical Care Survey

The use of prescription psychotropic medication in older adults is an area of important clinical significance. Older adults are more likely than younger adults to experience adverse polypharmacy-related events[1,2] given concomitant pharmacodynamic and pharmacokinetic changes.[3] Even selective serotonin reuptake inhibitors, long thought to be relatively benign, have been associated with risk of falls and fractures in older adults.[4,5] The latest version of the American Geriatrics Society Beers Criteria includes virtually every class of psychotropic medication as potentially inappropriate.[6] Psychotropic medication use in older adults has come under increased scrutiny, but recent pharmacoepidemiology has largely focused on specific diagnostic groups or institutional settings, such as the dementia-related use of antipsychotics[7,8] or psychotropic use in long-term care settings,[9,10] whereas broad studies of nationwide psychotropic use have focused on office-based psychiatry.[11–13] These investigations, although critical, do not consider psychotropic prescribing to community-dwelling older adults, who are more likely to be seen and receive prescriptions in nonspecialty settings serving a wide range of patient ages than in specialty settings.[14]

Strategies to improve mental health services have, in part, focused on improving the underdetection and undertreatment of mental illness. At the same time, and perhaps as a side effect of these efforts' success, use of psychotropic medication in the absence of a documented psychiatric disorder is garnering attention. This phenomenon has been demonstrated in a number of large, survey-based analyses of antidepressant[15,16] and antipsychotic[13,17,18] use. Complementing these large survey analyses, results

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from a state-wide mental healthcare management program demonstrated that nearly 48% of older adults prescribed a new psychotropic medication did not meet criteria for any Axis I psychiatric disorder.[19]

Given the limited supply of clinicians who see an exclusively geriatric population, most providers treat people across the adult age range. It is therefore important to understand the association of age with the demographic and clinical characteristics of those prescribed psychotropic medication, such as coprescribing and presence of psychiatric diagnoses. Prescribing should be based on the presence or absence of diagnostic criteria, so the characteristics of those prescribed psychotropic medication would not be expected to vary according to age. Finding otherwise would suggest that patient age influences provider prescribing, perhaps in an adverse manner. Examining medication use is particularly important for older adults, who are more sensitive to the side effects of medication and at greater risk of polypharmacy-related adverse effects. The decision to prescribe should be patient-centered, such that a given set of symptoms triggers prescribing, regardless of age, when controlling for other diagnostic and clinical characteristics. Based on previous work, it was hypothesized that older adults prescribed psychotropic medication would be less likely to have a diagnosed mental illness than their younger counterparts.

METHODS

Source of the Data

Data for these analyses were obtained from the National Ambulatory Medical Care Survey (NAMCS), a national survey administered by the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention designed to "provide objective, reliable information about the provision and use of ambulatory medical care services in the United States."[20] This study used data from the 2010 survey year, the most recent available.

Survey Design

The National Ambulatory Medical Care Survey is a national probability sample survey of office-based and community health center–based physicians that yielded 31,229 patient encounters in 2010. Physicians in the specialties of anesthesiology, pathology, and radiology are excluded, as are encounters such as house calls and those in institutional settings (e.g., nursing homes). The 2010 NAMCS sample included 2,406 eligible physicians, with a response rate of 58.3% overall and 53.5% of psychiatrists. Each physician is assigned to a 1-week reporting period, with the physician or office staff recording data from a random sample of visits. Data are obtained on patient symptoms, sociodemographic characteristics, and medications ordered or provided. The survey instrument captures the top three visit-related diagnoses and every NAMCS visit is also assessed for the presence of 14 specific chronic conditions (e.g., arthritis, chronic renal failure, ischemic heart disease).

Adjusting for survey design elements allows analyses to represent total annual visits to U.S. office-based physicians.

Psychotropic Drug Visits

The National Ambulatory Medical Care Survey uses the Lexicon Plus proprietary database (Cerner Multum, Inc., Denver, CO) for medication classification. A psychotropic visit was defined as a visit in which one medication from one of the four psychotropic classes was prescribed, ordered, supplied, administered, or continued, with psychotropic medications categorized according to the Multum classifications (Table 1): antidepressants, anxiolytic/sedative/hypnotics (hereafter referred to as "anxiolytics" for simplicity), and antipsychotics. A fourth category for mood stabilizers was created to capture office visits that included carbamazepine, lithium, lamotrigine, valproate, or divalproex. Antipsychotic visits were further subclassified into encounters that used second-generation antipsychotics (Table 1). If an encounter involved psychotropic medications from multiple classes, the visit was included in each appropriate medication group.

Diagnostic Groups

As part of the information collected at each NAMCS encounter, up to three diagnoses were included using the *International Classification of Disease, Ninth Revision, Clinical Modification* (ICD-9-CM) and the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*

Table 1. Psychotropic Drugs Reported in the 2010 National Ambulatory Medical Care Survey

Antidepressants	Anxiolytics	Antipsychotics	Mood Stabilizers
Amitriptyline	Alprazolam	Chlorpromazine	Carbamazepine
Amoxapine	Buspirone	Fluphenazine	Lamotrigine
Bupropion	Butabarbital	Haloperidol	Lithium
Citalopram	Butalbital	Loxapine	Valproate or divalproex
Clomipramine	Chloral hydrate	Molindone	
Doxepin	Chlordiazepoxide	Perphenazine	
Duloxetine	Clonazepam	Pimozide	
Escitalopram	Clorazepate	Prochlorperazine	
Fluoxetine	Diazepam	Thioridazine	
Fluvoxamine	Diphenhydramine	Thiothixene	
Imipramine	Doxepin	Trifluoperazine	
Maprotiline	Doxylamine	Second Generation	
Mirtazapine	Estazolam	Aripiprazole	
Nefazodone	Eszopiclone	Clozapine	
Nortriptyline	Flurazepam	Olanzapine	
Paroxetine	Hydroxyzine	Paliperidone	
Phenelzine	Lorazepam	Quetiapine	
Protriptyline	Meprobamate	Risperidone	
Selegiline	Midazolam	Ziprasidone	
Sertraline	Oxazepam		
Tranylcypromine	Pentobarbital		
Trazodone	Phenobarbital		
Venlafaxine	Prazepam		
	Pyrilamine		
	Ramelteon		
	Temazepam		
	Triazolam		
	Tybamate		
	Zaleplon		
	Zolpidem		

(DSM-IV). Encounters were then classified as to the presence or absence of a given condition using broad diagnostic categories.[18,21] Those with an ICD-9-CM visit diagnosis code of 296.2, 296.3, 298.0, 300.4, 309.1, or 311 were defined as encounters for a depressive disorder. Similar criteria were applied to define treatment for psychotic disorders (295.00–295.99, 297.00–298.09 (except 298.0), 298.30–298.99), bipolar disorder (296.0. 296.4–296.8, 301.13), and anxiety disorders (293.84, 300.00–300.09, 300.20–300.29, 300.3, 300.7, 308.0–308.9, 309.21, 309.81, 312.39, 313.0, 313.21, 313.23). Groups were also created for encounters that included a diagnosis of a seizure disorder (345), insomnia (307.40–307.49, 780.50–780.59), and dementia (291.2, 294.10, 294.11, 331.0, 331.1, 331.82). Last, a category was created for encounters with no psychiatric diagnosis (290–319).

Other Characteristics

Encounters were classified into two groups according to participant age: younger (21–64) and older (≥65) adult. Visits were subsequently classified into mutually exclusive groups according to provider type (psychiatrist, other), sex, and race (white, other). The total number of chronic conditions, time spent with the physician, and total number of medications were also included.

Statistical Methods

For each of the four medication classes, the number of younger and older adult office-based psychotropic visits in 2010 was determined and stratified according to provider type and patient sex, race, diagnostic groups, and use of medication from the other psychotropic classes. Within each medication class, the age groups were compared on each categorical variable using the chi-square test. Total number of chronic conditions, time with the physician, and number of medications were also compared between age groups using the Student t-test. Then, within each medication class and using age group as the independent variable (0 = younger adult, 1 = older adult), a simple logistic regression model was created for each categorical demographic and clinical variable (dependent), generating an odds ratio for psychotropic prescribing for older adults relative to younger adults for each dependent variable. Likewise, a simple linear regression was used for the continuous dependent variables (number of chronic conditions, time spent with physician, total number of medications). Subsequent regression models were then constructed with age group as the independent variable and each demographic and clinical variable as the dependent variable in turn, controlling for the remaining variables.

Analyses were adjusted for visit weight, clustering, and stratification using survey design elements provided by NCHS. All were conducted using SAS Enterprise Guide 4.3 (SAS Institute, Inc., Cary, NC) using two-sided analyses with α = .05.

RESULTS

In 2010, there were 90.3 million antidepressant office visits, 77.7 million anxiolytic visits, 15.5 million antipsychotic visits, and 9.5 million mood stabilizer visits. Within each medication class, the younger and older adult populations varied in a statistically significant manner for the majority of the demographic and clinical variables examined (Table 2). Nonpsychiatric providers provided the majority of prescriptions for all medications in both age groups. Only a small portion of older adult psychotropic visits were with psychiatrists, ranging from 3.5% of anxiolytic visits to 17.3% of antipsychotic visits. Older adults with psychotropic visits were less likely to have a psychiatric diagnosis for every medication class and every diagnostic group, and 65.2% of older adult antipsychotic visits noted no DSM-IV diagnosis. Analyses of individuals with insomnia or dementia yielded too few cases to meet NCHS standards for reliable national estimation.

In the unadjusted regression models (Table 3), older adult psychotropic users differed from their younger counterparts in the majority of demographic and clinical characteristics for all medication classes. For example, older adults prescribed an antidepressant were 0.26 (95% confidence interval (CI) = 0.19–0.35) times as likely as younger adults to see a psychiatrist and 3.10 (95% CI = 2.39–4.02) times as likely to have no DSM-IV diagnosis. In addition, in the unadjusted linear regression, older adults had 0.79 more chronic conditions, had visits that were 1.07 minutes shorter, and were taking 1.73 more medications than their younger adult counterparts taking antidepressants. Overall, older adults with psychotropic visits were nearly three to five times as likely as younger adults not to have a DSM-IV diagnosis.

Results of the multivariate regression models according to medication class are also presented in Table 3. For example, older adults taking an antidepressant were less likely than their younger adult counterparts to be female, more likely to be white, and less likely to have a diagnosed anxiety or seizure disorder or to receive concomitant anxiolytics or antipsychotics. Older adults prescribed antidepressants also had more chronic conditions, spent more time with the physician, and were on more medications than their younger counterparts. For all four medication classes, older adults had more chronic conditions, were taking more medications, and spent more time with the physician than their younger counterparts, with the exception of antipsychotics and mood stabilizers, with older adults having shorter visits than their younger counterparts.

DISCUSSION

To the knowledge of the authors, these are the first analyses of national community-based psychotropic prescribing to expressly describe how sociodemographic and clinical characteristics vary according to age group.

In every medication class, older adults were less likely to be diagnosed with a mental illness, with the majority of older adults taking an antipsychotic not having a DSM-IV diagnosis. These findings are generally consistent with previous analyses in the general adult population, such as the finding that 26.8% of antidepressant users in 2005 were diagnosed with depression[21] or a 2005 to 2009 NAMCS analysis showing that 15.8% of adults prescribed an antipsychotic were diagnosed with schizophrenia,[18] but the

Table 2. Sociodemographic and Clinical Characteristics as a Percentage of 2010 National Ambulatory Medical Care Survey Psychotropic Visits According to Age Group

Characteristic	Antidepressant			Anxiolytic			Antipsychotic			Mood Stabilizer		
	21–64	≥65	χ^2 or t-test	21–64	≥65	χ^2 or t-test	21–64	≥65	χ^2 or t-test	21–64	≥65	χ^2 or t-test
Total visits (in millions)	65.4	24.9		52.7	24.9		12.4	3.1		7.7	1.9	
Visit to psychiatrist, %	16.6	4.8	47.99[c]	14.4	3.5	56.34[c]	44.9	17.3	19.58[c]	40.9	12.9	20.32[c]
Female, %	67.1	62.2	4.53[a]	64.3	67.9	1.47	56.4	56.6	0.001	59.6	58.8	0.009
White, %	86.2	95.1	28.27[c]	84.9	93.1	18.94[c]	80.0	87.0	1.6	86.8	91.2	0.48
Depressive disorder, %	20.6	10.9	19.82[c]	12.1	5.1	14.81[c]	18.6	10.9	1.59	9.7	4.8	1.25
Bipolar disorder, %	3.6	1.0	15.97[c]	3.5	1.0	12.99[b]	16.3	5.5	10.29[b]	28.1	10.7	7.83[b]
Anxiety disorder, %	12.1	2.3	42.76[c]	15.2	4.5	31.65[c]	13.3	3.8	18.06[c]	6.5	0.3	29.08[c]
Psychotic disorder, %	2.0	0.4	8.94[b]	2.0	0.2	10.70[b]	18.0	6.8	8.20[b]	7.9	0.3	40.02[c]
No *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, diagnosis, %	60.6	82.7	50.05[c]	66.5	85.0	49.32[c]	37.6	65.2	11.63[b]	47.8	82.2	27.41[c]
Seizure disorder, %	0.4	0.0	18.51[c]	1.0	0.1	11.20[b]	0.5	0.3	0.3	5.8	12.9	2.29
Also taking antidepressant, %	—	—	—	43.2	25.5	44.67[c]	55.2	42.3	3.91[a]	44.8	36.2	1.09
Also taking anxiolytic, %	34.8	25.5	14.28[b]	—	—	—	44.6	29.4	5.39[a]	33.0	31.2	0.08
Also taking antipsychotic, %	10.4	5.3	9.16[b]	10.4	3.7	21.67[c]	—	—	—	35.7	23.1	2.63
Also taking mood stabilizer, %	5.2	2.7	5.81[a]	4.8	2.3	5.20[a]	22.2	13.8	2.04	—	—	—
Atypical antipsychotic, %	—	—	—	—	—	—	86.6	63.8	23.41[c]	—	—	—
Age, mean (SEM)	46.5 (0.09)	74.8 (0.11)	—	47.6 (0.08)	75.6 (0.10)	—	45.5 (0.14)	76.0 (0.42)	—	44.4 (0.30)	72.9 (0.17)	—
Number of chronic conditions, mean (SEM)	1.5 (0.01)	2.3 (0.03)	53.3[c]	1.39 (0.01)	2.03 (0.03)	24.2[c]	1.27 (0.01)	2.08 (0.07)	13.2[c]	1.08 (0.01)	1.86 (0.03)	26.5[c]
Time spent with doctor, mean (SEM)	22.6 (0.05)	21.5 (0.05)	23.5[c]	21.8 (0.07)	20.7 (0.13)	8.9[c]	24.5 (0.17)	21.1 (0.21)	8.8[c]	24.7 (0.14)	18.1 (0.08)	40.7[c]
Number of medications, mean (SEM)	4.7 (0.02)	6.4 (0.01)	1.7[c]	4.9 (0.02)	6.2 (0.02)	1.3[c]	4.51 (0.03)	5.64 (0.08)	1.1[c]	4.5 (0.05)	6.1 (0.01)	31.2[c]

$P <$ [a] .05, [b] .01, [c] .001.
χ^2 = Chi-Square; SEM = Standard Error of the Mean.

Table 3. Univariate and Multivariate Regression Models for 2010 National Ambulatory Medical Care Survey Psychotropic Visits According to Age Group

Factor	Antidepressant		Anxiolytic		Antipsychotic		Mood Stabilizer	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Logistic, Odds Ratio (95% Confidence Interval)								
Psychiatrist	0.26 (0.19–0.35)[c]	1.12 (0.57–2.18)	0.21 (0.15–0.31)[c]	0.89 (0.45–1.77)	0.26 (0.15–0.44)[c]	1.29 (0.45–3.55)	0.21 (0.10–0.45)[c]	1.56 (0.36–6.73)
Female	0.80 (0.65–1.01)	0.69 (0.54–0.88)[b]	1.18 (0.93–1.50)	1.20 (0.92–1.56)	1.01 (0.56–1.8)	1.03 (0.53–2.01)	0.97 (0.46–2.02)	0.87 (0.42–1.81)
White	3.10 (1.94–4.97)[c]	3.50 (2.15–5.70)[c]	2.39 (1.56–3.67)[c]	2.60 (1.69–4.01)[c]	1.67 (0.69–4.03)	1.90 (0.81–4.41)	1.56 (0.45–5.46)	1.08 (0.33–3.59)
Depressive disorder	0.47 (0.34–0.66)[c]	0.67 (0.38–1.20)	0.39 (0.25–0.62)[c]	0.38 (0.17–0.88)[a]	0.54 (0.21–1.38)	0.59 (0.13–2.78)	0.48 (0.13–1.79)	0.74 (0.11–5.02)
Bipolar disorder	0.28 (0.14–0.56)[b]	0.54 (0.19–1.51)	0.28 (0.14–0.57)[c]	0.54 (0.18–1.62)	0.30 (0.13–0.69)[b]	0.32 (0.086–1.22)	0.31 (0.14–0.69)[b]	0.75 (0.18–3.15)
Anxiety disorder	0.17 (0.10–0.29)[c]	0.36 (0.18–0.72)[b]	0.26 (0.16–0.43)[c]	0.33 (0.17–0.67)[b]	0.26 (0.11–0.59)[b]	0.35 (0.12–1.03)	0.05 (0.01–0.35)[b]	0.17 (0.02–1.60)
Psychotic disorder	0.19 (0.06–0.56)[b]	0.66 (0.08–5.63)	0.12 (0.03–0.54)[b]	0.83 (0.14–4.89)	0.33 (0.15–0.73)[b]	0.44 (0.12–1.60)	0.04 (0.005–0.28)[b]	0.001 (0.001–0.128)
No Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, diagnosis	3.10 (2.39–4.02)[c]	1.55 (0.79–3.05)	2.85 (2.11–3.86)[c]	0.77 (0.38–1.55)	3.12 (1.75–5.56)[c]	0.89 (0.26–3.00)	5.03 (2.47–10.25)[c]	2.11 (0.23–19.72)
On antidepressant	n/a	n/a	0.45 (0.35–0.58)[c]	0.39 (0.30–0.52)[c]	0.60 (0.34–1.04)	0.53 (0.27–1.02)	0.07 (0.34–1.46)[b]	0.58 (0.25–1.37)
On anxiolytic	0.64 (0.50–0.82)[b]	0.55 (0.42–0.73)[c]	n/a	n/a	0.52 (0.29–0.94)	0.50 (0.26–0.94)	0.92 (0.45–1.88)	0.88 (0.39–1.97)
On antipsychotic	0.48 (0.31–0.74)[a]	0.61 (0.38–0.99)[a]	0.33 (0.20–0.54)[c]	0.48 (0.28–0.85)[a]	n/a	n/a	0.54 (0.22–1.31)	0.74 (0.27–2.04)
On mood stabilizer	0.50 (0.27–0.92)[a]	0.54 (0.28–1.05)	0.47 (0.26–0.86)[c]	0.70 (0.36–1.40)	0.56 (0.24–1.33)	0.61 (0.24–1.53)[b]	n/a	n/a
Atypical antipsychotic	n/a	n/a	n/a	n/a	0.27 (0.14–0.54)[b]	0.31 (0.14–0.71)[b]	n/a	n/a
Seizure disorder	0.09 (0.02–0.39)[b]	0.09 (0.02–0.14)[b]	0.09 (0.02–0.53)[b]	0.07 (0.01–0.45)[b]	0.58 (0.10–3.28)	0.41 (0.02–10.12)	2.40 (0.74–7.78)	3.37 (0.95–11.90)
Linear, β (Standard Error)								
Number of chronic conditions	0.79 (0.01)[c]	0.37 (0.02)[c]	0.64 (0.03)[c]	0.14 (0.04)[b]	0.81 (0.06)[c]	0.51 (0.04)[c]	0.78 (0.03)[c]	0.52 (0.04)[c]
Time spent with doctor	−1.07 (0.04)[c]	0.36 (0.08)[c]	−1.14 (0.13)[c]	1.15 (0.13)[c]	−3.28 (0.37)[c]	−3.64 (0.38)[c]	−6.6 (0.16)[c]	−5.13 (0.12)[c]
Number of medications	1.73 (0.02)[c]	1.19 (0.01)[c]	1.34 (0.02)[c]	0.75 (0.01)[c]	1.13 (0.05)[c]	0.66 (0.01)[c]	1.6 (0.05)[c]	1.10 (0.04)[c]

$P <$ [a] .05, [b] .01, [c] .001.

n/a = Not Applicable; 0 = Young Adult; 1 = Older Adult.

current analyses are the first to show that psychotropic use in the absence of a psychiatric diagnosis is higher in every medication class for adults aged 65 and older.

Given that the NAMCS survey limits the number of diagnoses listed to three, it may be that the mental disorder diagnoses of older adults with multiple medical conditions were not included in the survey visit form. However, the NAMCS survey assesses the presence of 14 specific chronic conditions, and the average number of conditions reported was low for both age groups, the highest being just 2.3 ± 0.03 in the older adult group taking antidepressants. So although limited survey space may be a contributing factor, it is also possible that psychotropic medications were being used in older adults in the absence of a diagnosed mental disorder more commonly than in younger adults. Providers may be providing psychotropic medication for off-label uses; unfortunately, these survey data do not provide any information on prescriber rationale. In addition, the list of chronic conditions assessed was too brief to be informative in this respect. Although off-label psychotropic prescribing is important to understand in the older adult population, the nature of the NAMCS data is not ideally suited to do so.

As expected, the majority of psychotropic prescribing occurred in visits to nonpsychiatrists, a finding even more pronounced for older adults, although in the multivariate regression models for each class, this finding did not remain statistically significant.

In the unadjusted analyses, visit duration was significantly (if slightly) shorter for older adults in all medication classes, but in multivariate analyses, for the antidepressant and anxiolytic groups, this became a positive association. Stepwise regression models (data not shown) demonstrate that physician specialty primarily accounts for this difference, because older adults in these two classes overwhelmingly see nonpsychiatrists with shorter visit times. In contrast, older adult visits at which antipsychotics or mood stabilizers were prescribed remain shorter than for younger counterparts even in multivariate analyses. This is unexpected and is a potential cause for concern, because it is likely that older adults taking these classes of medications have significant comorbid medical problems and are at risk for particularly poor care.[22]

The only class in which sex varied between the age groups was with antidepressants, with older adult visits slightly less likely to be female than the younger cohort; this was even more pronounced in the multivariate analyses. This finding may be related to the fact that the prevalence of depression is higher in women, although this imbalance becomes less pronounced in older adults.[23,24] Older adult visits for antidepressant and anxiolytics were nearly three times as likely to involve older white individuals as were visits for younger adults; this finding did not extend to the antipsychotic or mood stabilizer groups. This racial difference is consistent with the finding that nonwhite minorities are less likely to receive appropriate medication management.[25,26]

It is perhaps encouraging to note that the older adult group was no more likely to be exposed to psychotropic coprescribing than younger adults, and in many combinations, this was less likely to occur for the older adult group. Older adults were less likely to receive an atypical antipsychotic than younger adults. Given that the evidence of mortality risk in individuals with dementia has consistently been shown to be higher with conventional antipsychotics,[27,28] it might have been expected that clinicians would preferentially use atypical agents for older adults than in the younger population.

An important limitation of this work is that clinical assessments were not available for each of these encounters. It is likely, for instance, that a significant amount of psychotropic prescribing is related to insomnia. This was included in the analytical plan as a diagnostic group, but there were too few cases to estimate annual visits reliably. Likewise, psychotropic prescribing in older adults may frequently be related to dementia, but as with insomnia, there were too few cases recorded in each of the four psychotropic groups to include dementia in these analyses.

The need to identify and treat mental illness in older adults must be balanced against the increasing evidence of psychotropic-related adverse events.[4,5] The current work confirms previous findings that psychotropic visits for older adults are less likely to be to a psychiatrist.[14] In addition, although previous analyses of survey and administrative data have found that prescribing occurs in the absence of a diagnosed mental disorder,[13,15–18] this is the first to document that this is even more likely in older adults for every class of psychotropic medication.

These findings follow the recent Institute of Medicine (IOM) report on *The Mental Health and Substance Use Workforce for Older Adults.*[29] Although better access to mental health specialists would ideally improve the specificity of psychotropic prescribing, this report notes that "there will never be sufficient numbers" of specialists to provide direct specialty care. Among other things, the IOM report suggests training midlevel providers in primary care settings in geriatric mental health to help screen and perform brief interventions. The evolution of Medicare Accountable Care Organizations may provide financial models that can allow health systems to invest resources in these midlevel providers to perform care management services that could promote screening and monitoring of at-risk older adults.[30] It is critical to develop and fund strategies for general settings that enable physicians to offer screening, education, and psychosocial supports, providing options for care beyond prescribing alone.

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