Prescribing Trends in Psychotropic Medications

Primary Care, Psychiatry, and Other Medical Specialties

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Context.—Psychotropic medications are widely prescribed, but how new classes of psychotropic medications have affected prescribing patterns has not been well documented.

Objective.—To examine changes between 1985 and 1994 (data from 1993 and 1994 were combined) in the prescribing patterns of psychotropic medications by office-based primary care physicians, psychiatrists, and other medical specialists.

Design.—National estimates for the number of visits during which a physician prescribed a psychotropic medication based on the National Ambulatory Medical Care Surveys conducted in 1985, 1993, and 1994.

Setting.—Office-based physician practices in the United States.

Participants.—A systematically sampled group of office-based physicians.

Main Outcome Measures.—National estimates of visits that included a psychotropic medication.

Results.—The number of visits during which a psychotropic medication was prescribed increased from 32.73 million to 45.64 million; the proportion of such visits, as a proportion of all visits, increased from 5.1% to 6.5% (P<.01). Antianxiety or hypnotic drug visits, previously the largest category, decreased as a proportion of psychotropic drug visits (P<.01) and are now surpassed by antidepressant visits. Visits for depression increased from 10.99 million in 1988 to 20.43 million in 1993 and 1994 (P<.01). Stimulant drug visits increased from 0.57 million to 2.86 million (P<.01). Although visits for depression doubled for both primary care physicians and psychiatrists, the proportion of visits for depression during which an antidepressant was prescribed increased for psychiatrists but not for primary care physicians.

Conclusions.—The patterns of psychotropic medication use in outpatient medical practice changed dramatically during the study period, especially in psychiatric practice.

PSYCHOTROPIC MEDICATIONS are among the most widely prescribed medications in the United States. As a class, they represented 8.8% of the prescription drug market in 1994,4 and their use has been increasing in recent years. A number of studies have documented differences over time and among physician groups in the use of psychotropic medications.2,3 In 1993, Olfson and Klepman4 reported a number of changes in the prescription patterns of psychotropic medications among office-based physicians. Their analyses revealed that between 1980 and 1989 the total number of office visits that included the prescription of a psychotropic drug remained relatively stable. They noted a decrease in the proportion of these visits to primary care physicians and an increase in the proportion of these visits to psychiatrists. However, recent years have seen enormous changes in the health care system and in the availability and applications of new and older psychotropic drugs.

Since the 1988 introduction of fluoxetine hydrochloride, the first of a new class of antidepressant drugs termed selective serotonin reuptake inhibitors (SSRIs), 4 more antidepressants have been brought to the market. Moreover, there have been additional indications approved for other marketed medications (eg, in 1990, alprazolam was approved for the treatment of panic disorder). At the same time, the treatment research literature on mental disorders has expanded considerably, providing evidence for the application of medications in ways that are not formally approved for labeling by the US Food and Drug Administration (FDA). Much of this information has been systematically integrated into practice guidelines,5-7 which also affect the selection of treatments. Furthermore, some states have implemented regulatory approaches in an attempt to alter prescribing patterns; one specific example would be the requirements for triplicate prescriptions for benzodiazepines in New York State.8,9 Finally, the advent of managed care in medicine has affected not only prescribing practices, through the use of protocols, formularies, etc, but also the relationships among physician specialties and changes in patient access to specialists.10

In this article, we examine changes between 1985 and 1993 and 1994 in the prescribing patterns of psychotropic medications by office-based physicians, specifically psychiatrists, primary care physicians, and other medical specialists. This article further highlights the changes in antidepressant prescription patterns among these medical specialists, given the advent of the SSRIs during the 10-year period examined. Our objective was to assess the differential trends across physician specialties in the prescription of psychotropic medications and determine what factors may have led to any observed differences.
METHODS

Source of Data

The source of data for this report is the National Ambulatory Medical Care Survey (NAMCS). The NAMCS, which is conducted annually by the National Center for Health Statistics (NCHS), Hyattsville, Md, samples a nationally representative group of visits to physicians in office-based practice. The current report is based on results from the 1985 and 1993 and 1994 NAMCS reports. At the time of these analyses, the 1985, 1993, and 1994 NAMCS data were the most recent NAMCS data available for public use. We used the 1985 data as our baseline, since it was included in the earlier Olsson and Klerman study, and we were interested in measuring a decade of change.

Survey Design

The NAMCS reports were conducted via a 3-stage sampling design. A probability sample was drawn of practicing physicians within primary sampling units, and a systematic random sample was then drawn of the patient visits to these physicians. A 1-week period was sampled. Physicians expecting more than 10 visits per day recorded visits based on a predetermined sampling interval. Approximately 75,000 visits were sampled in the 1985 survey, 36,000 in the 1993 survey, and 34,000 in the 1994 survey. Between these implementation periods, NCHS decreased its physician sample size.11-13 Therefore, following NCHS recommendations, data from the 1985 and 1994 surveys were combined to establish a larger base from which to derive annual estimates.

Attending physicians or their office staff completed a 1-page data form for each patient visit. The form contained items such as the patient’s age, sex, diagnoses, medications, and reasons for visiting the physician. The listed medications included new prescriptions; ordered, supplied, or administered medications; and continuing medications with or without new orders. Only minor modifications were made to the survey form between 1985 and 1993 and 1994.

Medical Specialties

In the present study, physicians were divided into the following 3 mutually exclusive groups: psychiatrists (child psychiatry, psychiatry, and psychoanalysis), primary care physicians (general practice, family practice, adolescent medicine, pediatrics, geriatric medicine, and internal medicine), and other physicians. The 1985 NAMCS surveyed 178 psychiatrists, 1053 primary care physicians, and 2873 other physicians. In the 1993 and 1994 NAMCS reports combined, these numbers were 257, 847, and 3786, respectively. The response rates in 1985 were 74% for psychiatrists, 69% for primary care physicians, and 71% for all others. In 1993 and 1994, the response rates were similar: 70%, 71%, and 72%, respectively.

Psychotropic Drug Visits

Psychotropic drugs were classified according to the 1994 Physicians’ Desk Reference14 and the Drug Evaluations Annual 1991,15 Antidepressants, antianxiety drugs and hypnotics, antipsychotics, psychostimulants, and lithium are considered in Table 1. A psychotropic drug visit is defined as a visit in which at least 1 psychotropic drug was prescribed, ordered, supplied, or administered; an antidepressant visit is defined as an antidepressant visit is defined as a visit in which at least 1 antidepressant was prescribed and so forth. If a particular visit included more than 1 type of psychotropic medication, for example, an antidepressant and a stimulant, then it was classified as both an antidepressant and a stimulant drug visit.

Diagistic Groups

Some of the analyses involved aggregating patient visits into broad categories by first, second, or third diagnosis. Antianxiety drugs and hypnotic visits were classified as including a mental disorder diagnosis if any of the listed International Classification of Diseases, Ninth Clinical Modification16 diagnosis codes fell within the range of 290 to 319, inclusive.

To examine the changes in prescribing practices for depression, some of the analyses focused specifically on patient visits where an ICD-9 diagnosis code indicated 1 of the following disorders in the first, second, or third diagnosis field: major depressive disorder; dysthymic disorder; depressive disorders, not otherwise specified; bipolar II disorder; or bipolar disorder, not otherwise specified (296.58, 296.62, 296.89, 300.49, or 311). Visits for depression were further grouped by medical specialty and psychotropic drug class.

Statistical Methods

One of the primary aims of the NAMCS is to provide national estimates of the volume and content of office-based care. Because of the complex patient visit sampling design, the NCHS weights each visit to mirror the US population. The US Bureau of the Census population estimates for July 1 of the survey year is used to compute the annual visit prevalence. The percentages reported in the current report are based on the weighted estimates. Estimates for the 1993 and 1994 period represent the annualized mean of the 2 survey years.

The NCHS provides formulae for the 1985 and 1993 and 1994 NAMCS reports to calculate SEs of the survey estimates in this complex sample.11-13 These formulae were used to compute 95% confidence intervals around the survey estimate and to accommodate for multiple comparisons.

RESULTS

Psychotropic Medication Visits

As depicted in Table 2, between the 2 study periods, overall visits to office-
Table 2.—National Estimates and Percentages of Psychotropic Drug Visits in Office-Based Practice by Specialty Groups, 1985 and 1993-1994

<table>
<thead>
<tr>
<th>Type of Visit</th>
<th>1985</th>
<th>1993-1994</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Visits (99% CI)</td>
<td>Percentage of All Visits (99% CI)</td>
</tr>
<tr>
<td>All visits</td>
<td>636.38 (572.00-700.76)</td>
<td>100.0 (100.0-100.0)</td>
</tr>
<tr>
<td>All psychotropic drug visits†</td>
<td>32.73 (28.63-36.83)</td>
<td>5.14 (4.76-5.52)</td>
</tr>
<tr>
<td>Primary care</td>
<td>18.02 (15.45-20.59)</td>
<td>2.83 (2.54-3.12)</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>7.77 (5.81-9.73)</td>
<td>1.22 (1.03-1.41)</td>
</tr>
<tr>
<td>Other specialists</td>
<td>6.93 (5.60-8.26)</td>
<td>1.09 (0.91-1.27)</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>0.24 (0.02-0.46)</td>
<td>42.11 (13.04-71.18)</td>
</tr>
</tbody>
</table>
| Data are from the National Ambulatory Medical Care Survey. National estimates are in millions of annual visits. Percentages are based on weighted sampling. Entries that are in bold type indicate a significant difference between 1985 and 1993 and 1994 using 99% confidence interval (CI) comparisons, P<.01. CI indicates confidence interval. Other specialists do not necessarily sum to all psychotropic drug visit entries because of rounding.

Table 3.—National Estimates of Visits by Psychotropic Drug Class and Physician Specialty, 1985 and 1993-1994

<table>
<thead>
<tr>
<th>Type of Visit</th>
<th>1985</th>
<th>1993-1994</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Visits (99% CI)</td>
<td>Percentage of All Psychopharmacological Visits (99% CI)</td>
</tr>
<tr>
<td>Anxiolytic/hypnotic drug visits</td>
<td>20.10 (17.31-22.89)</td>
<td>51.70 (51.53-55.17)</td>
</tr>
<tr>
<td>Primary care</td>
<td>12.09 (10.16-14.02)</td>
<td>60.15 (55.41-64.89)</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>3.69 (10.16-14.02)</td>
<td>18.36 (14.52-22.20)</td>
</tr>
<tr>
<td>Other</td>
<td>4.32 (3.32-5.32)</td>
<td>21.49 (17.25-25.46)</td>
</tr>
<tr>
<td>Primary care</td>
<td>5.62 (4.45-5.79)</td>
<td>47.55 (41.25-53.85)</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>4.09 (2.89-5.29)</td>
<td>34.60 (28.45-40.75)</td>
</tr>
<tr>
<td>Other</td>
<td>2.11 (1.45-2.77)</td>
<td>17.85 (13.02-22.68)</td>
</tr>
<tr>
<td>Selective serotonin reuptake inhibitor (SSRI) drug visits</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Primary care</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Other</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Antipsychotic drug visits</td>
<td>5.05 (3.95-6.15)</td>
<td>13.00 (10.65-15.35)</td>
</tr>
<tr>
<td>Primary care</td>
<td>1.71 (1.22-2.30)</td>
<td>33.86 (24.73-42.99)</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>2.42 (1.58-3.26)</td>
<td>47.92 (38.04-57.80)</td>
</tr>
<tr>
<td>Other</td>
<td>0.92 (0.49-1.35)</td>
<td>18.20 (10.75-25.65)</td>
</tr>
<tr>
<td>Stimulant drug visits</td>
<td>0.57 (0.24-0.90)</td>
<td>1.50 (0.65-2.25)</td>
</tr>
<tr>
<td>Primary care</td>
<td>0.26 (0.04-0.48)</td>
<td>45.61 (17.00-74.22)</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>0.24 (0.02-0.46)</td>
<td>42.11 (13.04-71.18)</td>
</tr>
<tr>
<td>Other</td>
<td>0.07 (−0.04-0.18)</td>
<td>12.28 (−6.57-31.13)</td>
</tr>
<tr>
<td>Lithium drug visits</td>
<td>1.22 (0.73-1.71)</td>
<td>3.10 (2.18-4.02)</td>
</tr>
</tbody>
</table>

*Data are from the National Ambulatory Medical Care Survey. National estimates are in millions of annual visits. Percentages are based on weighted sampling. Ellipses indicate data not applicable. CI confidence interval. Entries that are in bold type indicate a significant difference between 1985 and 1993 and 1994 using 99% CI comparisons, P<.01. SSRI drug visits are a subcategory of antidepressant drug visits.

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drug visits, the changes were not statistically significant at the P≤.01 level. Psychiatric visits with an antianxiety and hypnotic drug prescription represented almost a quarter of all visits to physicians for this drug class.

The large growth in antidepressant visits can be entirely accounted for by the use of SSRIs. Antidepressant drug visits increased across all physician classes. The distribution of those visits, however, changed in important ways. In 1985, primary care physicians provided 47.5% of all antidepressant drug visits, the most of all physician specialties. In 1993 and 1994, psychiatrists provided almost 44% of all antidepressant drug visits, with primary care providing 41%. In addition, a larger proportion of antidepressant drug visits to psychiatrists involved the use of SSRIs (50.4% [5.56/11.04]) than either primary care (40.5%) or other physicians (32.9%).

The largest proportional increases occurred among stimulant drug visits, with a 5-fold increase over this time period, from 1.5% to 5.1% of all psychotropic drug visits (P≤.01). Overall visits that included a stimulant medication increased from 0.57 million to 2.86 million during the 10-year period (P≤.01). This increase is the result of the significant rise in the number and proportion of stimulant visits by children and adolescents (from 0.01 million to 2.41 million visits) (P≤.01). Stimulant visits to psychiatrists did not increase significantly; however, stimulant visits to primary care physicians demonstrated a 7-fold increase (P≤.01) and similarly a 10-fold increase to other physicians (P≤.01). Again, these significant increases can be accounted for by a 10-fold increase in the number of psychotropic drug visits by children to primary care physicians (from 0.14 million to 1.30 million, P≤.01) and a 15-fold increase in the number of these visits to other physicians (from 0.04 million to 0.61 million) (P≤.01). Antipsychotic visits did not rise significantly; however, an increasing proportion of these visits were provided by psychiatrists. Drug visits for lithium did not rise significantly.

### Pharmacological Treatment of Depression

As indicated in Table 4, the total number of visits for depression increased from 10.99 million in 1985 to 20.43 million in 1993 and 1994 (P≤.01), with virtually no shift in the proportion of visits across the 3 categories of physicians.

However, within each physician group there are important changes in the pattern of psychopharmacological use. While there was approximately a doubling of depression visits to primary care physicians, there was no significant change in the proportion of visits in which a psychopharmacological agent was used. The proportion of those depression visits associated with antidepressant prescription was also rather stable at approximately 60%. Primary care physicians reported very limited use of lithium or other mood stabilizers. Benzodiazepine and antipsychotic use for depression visits showed no significant change as a proportion of visits regardless of physician specialty.
Overall visits for depression to psychiatrists also doubled ($P \leq .01$). As a proportion of all visits to psychiatrists, depression visits increased from 35.8% to 52.6% ($P \leq .01$). The proportion of psychiatric visits for depression that included a prescription of a psychopharmacological agent increased from 59.5% to 70.9% ($P \leq .01$). In addition to the advent of SSRI use, there was also an increase in the use of older antidepressants. The use of lithium and mood stabilizing agents increased, although these agents represented a small proportion of depression visits.

The “other physicians” group had no significant increase in depression visits. Less than half of those visits included a psychopharmacological agent and did not demonstrate significant changes in the distribution across medication groups.

**COMMENT**

The availability of new SSRIs, beginning with fluoxetine in 1988, sertraline in 1991, and paroxetine in 1992, has had an enormous impact on the prescription of psychopharmacological agents. Virtually all the substantial increase in psychotropic drug prescriptions can be accounted for by the use of these medications. Interestingly, the impact of these medications differed across the 3 specialty groups, with the SSRI group having the greatest impact on psychiatry. While data demonstrate a substantial increase in primary care physicians’ use of antidepressants (the majority of which were SSRIs), the proportion of their depression visits involving an antidepressant drug did not change.

The greatly expanded use of SSRIs by psychiatrists, as compared with primary care and other physicians, however, is surprising; the lower adverse effect profile and the simpler dosing patterns would seem to be attractive to primary care physicians, increasing their confidence to prescribe these medications. This might be explained by the fact that psychiatrists are closer to the initial research literature, which tends to be published in specialty journals and conducted in specialty populations. Psychiatrists, therefore, may be more on the leading edge of new technological developments in depression treatment. Thus, despite the fact that these data were collected 5 to 6 years after the initial marketing of the SSRIs, it may be that a longer time frame is necessary for a broader diffusion of new technologies to primary care. There also may exist other barriers to the appropriate recognition and management of depression in primary care, such as primary care physicians’ interest and training, societal stigma, and health plan reimbursement. Finally, it is possible that the prescribing practices of primary care physicians properly reflect the fact that many “depressed” patients in primary care settings may not have a depressive condition that warrants the use of a medication.

The largest proportional increase in the use of psychotropic medications occurred within the stimulant drug class. This increase can be largely accounted for by increases in the absolute number and proportion of stimulant visits by children and adolescents. These visits are associated with the diagnosis of attention deficit hyperactivity disorder and may provide further evidence of the dramatic increase in the recognition and prevalence of this condition. Significant increases occurred in the absolute number of stimulant drug visits to primary care physicians and to other physicians (largely neurologists) but not to psychiatrists. These data do not, however, shed light on whether the expanded use of these medications is appropriate or on the reasons why the expansion in use has been primarily in nonpsychiatric specialties.

Looking across the psychotropic drug categories, it is apparent that there has been a dramatic change in the nature of the practice of psychiatry. For example, in primary care and other physician specialties, there has been a continuing decrease in benzodiazepine use, with no substantial changes in the pattern of indications. In psychiatry, however, there is a rising trend in the proportion of anxiety drug visits. The expansion of psychopharmacological research in psychiatry across the range of mental disorders has provided data supporting the expanded indications for benzodiazepines. While alprazolam was approved by the FDA for an additional indication for panic disorder in 1990, other indications have not been formally approved for labeling by the FDA; they have nonetheless been incorporated in practice guidelines, which have systematically gathered and assessed relevant data and integrated them into treatment recommendations.

Other factors that may be affecting the pattern of psychotropic drug use are changes in the structure of health care delivery and health care reimbursement. In many managed care organizations, the incentives of a capitated system would encourage primary care physicians to maintain responsibility for their patients with mental disorders, treat them efficiently with medications, and not refer them to specialty care. At the same time, managed care patients who are referred for specialty care may be more likely to receive medication treatment by a psychiatrist as the sole form of treatment or may be receiving psychotherapy from other providers.

Unfortunately, the data do not permit us to examine the trends in psychotherapy utilization, since the instrument for characterizing nonpharmacological treatments changed between the 2 time periods. However, the duration of psychiatrist visits for depression showed only a slight drop, from an average of 42.5 minutes in 1985 to 39 minutes in 1993 and 1994.

Another important finding is the substantial growth in the number of depression visits across all the physician groups. It is unclear, however, whether this represents expanded case finding and improved treatment, as promoted by depression awareness programs and as requested by a recent consensus conference. While the number of depression visits did increase significantly for primary care, they represented only 2% of primary care visits in 1993 and 1994, far below the prevalence of depression. Moreover, there was no increase in the proportion of primary care depression visits that involved an antidepressant prescription. For psychiatry, the large increase in depression visits also reflects a substantial shift in the percentage of psychiatric visits for depression, 35.8% to 52.6% ($P \leq .01$), and the percentage of depression visits associated with an antidepressant medication. However, there was no substantial change in the overall number of psychiatrist visits. Thus, it is unclear whether there is a real change in psychiatrists’ case load (ie, individuals who have read *Listening to Prozac* or related publicity are seeking psychiatric care) or whether diagnostic patterns have changed (ie, individuals who previously might have been given a nondepression diagnosis are being given a depression diagnosis). While there has been no significant change in the standard nomenclature (ie, the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*) for depression during this time, the availability of effective, well-tolerated medications might encourage psychiatrists to evaluate patients more carefully for depressive symptoms and recharacterize their condition. However, without additional information (eg, whether the physicians’ diagnostic assessments were accurate), it is premature to draw any conclusions about appropriateness or quality of care.

In addition, it is important to recognize a number of limitations in the data from the NAMCS reports. First, they are limited to office-based settings; they do not include visits in hospital settings, federal facilities, emergency depart-
been the changes in psychiatric practice, especially the greatly expanded use of antidepressant and other medications. These changes reflect the availability of new agents, the expanded, formally approved uses of marketed medications, and the growth and application of the research literature in psychiatry supporting unlabeled uses of medications. It is also likely that changes in reimbursement have affected the patterns of prescribing, not only in psychiatry but also in relationship to other specialty groups. However, much more information is needed to tease apart the impact of these broader health policy shifts. In addition, more information is needed to understand how these patterns relate to other changes in the use of nonpharmacological interventions by primary care physicians, psychiatrists, and other health and mental health providers. It would be especially useful to have information on the clinical reasoning behind the selection of these medications. While population-based studies of physician practice patterns are a first step, new research strategies for some of these issues will soon be available. For example, the American Psychiatric Association has developed a national Practice Research Network that is similar to the Ambulatory Sentinel Practice Network in family practice and the Pediatric Research in Office Settings network. These in vivo research approaches will be able to assess the impact of financial arrangements, dissemination of clinical practice guidelines, and patient and provider characteristics on psychiatrists' clinical decision making, treatment selection, and, ultimately, outcomes.

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References


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