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For What Diagnoses Are Psychotropic Medications Being Prescribed?

A Nationally Representative Survey of Physicians

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Abstract

Background: Psychoactive medications, such as antidepressants, are one of the most widely prescribed categories of drugs in the US; yet few studies have comprehensively examined the conditions for which psychoactive medications are prescribed. To our knowledge, no prior study has examined the extent to which psychoactive medications are prescribed for non-psychiatric somatic illnesses or the main types of psychiatric disorders for which psychoactive medications are being used.

Objective: To examine the diagnoses for which psychiatric medications are being prescribed in the US by analysing data from a nationally representative survey of physicians.

Methods: The data were obtained from the 2005 National Disease and Therapeutic Index (NDTI), a continuing survey of a US office-based panel of physicians. The 2005 physician panel consisted of approximately 4000 physicians reporting quarterly, which was projected to a universe of 500 722 physicians. The study focused on the diagnoses that were given as the primary reason for prescribing the following types of psychotropic medications: antidepressants, antipsychotics and anti-anxiety medications.

Results: Of the total number of antidepressant drug mentions, 92.7% were prescribed for psychiatric conditions. The most common (65.3%) were mood disorders (e.g. depression), followed by anxiety disorders (16.4%), which together comprised 81.7% of all antidepressant drug mentions. Of the total number of anti-anxiety drug mentions, 67.7% were prescribed for psychiatric conditions. The most common diagnosis was anxiety disorders (comprising 39.6% of all drug mentions), followed by mood disorders (comprising 18.9% of all drug mentions). Almost one-third of anxiety medication drug mentions were for non-psychiatric conditions or conditions of unspecified type. Of the total number of antipsychotic drug mentions, 98.9% were prescribed for psychiatric conditions. The most common diagnoses, comprising 39.0% of all drug mentions, were mood disorders such as depression and bipolar disorder. The second most common psychiatric diagnosis was schizophrenia or other psychotic disorders, comprising 34.5% of drug mentions. Approximately

7.4% of drug mentions were for delirium, dementia, amnestic or other cognitive disorders. Attention-deficit/conduct/disruptive behaviour disorders were the diagnoses indicated on 5.7% of all antipsychotic drug mentions. Anxiety disorders were indicated on 5.5% of antipsychotic drug mentions. Disorders usually diagnosed in infancy/childhood/adolescence (e.g. autism) comprised 2.3% of antipsychotic drug mentions.

Conclusions: This research provides a broad view of the nature of psychoactive medication prescribing, which may serve as a guide to future research, policy and education about these medications, their perceived benefits and risks, and their uses.

Background

Psychoactive medications, such as antidepressants, are one of the most widely prescribed categories of drugs in the US.[1] Use of and spending on psychoactive medications in the US has grown rapidly over the past decade.[2] Analyses of spending from 1996 to 2001 found that about one-third of the increase in psychiatric prescription drug spending over that time period was due to more users and about two-thirds was from higher cost per user.[3]

Despite the prevalence of psychoactive medication utilization, few studies have comprehensively examined the conditions for which psychoactive medications are prescribed. For example, to our knowledge, no prior study has examined the extent to which psychoactive medications are prescribed for non-psychiatric somatic illnesses, such as pain. Further, as captured in the DSM-IV[4] or the International Statistical Classification of Diseases and Related Health Problems-Ninth Revision-Clinical Modification (ICD-9-CM),[5] psychiatric conditions are quite variable and span a number of syndromes and there are a variety of psychiatric conditions for which psychoactive medications can be prescribed. While off-label use of psychiatric medications has been documented, studies have not focused on which psychiatric conditions are being treated using the main classes of psychiatric medications.

Data on the diagnoses for which medications are being prescribed are quite limited. The US Centers for Disease Control National Center for Health Statistics collects data on drug mentions through a survey of office-based physicians known as the National Ambulatory Medical Care Survey (NAMCS).[6] While this survey has been used to track psychoactive medication utilization, it cannot be used to link prescriptions to diagnoses because the survey does not query physicians specifically about the diagnosis for which the medication was prescribed. Insurance claims data have also been used to understand psychoactive medication prescribing trends; however, prescription claims do not include diagnoses, and psychiatric diagnoses on medical claims that might help determine the reasons for psychoactive medication prescriptions are believed to be frequently under-coded.

This study analysed data from a nationally representative survey of physicians to examine the diagnoses for which psychiatric medications are being prescribed in the US. The information is important for a variety of reasons, including identifying the need for research on new applications of existing medications, understanding off-label usage and informing possible labelling changes.

Methods

This study used data from the 2005 National Disease and Therapeutic Index (NDTI). The NDTI is a continuing survey of a US office-based panel of physicians conducted by IMS Health. The NDTI collects diagnostic and treatment data similar to that contained in the Center for Disease Control's NAMCS. NDTI estimates were based

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on a universe of approximately 500 722 physicians that reside and practice within the continental USA. Physicians are recruited to participate in the NDTI survey from a sampling frame based on the American Medical Association and the American Osteopathic Association listings of all practising physicians. Approximately 4000 office-based, private practice physicians report per quarter. The sampling methodology employed was a two-stage, stratified, random sample. In the first stage, physicians were sampled. Two work days per month were subsampled from each doctor in the second stage. The sample was stratified by primary specialty and the nine census divisions. Physicians were recruited by telephone via a trained IMS recruiter. Approximately 34 physicians were contacted for every one physician recruited into the sample.

Physicians report on all patient contacts for two consecutive work days each quarter. Data are collected on approximately 2700 work days each month and 8000 work days each quarter. Information collected includes patient demographics, diagnosis and treatment information and physician demographics. The survey collects information through the use of a confidential log book in which physicians record information for each drug mention (i.e. each drug recommended or issued to a patient) and related diagnoses over a specified period. Each patient encounter can generate multiple diagnoses, and there is a direct correspondence between the recorded diagnosis and prescribed therapy. The 2005 sample is projected to a universe of physicians.

The current study focused on drug mentions of the three main categories of psychotropic medications: antidepressants, antipsychotics and anti-anxiety medications. Antidepressants included tricyclics, tetracylics, monoamine oxidase (MAO) inhibitors, selective serotonin reuptake inhibitors (SSRIs), serotonin-noradrenaline (norepinephrine) reuptake inhibitors (SNRIs) and newer generation antidepressants. Anti-anxiety medications included benzodiazepines and other types of anti-anxiety drugs but excluded sedative hypnotics such as barbiturates. Antipsychotics included both first- (typical) and second-generation (atypical) antipsychotic medications.

Diagnoses, coded using the ICD-9-CM, were grouped into psychiatric and non-psychiatric categories. Psychiatric diagnoses were defined as those of ICD-9-CM codes 290–314. Diagnoses were further grouped using the Clinical Classifications Software (CCS), a diagnosis and procedure categorization that combines related codes from multiple chapters of the ICD-9-CM manual for policy analyses. CCS was developed as part of the Healthcare Cost and Utilization Project (HCUP), a Federal-State-Industry partnership sponsored by the Agency for Healthcare Research and Quality.[7]

Results

Antidepressants were the most commonly prescribed of the three drug classes examined (with approximately 68 million drug mentions). Table I describes the diagnoses associated with antidepressant drug mentions. Of the total number of antidepressant drug mentions, 92.7% were prescribed for psychiatric conditions. The most common (65.3%) were mood disorders (e.g. depression), followed by anxiety disorders (16.4%), which together comprised 81.7% of all antidepressant drug mentions. Antidepressants were also used for a variety of other psychiatric conditions including attention-deficit/conduct/disruptive behaviour disorders (2.8%), schizophrenia and other psychotic disorders (2.6%), adjustment disorders (1.3%), delirium/dementia/amnestic/other cognitive disorders (1.0%), substance-related disorders (0.3%) and others. Approximately 7.3% of antidepressant prescriptions were prescribed for a variety of non-psychiatric diagnoses. About 1.1% of antidepressant prescriptions were for headaches (including migraine). Another 1.0% was prescribed for 'other connective tissue disease' (e.g. fibromyalgia), and 0.8% for 'other nervous system disorders'. About 0.8% were for 'other female genital disorders' (e.g. premenstrual tension) and about 0.7% were for 'spondylosis; intervertebral disc disorders; other back problems'.

Table II describes the diagnoses associated with the 21 million anti-anxiety medication drug mentions. Of the total number of drug mentions, 67.7% were prescribed for psychiatric conditions.

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Table I. National estimates of antidepressants prescribed by office-based physicians by patient diagnosis categories[a]

Patient diagnoses[b]	Number of drug mentions (000)	% of all antidepressant drug mentions (classified patient diagnoses except where stated otherwise)
Total (classified or residual/unclassified)[c]	**68 219**	
Total classified[c]	66 855	100.0
Psychiatric	61 947	92.7
mood disorders	43 679	65.3
anxiety disorders	10 968	16.4
attention-deficit/conduct/disruptive behaviour disorders	1 862	2.8
schizophrenia and other psychotic disorders	1 750	2.6
adjustment disorders	877	1.3
delirium/dementia/amnestic/other cognitive disorders	700	1.0
miscellaneous mental disorders	591	0.9
screening and history of mental health and substance abuse codes	539	0.8
personality disorders	462	0.7
substance-related disorders	207	0.3
disorders usually diagnosed in infancy/childhood/adolescence	160	0.2
impulse control disorders not elsewhere classified	122	0.2
developmental disorders	30	0.0
Non-psychiatric	4 908	7.3
headache; including migraine	743	1.1
other connective tissue disease	686	1.0
other nervous system disorders	532	0.8
other female genital disorders	531	0.8
spondylosis: intervertebral disc disorders; other back problems	454	0.7
other	1 962	2.9
Residual/unclassified[c]	1 364	2.0[d]

a Diagnosis categories are based on the CCS, Agency for Healthcare Research and Quality.

b All entries, some of which are not strictly diagnoses, are based on International Statistical Classification of Diseases and Related Health Problems-Ninth Revision-Clinical Modification codes.[5]

c According to CCS classification coding.

d Represents percentage of total (classified or residual/unclassified) patient diagnoses.

CCS = Clinical Classification Software.

The most common diagnosis was anxiety disorders (comprising 39.6% of all drug mentions), followed by mood disorders (comprising 18.9% of all drug mentions). Almost one-third of anxiety medication drug mentions were for non-psychiatric conditions or conditions of unspecified type. In particular, 6% of drug mentions were for 'medical examination/evaluation' (e.g. V728: Specific Examination). Another 4.1% of anxiety medications were prescribed for allergic reactions, and 2.5% for 'spondylosis; intervertebral disc disorders; other back problems'.

Table III describes the diagnoses associated with the 18 800 antipsychotic medication drug mentions. Of the total number of antipsychotic drug mentions, 98.9% were prescribed for psychiatric conditions. The most common diagnoses, comprising 39.0% of all drug mentions, were mood disorders such as depression and bipolar disorder. The second most common psychiatric diagnosis was schizophrenia or other psychotic disorders, comprising 34.5% of drug mentions. Approximately 7.4% of drug mentions were for delirium, dementia, amnestic or other

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cognitive disorders. Attention-deficit/conduct/disruptive behaviour disorders were the diagnoses indicated on 5.7% of all drug mentions. Anxiety disorders were indicated on 5.5% of antipsychotic drug mentions. Disorders usually diagnosed in infancy/childhood/adolescence (e.g.

Table II. National estimates of anti-anxiety medications prescribed by office-based physicians by patient diagnosis categories[a]

Patient diagnoses[b]	Number of drug mentions (000)	% of all anti-anxiety drug mentions (classified patient diagnoses except where stated otherwise)
Total (classified and residual/unclassified)[c]	**20 983**	
Total classified[c]	20 407	100.0
Psychiatric	13 810	67.7
Anxiety disorders	8 089	39.6
Mood disorders	3 851	18.9
Schizophrenia and other psychotic disorders	422	2.1
Substance-related disorders	393	1.9
Adjustment disorders	305	1.5
Delirium/dementia/amnestic/other cognitive disorders	241	1.2
Attention-deficit/conduct/disruptive behaviour disorders	170	0.8
Personality disorders	159	0.8
Miscellaneous mental disorders	61	0.3
Impulse control disorders not elsewhere classified	54	0.3
Developmental disorders	29	0.1
Disorders usually diagnosed in infancy/childhood/adolescence	18	0.1
Screening and history of mental health and substance abuse codes	18	0.1
Non-psychiatric	6 597	32.3
Medical examination/evaluation	1 227	6.0
Allergic reactions	831	4.1
Spondylosis; intervertebral disc disorders; other back problems	516	2.5
Other aftercare	268	1.3
Epilepsy; convulsions	251	1.2
Gastrointestinal haemorrhage	233	1.1
Sprains and strains	188	0.9
Other inflammatory condition of skin	176	0.9
Other skin disorders	169	0.8
Headache; including migraine	168	0.8
Other connective tissue disease	165	0.8
Other and unspecified benign neoplasm	130	0.6
Other hereditary and degenerative nervous system conditions	101	0.5
Conditions associated with dizziness or vertigo	98	0.5
Other	2 076	10.2
Residual/unclassified[c]	576	2.75[d]

a Diagnosis categories are based on the CCS, Agency for Healthcare Research and Quality.

b All entries, some of which are not strictly diagnoses, are based on International Statistical Classification of Diseases and Related Health Problems-Ninth Revision-Clinical Modification codes.[5]

c According to CCS classification coding.

d Represents percentage of total (classified or residual/unclassified) patient diagnoses.

CCS = Clinical Classification Software.

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Table III. National estimates of antipsychotic medications prescribed by office-based physicians by patient diagnosis categories[a]

Patient diagnoses[b]	Number of drug mentions (000)	% of all antipsychotic drug mentions (classified patient diagnoses except where stated otherwise)
Total (classified and residual/unclassified)[c]	**18 800**	
Total classified[c]	18 455	100.0
Psychiatric	18 244[d]	98.9
Mood disorders	7 195	39.0
Schizophrenia and other psychotic disorders	6 368	34.5
Delirium/dementia/amnestic/other cognitive disorders	1 369	7.4
Attention-deficit/conduct/disruptive behaviour disorders	1 046	5.7
Anxiety disorders	1 019	5.5
Disorders usually diagnosed in infancy/childhood/adolescence	426	2.3
Personality disorders	268	1.5
Impulse control disorders not elsewhere classified	223	1.2
Substance-related disorders	130	0.7
Developmental disorders	86	0.5
Miscellaneous mental disorders	79	0.4
Adjustment disorders	36	0.2
Non-psychiatric	211[d]	1.1
Other hereditary and degenerative nervous system conditions	36	0.2
Intracranial injury	30	0.2
Other aftercare	19	0.1
Diabetes mellitus with complications	14	0.1
Nausea and vomiting	12	0.1
Other nutritional, endocrine and metabolic disorders	9	0.1
Other	92	0.5
Residual/unclassified[c]	345	1.84[e]

a Diagnosis categories are based on the CCS, Agency for Healthcare Research and Quality.

b All entries, some of which are not strictly diagnoses, are based on International Statistical Classification of Diseases and Related Health Problems-Ninth Revision-Clinical Modification codes.[5]

c According to CCS classification coding.

d The difference from the sum total of individual drugs mentions is due to rounding.

e Represents percentage of total (classified or residual/unclassified) patient diagnoses.

CCS = Clinical Classification Software.

autism) comprised 2.3% of antipsychotic drug mentions.

Discussion

The data presented here on the types of diagnoses for which psychiatric medications are being used have a number of implications. Using data from the 2001 NDTI, and examining the same drug classes as examined in this article (i.e. antidepressants, anxiolytics and antipsychotics), Radley and colleagues[8] estimated that approximately 31% of the 18 million psychiatric drug mentions were for 'off-label' diagnoses. Diagnoses were considered US FDA approved and 'on-label' if they could be matched to the therapeutic indications reported in the package insert of the drug. This study further informs the research by Radley and colleagues[8] concerning off-label usage by finding that about 99% of antipsychotic medication drug mentions, 93% of antidepressant drug mentions and 68% of anti-anxiety medication drug mentions were for psychiatric conditions. Taken together, these two studies suggest that

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most off-label prescribing of psychiatric medications are for psychiatric conditions.

This study also informs other current debates concerning psychoactive medication. For example, there has been growing concern about the use of antipsychotics by children.[9] By the end of 2009, risperidone, aripiprazole, questiapine and olanzapine were approved for adolescents with schizophrenia and bipolar disorder. Risperidone and aripriprazole were also approved for treatment of irritability associated with autistic disorder.

While this study does not include data on the age of those treated, it reveals that 5.7% of antipsychotic drug mentions or about 1 million drug mentions in 2005 were for attention-deficit/conduct/disruptive behaviour disorders, which are primarily paediatric diagnoses. Another 2.3% of prescriptions, or about 426 000 drug mentions were for 'disorders usually diagnosed in infancy/childhood/adolescents'. These data suggest that more research and guidance is needed on the appropriateness, efficacy and safety of antipsychotics in the treatment of attention-deficit hyperactivity disorder and conduct disorders.

Another controversial usage of antipsychotic medications is for the treatment of dementia. The NDTI data revealed that in 2005, 7.4% of antipsychotic drug mentions or 1.4 million drug mentions were prescribed for 'delirium/dementia/amnestic/other cognitive disorders'. This was the third most common use of antipsychotic medication after mood disorders, and schizophrenia/other psychotic disorders. Recent research has revealed cerebrovascular risks and increased mortality associated with antipsychotic treatment of elderly patients with dementia, which has led to warning labels on antipsychotic medications.[11,12] The use of antipsychotic medications for dementia may have declined since 2005 as a result of these warnings.

This analysis found that 18.9% of anti-anxiety medications were used to treat mood disorders, rather than anxiety disorders, suggesting that more research may be helpful to further understand how anxiolytics are being used, and to inform physicians of the risks and benefits of anxiolytics in the treatment of unipolar and bipolar depression. For antidepressants, 0.3% of the drug mentions, or 207 000 mentions, were for substance-related disorders. Some research suggests that antidepressants may be effective in treating drug abuse[13-15] and alcoholism in certain genetic subtypes of alcoholic patients,[16,17] but this information has not been used in labelling.

The study must be understood in light of its limitations. The diagnoses used were those recorded by physicians as the reason for the prescription. We cannot assess whether survey participation influenced the types of diagnoses recorded or types of medications prescribed. Additionally, medications were described as falling into three broad classes and the types of diagnoses for which medications were prescribed may have varied within each class, for example, among first- and second-generation antipsychotics.

Conclusions

Psychotropic medications are one of the most commonly prescribed classes of drugs. With widespread usage have come increased concerns that they are being used inappropriately, in populations that may not benefit, or that may be at heightened risk for adverse effects. Nevertheless, surprisingly little comprehensive information exists about the types of patient conditions that are being treated with psychotropic medication. The analyses presented here suggest that most prescribing of psychoactive medications is for psychiatric conditions. However, the types of psychiatric conditions being treated are quite varied, highlighting the complexity and challenges of psychiatric diagnosis and treatment. The information presented in this study may serve as a guide to future research, policy and education about these medications, their perceived benefits and risks, and their uses.

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