



The Magnitude of the Problem of Psychiatric Illness Presenting in the Emergency Department

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Introduction

Mental illness is ubiquitous and increasingly recognized as a growing problem throughout the world [1]. The purpose of this chapter is to describe the magnitude of the problem of mental illness, both globally and in terms of specific mental-health-related visits encountered in emergency department (ED) settings.

While emergency departments may not be the optimal location to manage the growing burden of mental illness, they generally constitute the only 24/7 access for the preponderance of patients in crisis.

Global Burden

The global burden of mental illness supersedes that of all other diseases. Recent estimates place mental illness first in the proportion of both global years of life lost due to disability (YLDs; 32.4%) and in terms of disability-adjusted life years lost (DALYs; 13%) [2]. More conservative and somewhat incomplete metrics from WHO in 2013 suggested mental illness constituted only 21.2% and 7.1% of all global YLDs and DALYs,

respectively [3]. The following two graphics from Vigo et al. [2] highlight two different ways mental health burden may be estimated, giving significantly different results (Figs. 1.1 and 1.2).

Regardless of the yardstick, the burden of mental illness is increasing. Escalation of mental illness is attributed to an increase in psychosocial and environmental stressors in many parts of the world, combined with the epiphenomenon of mental illnesses becoming less stigmatized in many advancing societies and patriarchal cultures. Indeed, a substantial increase in measured prevalence comes less from new biological challenges and much more from an increase in diagnoses; the latter diagnostic contagion has been generated in part by improved training and recognition, the proliferation of clinical psychologists, the widespread availability of structured diagnostic tools, and a penchant to pathologize symptoms formerly regarded as nonpsychiatric.

Prevalence

Diagnostic trends notwithstanding, the worldwide prevalence of mental illness remains profound. The growing extent of the problem has been well described in the psychiatric epidemiologic studies of the World Health Organization's (WHO) World Mental Health Surveys conducted

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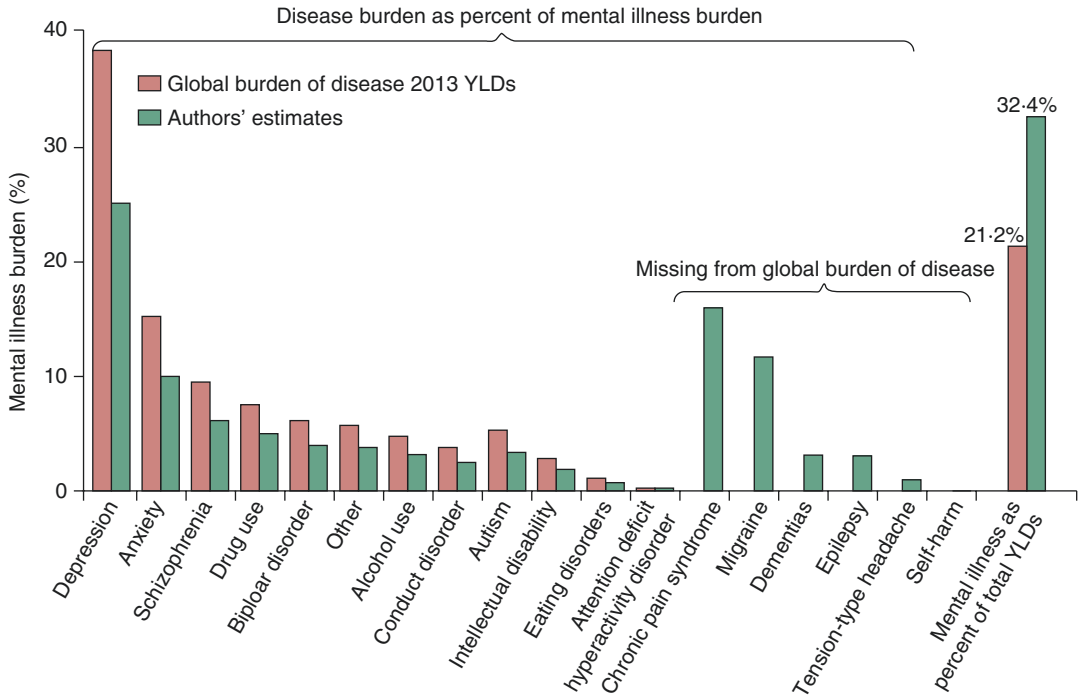


Fig. 1.1 Comparison of global burden of disease 2013: years lived with disability (YLDs) with the authors' estimates. Analysis based on data from Global Burden of Disease Study 2013 Collaborators [3]

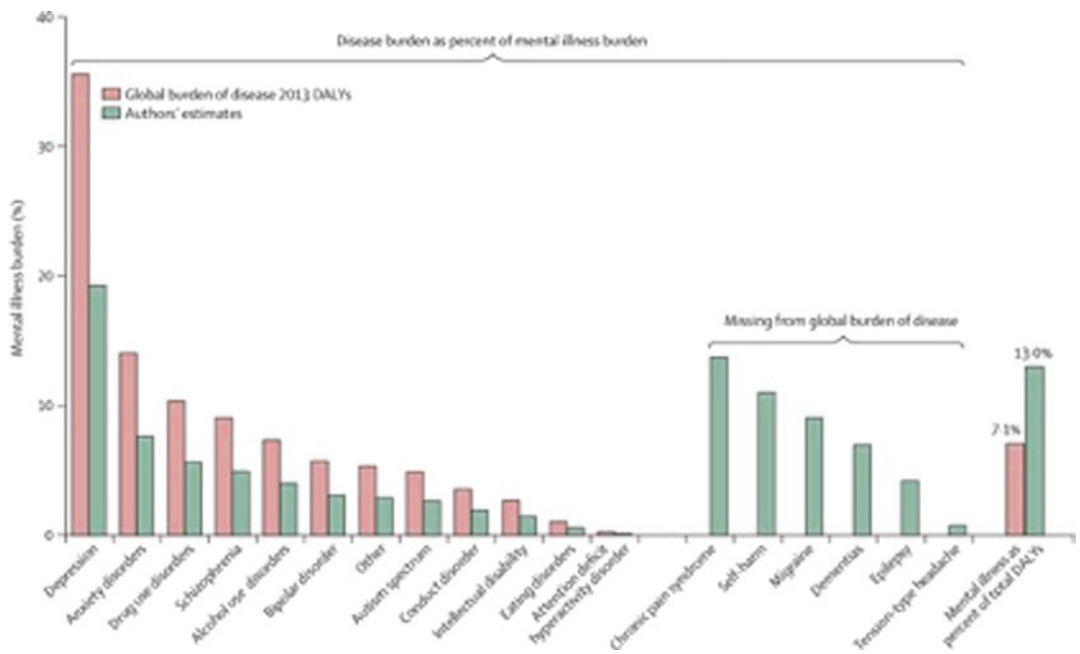


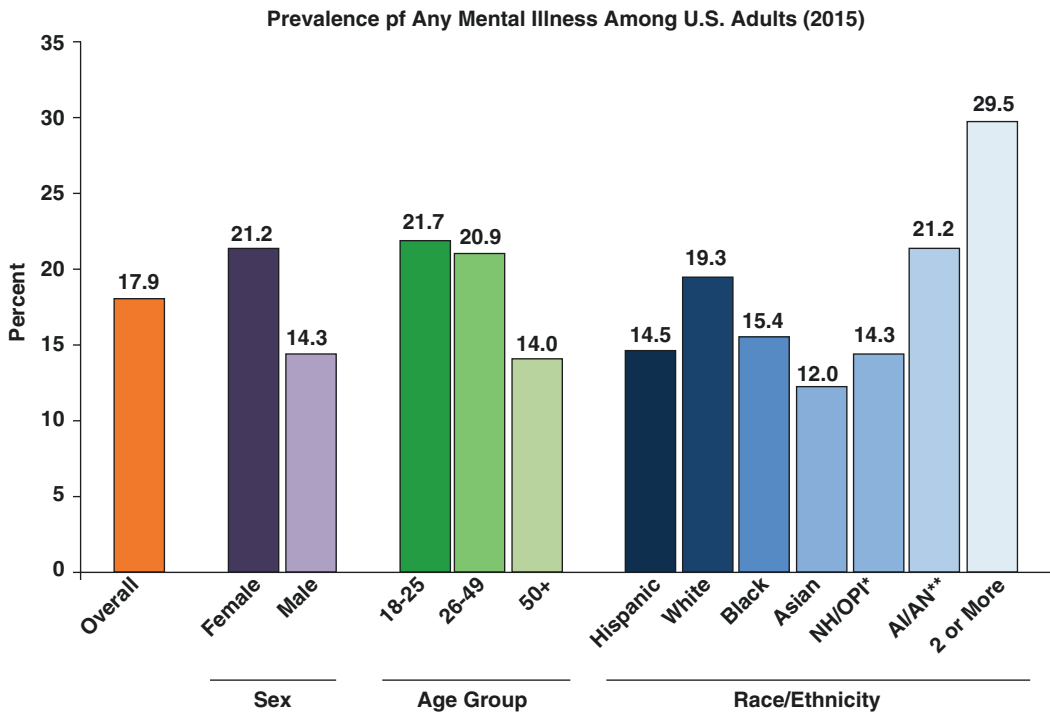
Fig. 1.2 Comparison of global burden of disease 2013: disability-adjusted life years (DALYs) with the authors' estimates of years lived with disability (YLDs); analysis based on data from GBD 2013 DALYs and HALE Collaborators [3, 4]

in 28 countries [1]. The WHO’s cross-national comparisons show a globally high prevalence of major mental disorders (defined by Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV): anxiety disorders, mood disorders, impulse-control disorders, and substance-use disorders). Combined, one or more of these disorders impacts one in four persons; the 25th–75th interquartile prevalence range (IQR) is 18.1–36.1% of the total population. These WHO-sponsored data also reveal cross-nationally consistent findings of early ages at onset, high comorbidity, significant chronicity, widespread unmet treatment needs, significant delays between illness onset and treatment, and inadequate frequency and quality of mental health care [1].

In the United States, the National Survey on Drug Use and Health (NSDUH) estimates 43.4 million adults, or 18% of the US adult population, has had a mental illness in the past year

[5] (Fig. 1.3). The World Mental Health Survey (WMHS) found that lifetime prevalence of major DSM-IV mental disorders was highest in the United States, with almost half (47.4%) the population having a lifetime risk of at least one mental illness [6]. The 12-month WMHS-based prevalence estimate for any disorder varied widely and was also highest in the United States at 24.6% (6% higher than US estimates from NSDUH), but lowest in Shanghai, China (4.3%) [7].

All four major classes of DSM-IV disorders are important components of overall prevalence. Anxiety disorders (IQR, 9.9–16.7%) and mood disorders (IQR, 9.8–15.8%) are the most prevalent lifetime illnesses. Impulse-control disorders (IQR, 3.1–5.7%) and substance-use disorders (IQR, 4.8–9.6%) are generally less prevalent in global samples, despite their relatively high frequency among emergency department patients in the English-speaking world [6].



Data courtesy of SAMHSA

*NH/OPI = Native Hawaiian/Other Pacific Islander
 **AI/AN = American Indian/Alaska Native

Fig. 1.3 Prevalence of any mental illness among U.S. adults (2015)

Extent of Mental Illness Across the Life Cycle

Most mental disorders begin early in life and often have a chronic, fulminating course. They have much earlier ages of onset than most chronic non-psychiatric disorders. In the US sample of the World Mental Health Survey, approximately 50% of psychiatric disorders existed by age 14 and 75% by age 24 [8]. Very early age of onset occurs for some anxiety disorders, notably phobias and separation anxiety disorder (SAD), with a median age of onset in the range of 7–14 years [6]. Early onsets are also typical for the externalizing disorders, with 80% of all lifetime attention-deficit/hyperactivity disorder beginning in the age range of 4–11, and the clear majority of oppositional-defiant disorder and conduct disorder beginning between ages 5 and 15 [6]. Serious mental illnesses such as schizophrenia typically first manifest in the late teenage years or early adulthood, typically in the range of 15–35 years of age [9].

Adult onsets are seen for the other common anxiety disorders (panic disorder, generalized anxiety disorder, and post-traumatic stress disorder), with median onset in the age range of 25–50 years old. Mood disorders have a similar age of onset to the later-onset anxiety disorders, increasing linearly from the early teens until late middle age, and then declining. The median age of onset for mood disorders ranges from 25 to 45. Substance-use disorders also begin in young adulthood, with a median age of onset ranging from 20 to 35 years [6]. The age of onset for the dementias is generally late in older adulthood. Alzheimer's disease is typically first seen in those over 65 years of age [10].

Social and Physical Health Impacts

WHO data from both the World Mental Health Survey and the Global Burden of Disease Study show that mental disorders impose enormous personal and economic costs. These enduring costs arise in part from the combination of early onset, high prevalence, high disability, and chronicity of mental health disorders [11]. Early-onset mental disorders are associated with a wide

array of adverse outcomes over the life course, including lowered educational attainment, early marriage, marital instability, and low occupational and financial status [11]. In addition, and particularly relevant to emergency medicine, early-onset mental disorders increase the risk of onset and persistence of a wide range of physical disorders, including heart disease, asthma, diabetes mellitus, arthritis, chronic back pain, and chronic headache [12, 13]. Adult-onset mood, substance, and anxiety disorders are also associated with significant role impairment and are often comorbid with physical illnesses.

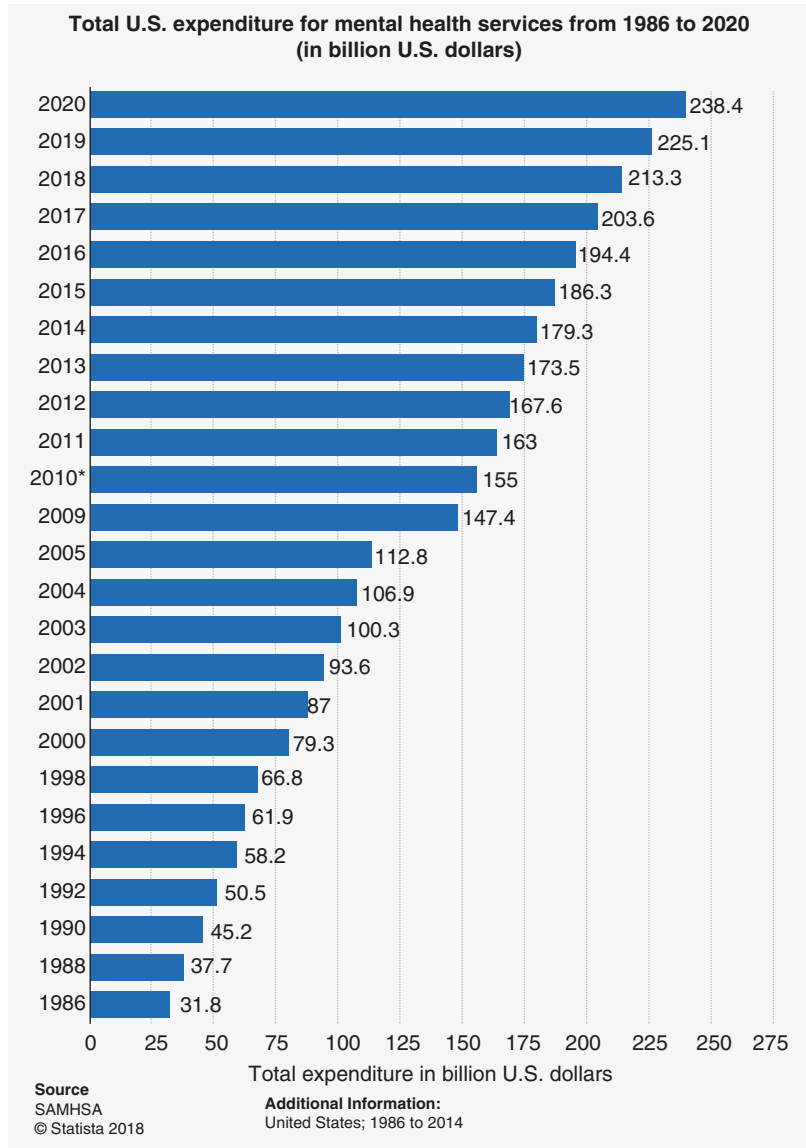
Economic Burden: United States

In any given year, an estimated one in four (26.2%) of the United States population has a diagnosable mental or substance-use disorder [14]. Of those with a disorder, 22% are classified as serious, 37% as moderate, and 40% as mild. To address this burden, the total US national health expenditures for mental health services has increased exponentially during the last three decades, from \$33 million in 1986 to \$147.4 billion in 2009 [5, 15]. Projections based on the SAMHSA findings estimate an increase in expenditures to \$238 billion by 2020 (Fig. 1.4) [5, 16].

Most of the World Mental Health Survey research undertaken to calculate the magnitude of the short-term societal burden of mental disorders has been done in the United States [17, 18]. These studies count costs in terms of health care expenditures, impaired functioning, and premature mortality, and reveal an overwhelming financial burden. The economic cost of depression in 2010, for example, was estimated at \$210.5 billion [19].

Industrial analyses suggest that one-third of all health-related days lost from work or home responsibilities in the United States (totaling in the billions) are due to mental disorders [20]. Major depressive disorder alone impacts 6.4% of US workers annually and results in an average of >5 weeks of absenteeism and lost work productivity, costing employers around \$51 billion. The burden of depression-associated presenteeism—when workers are present at the workplace in

Fig. 1.4 Total U.S. expenditure for mental health services from 1986 to 2020 (in billion U.S. dollars)



body but not in mind—is even more costly, estimated at more than \$84 billion annually in the United States [21].

Changes in Mental Health Care Infrastructure

Globally, the burden of escalating numbers of mental health patients has been exacerbated by negative changes in mental health infrastructure that have resulted in reduced resources and restricted access for patients. In the United States,

psychiatric inpatient facilities have been closed, numbers of psychiatrists have declined, and numbers of psychiatric beds have decreased, both in state hospitals and in general. For example, from 1986 to 2004, the number of mental health organizations in the United States has contracted, from 3512 to 891; the total number of psychiatric beds has fallen by 20%, from 267,613 to 212,231; the number of psychiatric beds in state and county mental hospitals has halved, from 119,033 to 57,034; and the number of beds per 100,000 civilian population decreased from 111.7 in 1986 to 71.2 in 2004 [21].

Of the 12,826 mental health treatment facilities in the United States in 2015, the vast majority (9640, or 75.2%) are less than 24-hour outpatient facilities. Only 2115 (or 16.5%) are associated with 24-hour hospital facilities [22].

These striking reductions in psychiatric resources have not been reversed in more recent years. In fact, the problems are worse, accompanied by reduced lengths of stay, moves to treat people in the community, increased out-of-pocket consumer costs, and unfavorable mental-health-provider reimbursement. Having no place else to go, the preponderance of patients in crisis, as well as those with severe and chronic psychiatric illnesses, have been forced en masse to seek care at emergency departments (EDs)—the only 24/7 health care facilities that cannot legally turn them away [26].

Large differences exist in the mental health workforce between countries with more than four times as many psychiatrists per capita in developed countries such as the Netherlands compared to developing countries such as China and India [23] (Fig. 1.5). Within country differences in the distribution of mental health care, workers are

also significant [24] (Fig. 1.6). In the United States, for example, the highest density of psychiatrists is located in small New England states such as Vermont, Connecticut, and Rhode Island. Southern and Great Plains states have significantly fewer psychiatrists per capita. Similar distribution variances are observed for other types of mental health care providers as well [25] (Fig. 1.7). Naturally, access to local mental health resources greatly impacts the disposition (admission, transfer, referral, and discharge home) and treatment (ED, inpatient, and/or outpatient) of many psychiatric patients presenting to emergency departments.

Overall Emergency Department Visits

In 2014, there were almost 141 million visits to US EDs, 44.4 visits for every 100 persons in the United States [26]. From 1994 to 2014, the annual number of ED visits increased 52%, from 93 to 141 million, representing an average increase of approximately 2.4 million (2.6%) vis-

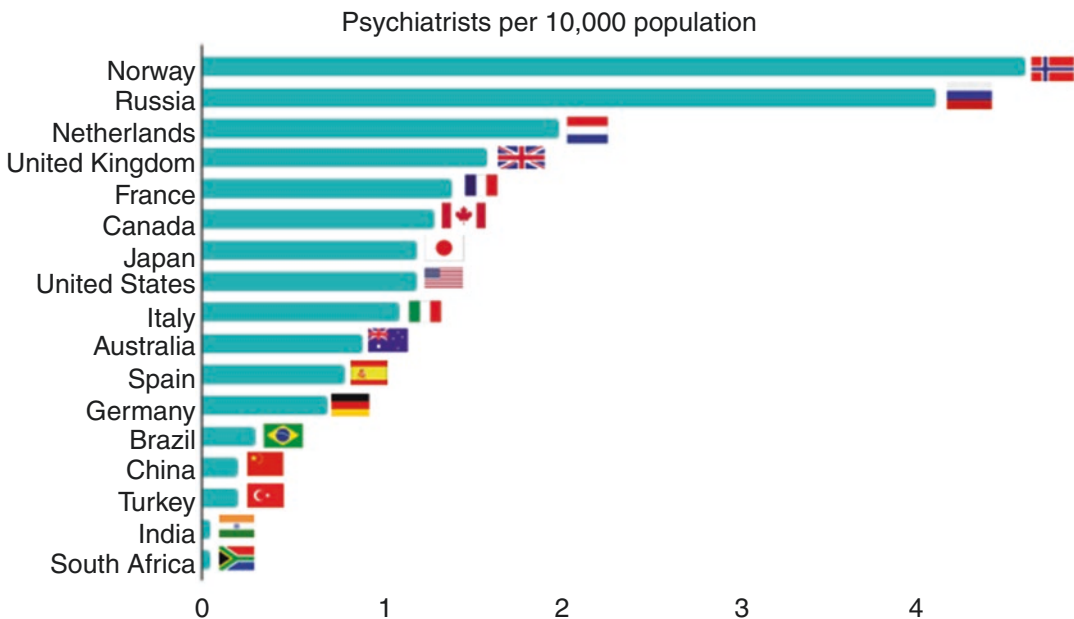


Fig. 1.5 Psychiatrists per 10,000 population (Data source: Mental Health Atlas 2014 [23]). (*Number of psychiatrists in India and South Africa are <0.05 per 10,000 population)

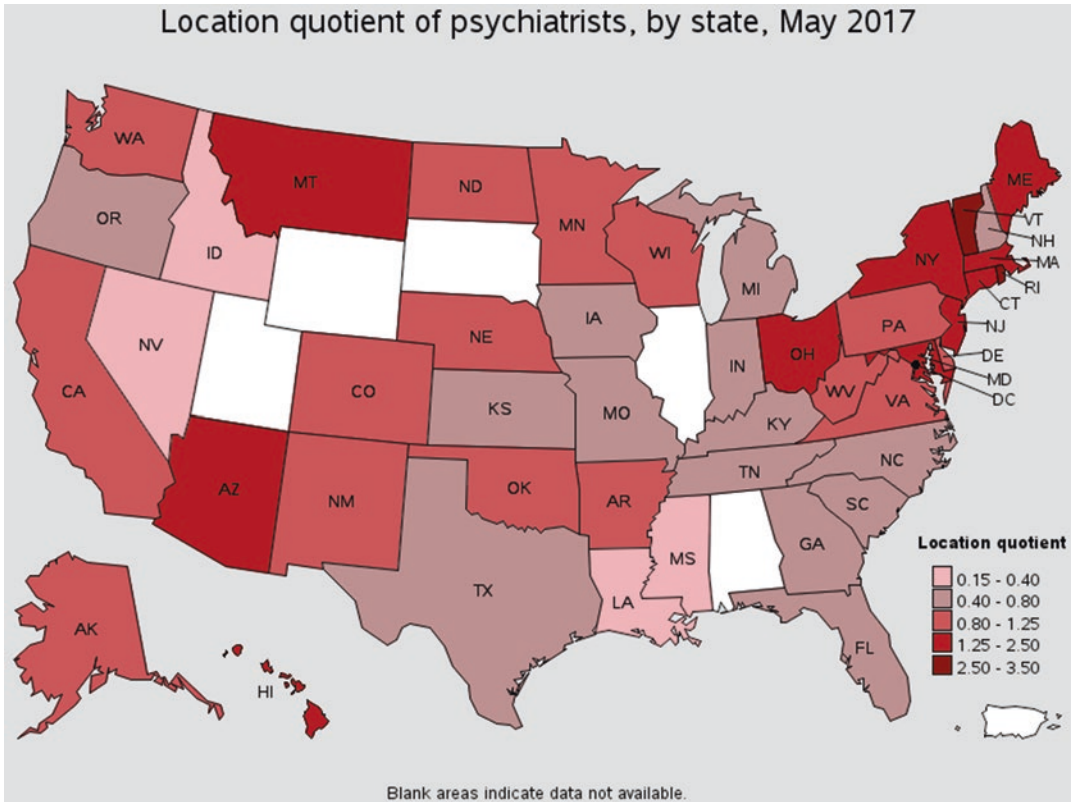


Fig. 1.6 (Source: US Bureau of Labor Statistics [24]). (The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indi-

cates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average)

its every year [26, 27]. However, as the number of visits has increased, the number of hospital-based EDs has decreased, from 4960 in 1994 to 4408 in 2014, and this trend shows no sign of reversal [28] (Fig. 1.8). The net effect of increasing visit rates and a reciprocal decline in the number of EDs is a 20% increase in ED volume and concomitant overcrowding. Mental health patients have played an increasing role in ED oversubscription, and we describe this below.

Increased Mental Health Visits to Emergency Departments

An increasing fraction of annual ED visits are for mental health presentations [29]. Indeed, while overall use of US ED services increased by 52%

from 1994 to 2014, the number of documented mental-health-related visits increased at an even faster rate—100% over the same 20 years [27, 29]. For the past two decades, mental disorders have been the fastest growing component of emergency medical practice, while psychiatric services have diminished.

Nearly one in three adults in the noninstitutionalized community has a diagnosable mental or addictive disorder; in the ED, this figure climbs to at least 40%. In 2006, the National Center for Health Statistics (NCHS) reported that 4.7 million patients presented to American Eds with a primary psychiatric diagnosis. However, this number does not include codes for psychiatric reasons for the visit, comorbid mental health issues, substance-related visits, and the many patients in whom psychiatric reasons for the visit

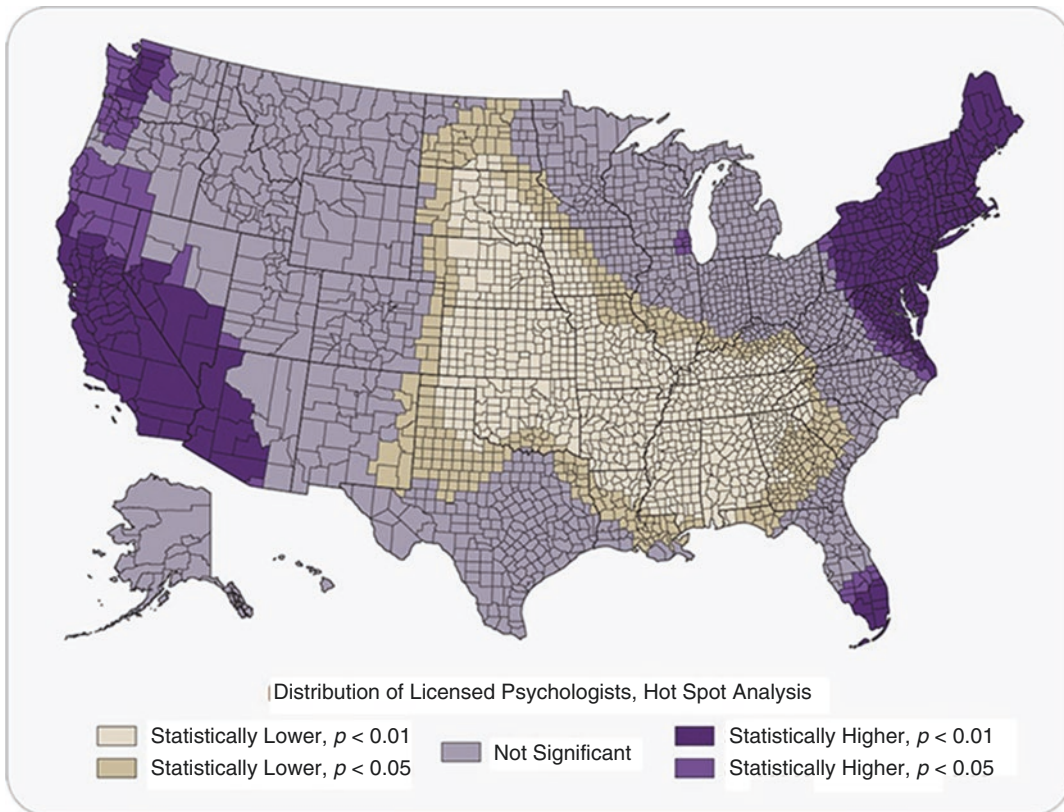


Fig. 1.7 Hot-spot analysis on the number of licensed psychologists, 2012–2015. (Source: American Psychological Association [25]). (Note: This map was based on the Getis-Ord statistic generated from the hot-spot analysis. The number of licensed psychologists was

statistically compared to the national mean. Counties in Hawaii, Oklahoma, and Utah were included in the analysis based on state means of licensed psychologists per county)

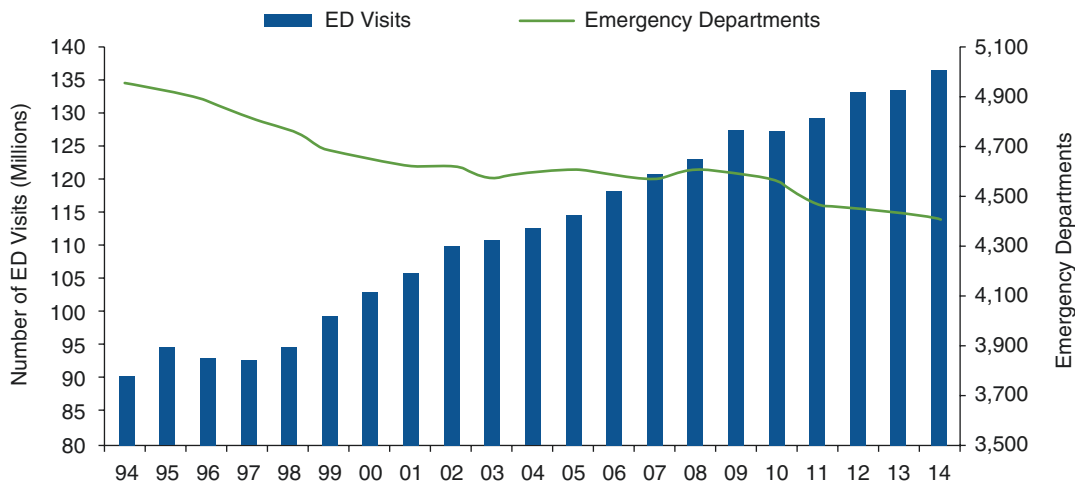


Fig. 1.8 US emergency department visits and hospital-based emergency departments, 1994–2014. (Source: American Hospital Association TrendWatch ChartBook

[28]). (*Defined as hospitals reporting ED visits in the AHA Annual Survey)

are secondary; hence, NCHS numbers are a gross underestimate.

The Emergency Medical Treatment and Active Labor Act (EMTALA) legislation and mental health insurance exclusions, as well as changes in the mental health infrastructure, mean that Eds have become the default option for urgent and acute contact for many psychiatric patients, including high severity patients and those who are suicidal. For some, the ED is their sole source of health care [26]. While many of those who present to Eds with mental health problems are uninsured, underinsured, homeless, and of racial and ethnic minorities who have no easy access to health care, the largest increase in mental health visits in the past decade comes from those who are insured [30]. As states reduce mental health care expenditure and the US health care system becomes inaccessible to an increasing fraction of the American population, the 100% increase in ED psychiatric visits observed between 1994 and 2014 is likely to continue.

As a result of these trends, emergency medicine is being forced to assume a growing responsibility for providing both primary and acute mental health care. Paradoxically, however, while ED visits increase every year, both the number of general and psychiatric EDs are declining. Only approximately 146 EDs with specialized psychiatric emergency units remain (American Association for Emergency Psychiatry, 2009, “personal communication”).

The Epidemiology of Mental Health Visits to Emergency Departments

Emergency department use for psychiatric reasons has expanded over the past two decades and now accounts for 3.5% of all US emergency department visits by adults [27, 29]. Despite these recent trends, which have resulted in record-breaking numbers of patients seeking emergency services nationwide, there have been few methodologically and epidemiologically sound studies of mental-health-related emergency visits in the United States.

The most comprehensive study used National Hospital Ambulatory Medical Care Survey (NHAMCS) data relevant diagnostic fields, including psychiatric reason-for-visit codes, DSM-based ICD diagnoses, Supplementary Classification of Factors Influencing Health Status and Contact with Health Services (V codes), and external cause-of-injury codes (E codes) for all appropriate mental-health-related disorders [30]. This study found that from 1992 to 2001, a total of 53 million visits to US EDs were made primarily for mental-health-related reasons. Of these, an estimated 17 million visits were for a mental-health-related primary complaint (i.e., as conveyed to the clinician by the patient), but many more involved a psychiatric diagnosis (i.e., the assessment of the patient’s condition by the clinician). Among the estimated 53 million mental-health-related visits overall, the most common diagnoses were substance-related disorders (30%), mood disorders (23%), and anxiety disorders (21%). Psychoses constituted 10%, and suicide attempts 7%, of all documented mental-health-related visits. These five major subgroups accounted for 79% of all mental-health-related visits [30].

The remaining visits included all other Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnostic codes and reason-for-visit codes referable to other psychological and mental disorders. Rates of these miscellaneous mental-health-related visits increased significantly over the decade. Rates of presentation to EDs for the most serious mental health problem (suicidal behavior) increased by almost 50% from 1992 to 2001. As well as suicidal behavior, increased rates of visits were significant for all of the most prevalent disorders (mood, substance use, and anxiety disorders). According to the Nationwide Emergency Department sample, mental health ED visits increased from 2006 to 2014 by 44.1% [32]. However, rates of psychoses-related visits remained stable over this period from 0.6% in 2009 to 0.7% in 2014 in the adult male population [27, 33].

Specific Mental Disorders

The goal of the following section is to describe the magnitude of the problem of ED presentations for specific mental disorders. The most prevalent conditions are highlighted. While the prevalence and illness burden of each condition are worthy of discussion, prevalence data are not available for all mental illnesses, particularly those that are less common. While some disorders are increasingly recognized (ADHD, e.g., 2.8% prevalence), their relative lack of ED treatment-seeking often keeps them out of the discussion of emergency mental health [34].

Anxiety Disorders

Anxiety disorders are the most common psychiatric disorders in the general population. Studies suggest that as many as one in four ED patients screen positive for anxiety disorders [35]. Many patients with anxiety disorders visit emergency departments, either to seek help for the anxiety symptoms explicitly or because they have physical symptoms related to anxiety. While anxiety symptoms rarely constitute a life-threatening emergency, severe anxiety is a common presenting problem in emergency department patients, consuming many resources. Specific anxiety disorders include (based on DSM-5):

- Anxiety disorders
 - Separation anxiety disorder
 - Selective mutism
 - Specific phobia
 - Social anxiety disorder
 - Panic disorder
 - Panic attack specifier
 - Agoraphobia
 - Generalized anxiety disorder
 - Anxiety disorder due to another medical condition
 - Other specified anxiety disorder
 - Unspecified anxiety disorder
- Obsessive-compulsive disorders
 - Obsessive-compulsive disorder
 - Body dysmorphic disorder
- Hoarding disorder
- Trichotillomania
- Excoriation disorder
- Substance/medication-induced obsessive-compulsive and related disorder
- Obsessive-compulsive and related disorder due to another medical condition
- Other specified obsessive-compulsive and related disorder
- Unspecified obsessive-compulsive and related disorder
- Trauma and stressor-related disorders
 - Reactive attachment disorder
 - Disinhibited social engagement disorder
 - PTSD
 - Acute stress disorder
 - Adjustment disorders
 - Other specified trauma-and-stressor-related disorder
 - Unspecified trauma-and-stressor-related disorder

In any given year, anxiety disorders affect 25% of the US adult population, making them the most prevalent type of mental disorders [36]. Of these cases, 22.8% (4.2% of the total adult population) are classified as “severe” [8]. The mean age of onset of anxiety disorders is 11 years, and these disorders are more common in females than males and less common in non-Hispanic Blacks and in Hispanics than in non-Hispanic Whites.

Despite the high prevalence rates of anxiety disorders, they are often underrecognized and undertreated clinical problems in the general population and in primary care. Of all cases each year, only one-third (36.9%) receive treatment, and for only one-third of those (12.7% of those with the disorder) is the treatment effective or adequate [37]. Anxiety disorders have a strong comorbidity with depression and substance-use disorders; the risk of suicidal behavior in anxiety-disordered patients is often underestimated [38].

Anxiety-related presentations accounted for 16% of emergency department mental health visits from 1992 to 2001, increasing from 4.9% to 6.3% of all emergency department visits across the decade [38]. While not always used for anxiety, the anxiolytics/sedatives/hypnotics prescrip-

tions escalated from 9.6M in 2006 to 13.5M in 2014 [27, 33]. This growth may reflect a rise in anxiety-related emergency department care-seeking, an increase in anxiety awareness among patients and practitioners, or both. Of all mental health visits to the ED, anxiety disorders are the least likely to result in admission, with an overall hospitalization rate of 20% [38].

The European Study of the Epidemiology of Mental Disorders (ESEMED) based on more than 21,000 adults across Belgium, France, Germany, Italy, Netherlands, and Spain estimated that only one-fifth of anxiety patients seek help. Of those that reach out for health services, 23% receive no treatment, 31% receive only drugs, 20% receive only psychotherapy, and 27% are treated with both pharmacotherapy and psychotherapy [39].

Panic Disorder

The estimated lifetime prevalence of panic disorder in the US adult population is 4.7% [40, 41]. Twelve-month prevalence is estimated at 2.7%. The lifetime prevalence of panic disorder is twice as high among females (6.2%) than males (3.1%). Twelve-month prevalence is 3.8% for females and 1.6% for males. The age of onset for panic disorder is typically is early to mid-20s, and panic disorder is seen most commonly in people aged 15–24 years [42]. However, these population estimates may not reflect the characteristics of panic disorder patients seen in emergency department settings. For example, it has been found that panic patients in an ED were older and more likely to be male than patients seen in psychiatric clinics. One study found ED panic patients were also significantly more likely to be on Medicare and less likely to be uninsured [43].

Patients with panic disorder have high rates of use of both ED services and 911 emergency services, as well as high rates of ED recidivism. Panic patients seek emergency care not only because of the sudden, severe, and frightening onset of symptoms but also because anxiety disorders often occur in association with somatic

complaints. The direction of association is unclear but is likely to be bidirectional.

A series of ED studies have focused on patients who present with chest pain [43]. Chest pain is the most common reason for ED presentation for those over 65 and the second most common reason for those aged 15–64 years, accounting in 2008 for 4.7 million ED visits [15]. Studies of ED chest pain patients consistently report that panic disorder can be diagnosed in two-thirds of all patients presenting to an ED with medically unexplained chest pain. In several studies, the vast majority (98%) of ED patients with panic disorder were undiagnosed. These patients often receive costly cardiac workups to exclude coronary artery disease, yet they are seldom, if ever, screened for panic disorder [44].

Underdiagnosis of panic disorder is unfortunate, not only because identification of these patients might reduce their economic burden in the ED by avoiding unnecessary and expensive investigative tests, and minimizing rates of medical care usage, use of 911 services, and overall ED use, but also because effective pharmacological and psychotherapeutic treatments are available. Untreated, panic patients tend to develop depression, agoraphobia, alcohol and substance abuse problems, and impaired social and occupational functioning. Panic disorder is also associated with an elevated risk of suicidal behavior. Although only 60% of people with panic disorder seek care, 32% of these patients present to EDs, rendering EDs an appropriate site for detection and possibly early treatment and referral of panic disorder patients [44].

Posttraumatic Stress Disorder (PTSD)

While the nosology of posttraumatic stress disorder is still being debated, the estimated lifetime prevalence of PTSD among adult Americans is 6.8% [14]. The 12-month PTSD prevalence estimate is 3.5%. PTSD is significantly more common in women than men; the lifetime prevalence of PTSD among men is 3.6%, and among women, 9.7%. The 12-month prevalence is 1.8% among men and 5.2% among women.

PTSD is often unrecognized in the general population, as well as in emergency departments, which are routine reception zones for trauma and disaster victims. Emergency departments receive many patients who have experienced mass-casualty events, natural disasters, serious accidents, assault or abuse, sudden and major deaths, as well as deep emotional losses that put them at risk of PTSD. The ED as an ideal setting for PTSD prevention is being increasingly recognized.

Generalized Anxiety Disorder

The lifetime prevalence of generalized anxiety disorder (GAD) is estimated at 5.7% in the United States, which is higher than the estimated 3.7% lifetime prevalence globally [14, 40, 45]. The 12-month US prevalence is 2.7%. The lifetime prevalence of generalized anxiety disorder is estimated to be 7.1% in females and 4.2% among males. Past-year prevalence is 3.4% among females and 1.9% in males. Generalized anxiety disorder rarely occurs in isolation from other psychiatric disorders, with an estimated 90% of people with GAD meeting criteria for another psychiatric disorder over the course of their lifetime. The most common comorbid illnesses are depression, alcohol abuse, and other anxiety disorders [46]. In the emergency department, GAD is likely to be a secondary diagnosis both to these comorbid mental disorders as well as to physical illnesses.

Phobic Disorders

The global estimates for phobia report a 3.6% lifetime prevalence [47]. The estimates for the adult US population are much higher, at 12.5% [14]. In any year, one in every ten adults reports having a specific phobia. The lifetime prevalence is estimated at 15.8% in females and 8.9% in males. While phobias are the most prevalent anxiety disorders, they are much less likely than panic disorder, PTSD, and GAD to be the primary reason for ED presentation.

Mood Disorders

After anxiety disorders, mood disorders are the second most common psychiatric disorder in the general population, occurring in 10% of the US adult population each year [14, 48]. Of these cases, 45% (4.3% of the total population) are classified as severe. The mean age of onset is 30 years, and women are 50% more likely than men to suffer a mood disorder during their lifetime. Non-Hispanic Blacks and Hispanics are less likely than non-Hispanic Whites to experience a mood disorder during their lifetime.

Mood disorders are the most expensive mental illness in the general population because they are frequently undiagnosed, underdiagnosed, or misdiagnosed, and, even if detected, often inadequately treated. Each year, half of those in the general population with a mood disorder receive treatment, and for 40% (20% of those with any mood disorder), this treatment is minimally adequate [42].

The economic burden of depression in the general population is derived not only from the health care costs of inadequate diagnosis and treatment but also from workplace absenteeism and loss of productivity, lost earnings due to premature death, and the costs incurred by social agencies (including law enforcement, the justice system, and shelters), as well as personal costs in terms of reduced quality of life.

After substance-use disorders, mood disorders (including major depressive disorder, bipolar disorder, and dysthymia) are the most common mental illnesses seen in the emergency department, accounting for 17% of US ED visits for mental-health-related reasons from 1992 to 2001 [31]. More recent data reveal a 34% increase in the rate of mood disorder presentations to the ED as a first-listed diagnosis, from 1.1M in 2006 to 1.5M in 2014 [32].

Major Depression

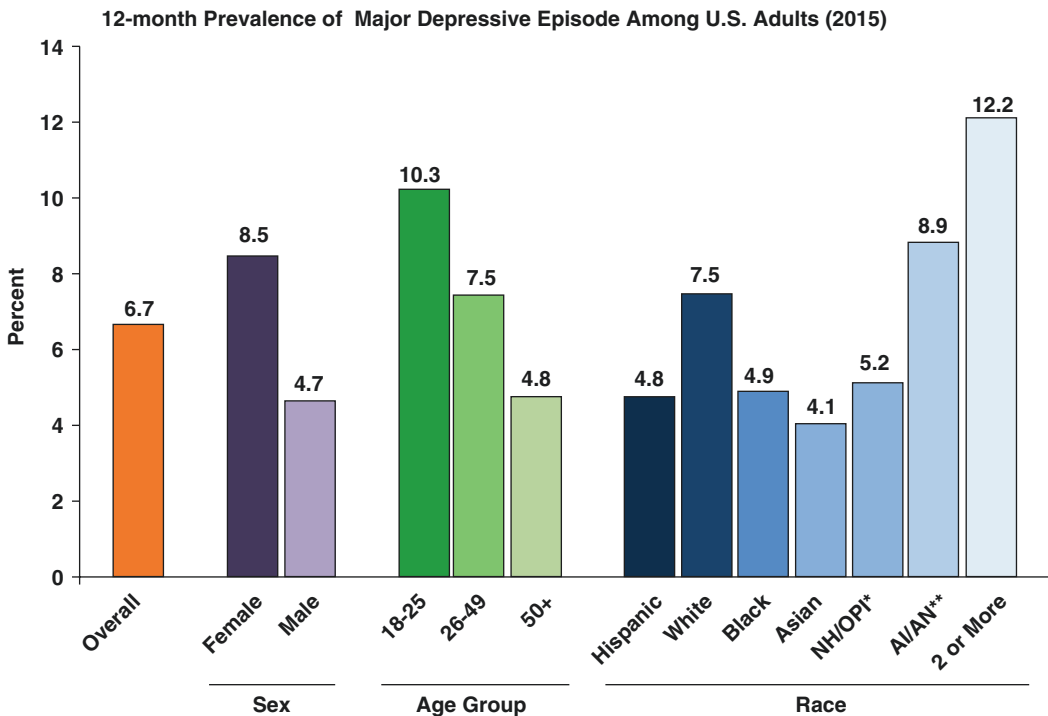
Major depression was estimated to affect 322 million, or 4.4% of the world's population, in the year 2015 [49]. Currently, 16.1 million adults in

the United States are considered to suffer from MDD [5]. Each year, 6.7% of US adults suffer a major depressive episode (MDE) [14, 50] (Fig. 1.9). The prevalence of MDE among young adults aged 18–25 in the United States has increased significantly in recent years, and overall, this prevalence is higher than all other age groups [5] (Fig. 1.10). Of all major depressive episodes, one-third (2% of all the US adult population) are classified as severe. The mean age of onset is 32 years. Women are 70% more likely than males to have a major depressive episode during their lifetime, and MDD is 40% less common in non-Hispanic Blacks than non-Hispanic Whites. Of all those with MDD each year, only half receive treatment, and of those receiving treatment, 38% (20% of those with the disorder) are receiving minimally adequate treatment.

The use of antidepressants for treating depression has risen sharply in the years 2001–2011, showing an increase of 98% [51]. This increase is much higher than the 6% increase over the previ-

ous decade, which ended in 2001 [30]. The rise in antidepressant prescriptions accompanies a general awareness of treatment for depression, with a 220% increase since the 1980s [52]. Although more individuals are seeking treatment, a gradual decline in the use of psychotherapy can be appreciated in the 2000s compared to the 1980s (54–43%) [52].

Untreated depression imposes a severe economic burden, resulting largely from inadequate diagnosis and treatment. In the majority (50–60%) of those with depression, the disorder is not accurately diagnosed [53]. Wells and colleagues found that depressed medically ill patients have significantly more pain and functional impairment than matched patients having chronic medical conditions alone [54]. Only advanced coronary artery disease accounts for more bed disability days (defined as days during which a person stayed in bed for more than half a day because of illness or injury) than depression, and only arthritis causes more pain. In terms of



Data courtesy of SAMHSA

*NH/OPI = Native Hawaiian/Other Pacific Islander
 **AI/AN = American Indian/Alaska Native

Fig. 1.9 Twelve-month prevalence of major depressive episodes among US adults (2015). (Source: SAMHSA [50])

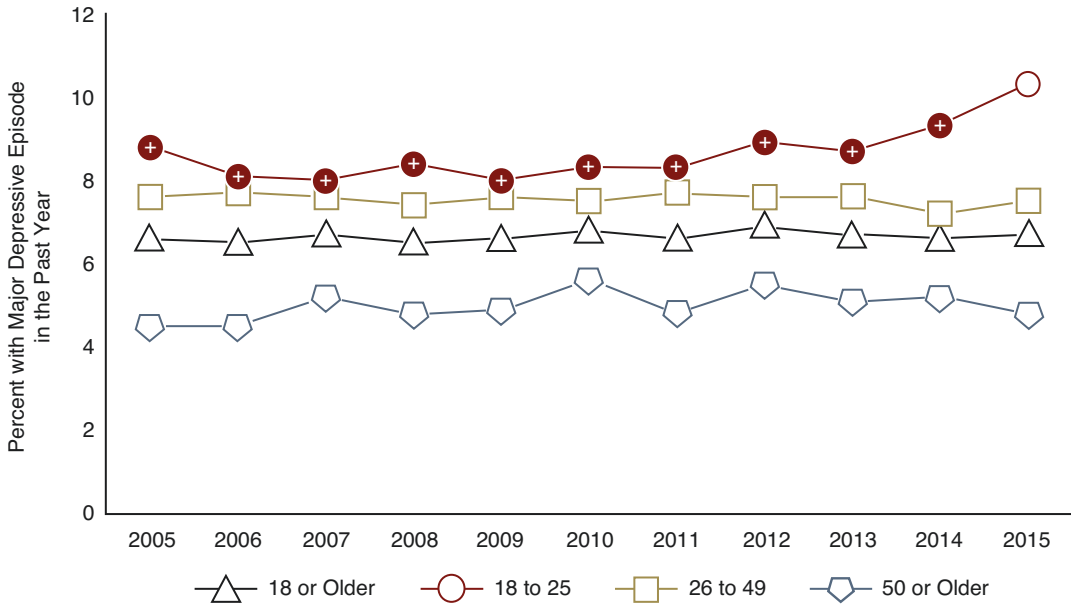


Fig. 1.10 Major depressive episode in the past year among adults aged 18 or older, by age group: percentages, 2005–2015. (Source: Center for Behavioral Health Statistics and Quality [5])

impaired physical functioning and ability to work, to function socially, and to care for home and family, depression is more disabling than hypertension, diabetes, arthritis, gastrointestinal disorders, or back pain problems. Depressed patients have high rates of medical usage for a range of somatic complaints, including headaches, backaches, gastrointestinal disorders, weakness, lethargy, fatigue, and insomnia. They are frequent users of emergency departments, using such services three to five times more than nondepressed patients [55].

However, depression is often neither detected nor even inquired about in emergency department settings [56]. A study of 476 ED patients in four US hospitals found that, when screened for symptoms of depression, one-third were positive [57]. While symptoms of depression do not necessarily equate with standardized DSM-based diagnoses of depression, these results suggest that depression in ED patients may be approximately six times higher than in general population samples.

Depression is often comorbid with anxiety disorders, substance dependence, and other men-

tal disorders, as well as a range of somatic complaints. It may be obscured in ED presentations by these other concerns unless explicit screening for depression is undertaken. However, if ED screening for depression is implemented, then there is a need to develop a range of ED-based interventions to either provide ED-delivered interventions or to link all those who screen positive for depression to appropriate services external to the ED and, furthermore, to ensure that no one falls through gaps between ED and outpatient services.

Bipolar Disorder

Bipolar disorder is a chronic mood disorder that causes significant economic burden to patients, families, and society [14, 58]. The 12-month prevalence of bipolar disorder in the US adult population is 2.6%. Prevalence estimates may vary from 2.4% to 15.1%, depending upon how inclusive the diagnostic categories employed. For example, the highest prevalence of 15.1% would comprise manic episode, hypomanic episode,

and soft hypomanic episode [59–65]. The majority of these cases (83%) are classified as severe. Half of those with the disorder receive treatment each year, and of those, 40% receive minimally adequate treatment.

Bipolar disorder is characterized by recurrent manic (or hypomanic) and depressive episodes that cause functional impairment and reduce the quality of life [66]. At least 25–50% of patients with bipolar disorder also attempt suicide [67]. People with bipolar disorders are 20–30 times more likely to commit suicide than the general population [69, 70]. Bipolar patients may present to the ED in either depressed or manic states; some will have attempted suicide. There are few studies of the epidemiology of bipolar disorder visits to the ED, but one small study found that almost 7% of ED patients screened positive for bipolar disorder, considerably higher than population estimates of 1.3% [68]. As with anxiety disorders, bipolar disorders carry significant comorbidity with substance-use disorders [69].

Dysthymic Disorder

The DSM-5 characterizes dysthymia as a “Persistent Depressive Disorder.” This category is a consolidation of the DSM-IV defined chronic major depression and dysthymia. Persistent Depressive Disorder is characterized by a depressed mood for most of the day for at least 2 years. If individuals meet the MDD criteria for 2 years, they are classified as having both MDD and Persistent Depressive Disorder. People with dysthymia may also experience one or more episodes of major depression during their lifetime [14]. The lifetime prevalence of dysthymic disorder is estimated to be 2.5% [14]. The 12-month prevalence is 1.5%. Lifetime estimates are 3.1% among females and 1.8% in males. Twelve-month estimates are 1.9% among females and 1.0% in males. Dysthymia may underlie many ED visits, but it is frequently undetected, and many outpatients with dysthymia may be receiving inadequate treatment.

Suicidal Behavior

Suicidal behavior is a proposed DSM-5 disorder assigned to those who have attempted suicide in the past 2 years. Suicidal behavior is closely associated with most mental disorders and is one of the most common and arguably the most serious psychiatric emergency presentation to the ED. Suicide ideation and suicide attempts are strongly linked to death by suicide and predict further suicidal behavior [71]. The lifetime prevalence of suicide ideation is 9%, and the lifetime prevalence of suicide attempts is 3%. Twelve-month prevalence rates of suicide ideation, plans, and attempts are, respectively, 2%, 0.6%, and 0.3% for developed countries [72].

Recently, suicide has surpassed transport-related crashes as the most common cause of injury-related deaths in the United States. In 2004, suicide was responsible for approximately 32,000 deaths, and motor vehicles for 47,000 deaths. By 2014, the numbers reversed: Suicide became responsible for 43,000 deaths compared to 38,000 deaths due to motor vehicle crashes [73].

Suicide attempts accounted for approximately 2.5 million (5.9%) injury-related US ED visits in 2012 [30]. The rate of presentation for suicide-related visits to US EDs increased by 73%, from 0.3M in 1994 to 0.5M in 2014 [27, 29]. Yet these figures underestimate the prevalence of suicide-related visits to the ED. A study by Claassen and Larkin (2005), for example, found that a significant fraction of those who present to EDs for non-mental-health reasons often have occult or silent suicide ideation (estimated at 8–12%) [74].

Three clusters of ED patients can be identified as being at risk of suicide ideation and behavior: (i) those who present to ED with suicide ideation or threats, or following suicide attempts; (ii) those who present with the mental health problems with which suicide is associated; and (iii) those who present with specific physical problems but who have occult or silent suicide risk [75–77].

Almost all mental disorders have an increased risk of suicide apart from mental retardation and dementia [77]. Outside of China, psychological autopsies reveal that approximately 90% of individuals who attempt or commit suicide meet diagnostic criteria for a mental disorder, most commonly mood disorders, substance-use disorders, psychoses, and personality disorders. However, both the mental disorders with which suicide is associated and the subtle levels of suicide ideation are frequently underrecognized and undertreated in ED settings.

Those who make suicide attempts also present to ED services for a range of medical problems and have increased risks of homicide, accidents, disease, and premature death in general [79]. Patients who present to the ED with suicide ideation (without attempt) also have risks of returning to the ED with further ideation or with suicide attempts; in fact, those with SI have as much risk as those who present with attempts [74].

EDs have an unmatched burden of responsibility for suicidal patients. EDs are thoroughfares for a range of endophenotypes at high risk of suicidal behavior, including not only those with frank or occult suicidal behavior but also young people; males; prisoners; gun owners; the homeless; the psychiatrically ill; binge drinkers, illicit drug users, and substance abusers; older adults; victims of abuse, trauma, and assault; perpetrators of crime, assault, and violence; substance-abusing youth; violent youth; youth with conduct disorder and those in foster and welfare care; patients with severe, chronic mental disorders, including those with depression, psychosis, and personality disorders; older adults with physical health problems, persistent pain, disability, and/or depression; and adults and young adults with degenerative illnesses. Given that emergency departments are in frequent contact with suicidal patients, EDs represent underutilized sites for suicide prevention [74]. Potentially, EDs are sites that could identify and engage at-risk patients into accessible outpatient care management and suicide prevention programs.

Substance-Use Disorders

One person in three in the US population has a lifetime substance-use disorder, and the lifetime risk is higher among males (41.8%) than females (29.6%) [14]. The 12-month prevalence is 13.4%—again, higher in males (15.4%) than females (11.6%).

Substance abuse is the most common mental health reason for ED presentations. The primary diagnosis of substance abuse was responsible for 30% of psychiatric-related ED visits in the United States from 1992 to 2001 [30]. In 2015, substance abuse constituted 7% of all ED visits (NHAMCS-ED 2015). Substance abuse is often comorbid with other mental disorders, including mood and anxiety disorders in particular. Patients with comorbid major psychiatric diagnoses and substance-abuse diagnoses are overrepresented in those who are frequent recidivists to EDs.

Substance abuse is also commonly involved in injury-related ED presentations, including violence, falls, drownings, motor vehicle crashes, and suicide attempts. Substance misuse is also associated with hazardous and costly social consequences, including driving under the influence of alcohol or drugs, arrest, and violent behavior.

Alcohol Abuse or Dependence

In 2000, 16.2% of deaths and 13.2% of disability-adjusted life years (DALYs) from injuries globally were estimated to be attributed to alcohol. The lifetime prevalence of alcohol abuse or dependence in the US population is estimated to be 13.2% [14]. The 12-month estimate is 3.1%. Lifetime prevalence is estimated at 19.6% among males and 7.5% among females. The 12-month estimates are 4.5% among males and 1.8% among females. The apparent prevalence of alcohol-use disorder in the United States has decreased significantly in recent years, especially among those aged 18–25 [5] (Fig. 1.11).

Alcohol-related disorders presenting to EDs as first-listed diagnoses increased by 76%, from 0.8M to 1.5M in the years 2006 to 2014 [32]. This inflation, however, represents only the tip of an iceberg. An important caveat to these numbers

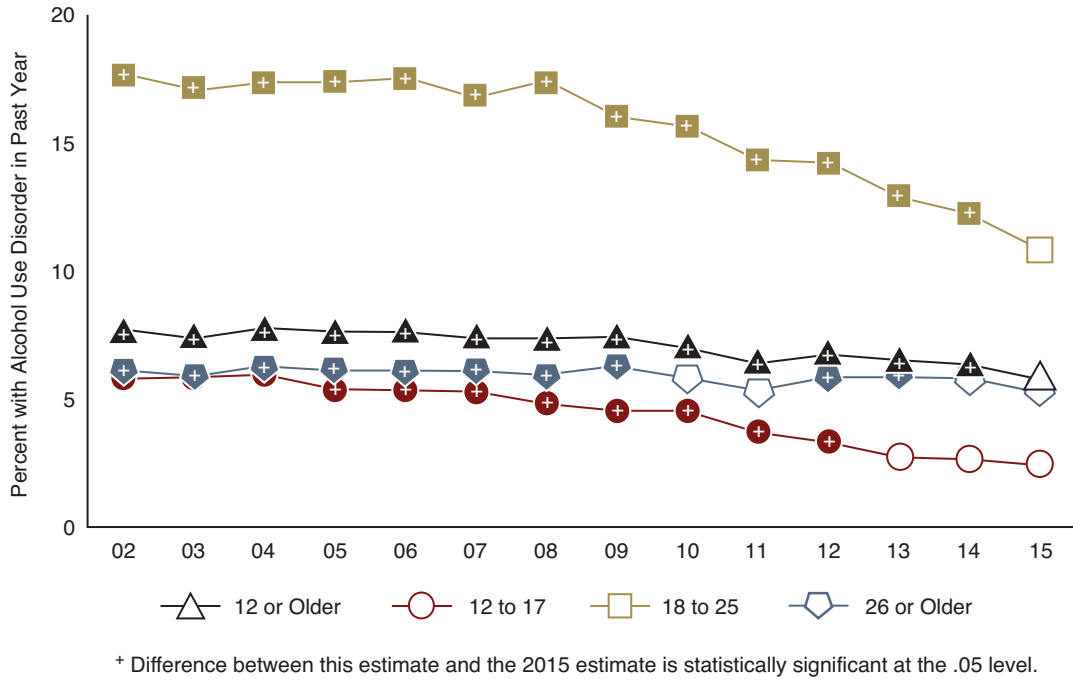


Fig. 1.11 Alcohol-use disorder in the past year among people aged 12 or older, by age group: Percentages, United States (2002–2015). (Source: Center for Behavioral Health Statistics and Quality [5])

is a systematic underestimation due in part to patient and provider denial. Trauma patients who are intoxicated are often underdiagnosed with substance abuse in order to maximize the likelihood that a claim will not be denied. Frequent alcohol recidivists rarely have their alcohol levels checked, in order to expedite their disposition. Numerous patient, provider, and systemic issues conspire, leading to an underdiagnosis of alcohol abuse and dependence.

Alcohol-related visits impose a significant burden on emergency departments. As mentioned, patients often withhold information about their drinking habits and drinking history; hence, the role of alcohol in many ED visits is likely underestimated. Nevertheless, alcohol abuse is often implicated in ED visits for violence and injury. Half of all drug abuse/misuse visits made to EDs by individuals under 20 years old involve alcohol [80]. Indeed, there is a significant overlap among persons with illicit drug-use disorders and alcohol-use disorders [5] (Fig. 1.12).

Drug Abuse or Dependence

An estimated 8% of the US adult population has a lifetime drug abuse or dependence disorder [14]. The 12-month estimate is 1.4%. Lifetime estimates are 11.6% among males and 4.8% among females. The 12-month estimates are 2.2% for males and 0.7% for females. Drug-related ED visits include those made for drug abuse and misuse, suicide attempts, adverse reactions, and accidental ingestions. Adverse effects from drug abuse represent almost half of all drug-related ED visits [81] (Fig. 1.13). Drug abuse also spawned increased violence during the crack-cocaine epidemic of the 1990s, followed in the United States by prescription opiate abuse (e.g., oxycodone) and ultimately in the last decade by a resurgence in heroin and related substance abuse.

The number of drug abuse-related ED visits have skyrocketed by 161% in 7 years, from 1,545,136 in 2004 to 4,032,571 in 2011 [80]. A resurgence of methamphetamine abuse has led to an increase in methamphetamine-related ED vis-

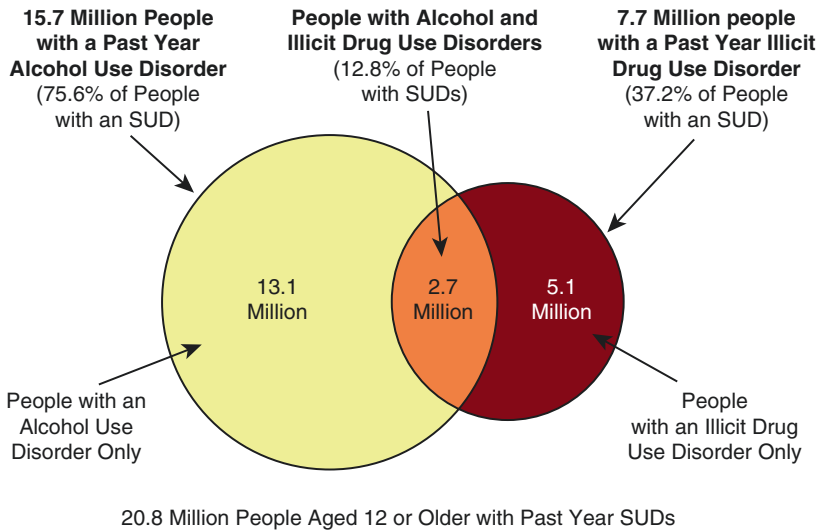


Fig. 1.12 Alcohol-use disorder and illicit-drug-use disorder in the past year among people aged 12 or older, with a past-year substance-use disorder (SUD): United States (2015). (Source: Center for Behavioral Health Statistics and Quality [5])

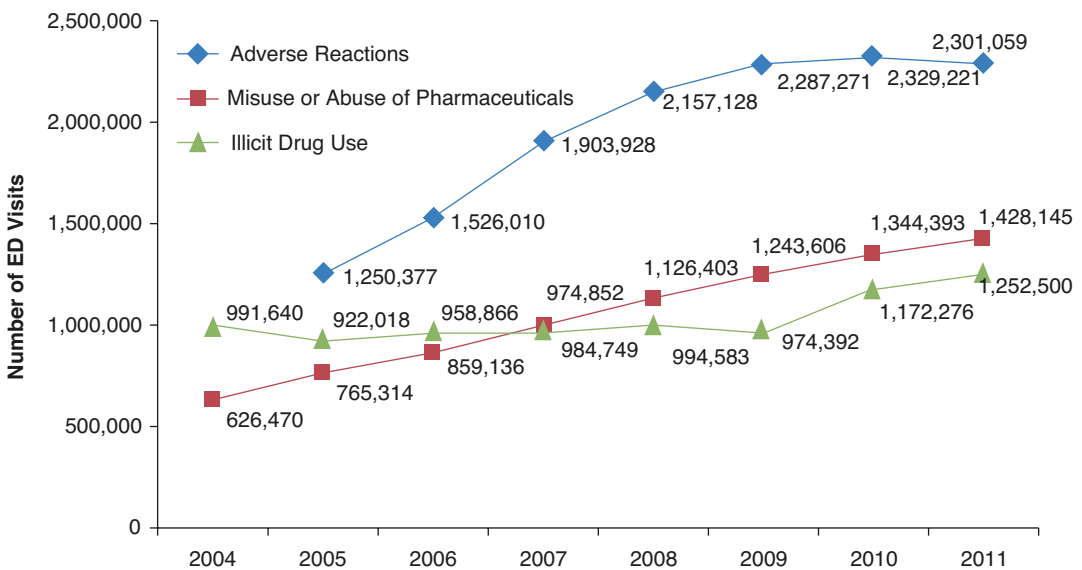


Fig. 1.13 Trends in drug-related emergency department visits by type: United States (2004–2011). (Source: Substance Abuse and Mental Health Services Administration [81])

its by 61%, from 64,117 in 2009 to 102,961 in 2011. Substance abuse and dependence remains a central reason for visiting the ED for many patients in the United States. However, opiate

abuse has tremendous regional variation both within and between countries. Opiate abuse, for example, is much less of an ED issue in more socialized systems like New Zealand.

Schizophrenia and Other Psychotic Disorders

Schizophrenia-spectrum diagnoses account for approximately two-thirds of all psychotic disorders. The estimated lifetime prevalence of schizophrenia in the US adult population is 1.1% [14]. Twelve-month healthcare use is estimated at 60%.

Schizophrenia is a serious mental illness with high economic and social costs for families and for society. The overall US 2013 cost of schizophrenia was estimated to be \$155.7 billion, of which the largest components were excess costs associated with unemployment (38%), productivity loss due to caregiving (34%), and direct health care costs (24%) [82].

A population-based study of ED mental health visits, using NHAMCS data, found that psychosis-related ED visits accounted for approximately 10% of all mental health ED visits during the decade from 1992 to 2001 [83]. Notably, while overall mental-health-related ED visits increased by more than a third over this time, and rates of ED visits for other major mental health problems (including suicidal behavior, substance-use disorders, mood disorders, and anxiety disorders) all increased, the rate of psychosis-related ED visits per capita did not change. Psychoses-related ED visits formed 0.4% of all ED visits in 2004 and remained at 0.3% in 2014 [84]. This stability may reflect the results of recent substantial investment in early intervention and intensive case management for the seriously mentally ill.

Some patients with schizophrenia may present to EDs in a psychotic crisis that requires immediate management and may not have been diagnosed with psychiatric illness previously. They often present diagnostic dilemmas involving organic versus psychiatric etiology and primary psychotic versus affective disorder diagnosis. Treatment may be complicated further by the presence of alcohol or drug intoxication. Previously diagnosed patients with serious mental illness may also present to the ED with a com-

plication of treatment (e.g., adverse effects of medication) or a psychotic crisis that may arise from gaps in treatment or socioeconomic challenges engendered by serious mental illness (e.g., poverty, homelessness, social isolation, failure of support systems).

Eating Disorders

Both obesity and the fear of obesity are on the rise. The lifetime prevalence of anorexia nervosa is 0.6% of the US adult population; only one-third of anorexia nervosa patients receive treatment [14]. Similarly, the lifetime prevalence of bulimia nervosa is 0.6%; 43.2% receive treatment. The 12-month prevalence is bulimia is 0.3%, and only 15.6% receive treatment over that year.

Binge eating is much more common, with a lifetime prevalence of 28%, of whom 43.6% receive treatment. The 12-month prevalence of binge eating is 1.2% of US adults, of whom 28% receive treatment [85]. As many as 5% of young women exhibit symptoms of anorexia but do not meet full diagnostic criteria, and some studies show disordered eating behavior in 13% of adolescent girls in the United States.

Patients with anorexia nervosa may present to the ED with extreme weight loss, food refusal, dehydration, electrolyte abnormalities, weakness, acute abdominal pain, or shock. They are frequent users of the emergency department; they may often present at the urging of family members or friends and may often deny their disorder and their malnutrition. Major depression and dysthymic disorder have been reported in up to 50% of patients with anorexia nervosa, and these patients have an elevated risk of suicide.

Impulse Control Disorders

An estimated one in four of the US adult population has one of the impulse control disorders (oppositional defiant disorder, conduct disorder,

attention-deficit/hyperactivity disorder, or intermittent explosive disorder) [14]. The 12-month estimate is 10.5%. Lifetime estimates are higher for males (28.6%) than females (21.6%). Twelve-month estimates are 11.7% for males and 9.3% for females. These disorders are likely associated with ED presentations for violence and injury, and with high rates of medical usage, but are rarely assessed in the ED setting.

Personality (Axis II) Disorders

Almost one in ten of the adult US population is estimated to have an Axis II personality disorder in any year [14]. People with personality disorders have high rates of comorbid mental disorders, including anxiety disorders, mood disorders, impulse control disorders, and substance abuse or dependence, and may present to the ED with these mental illnesses. Although DSM-IV defines ten categories of personality disorder, population prevalence, and ED visit data are lacking for most classifications, they are available for the most common disorders: borderline personality disorder and antisocial personality disorder.

Borderline personality disorder (BPD) is a personality disorder seen frequently in EDs, and BPD patients are high users of ED services and psychiatric services. The 12-month prevalence of borderline personality disorder is estimated to be 1.6%, of whom 42.4% receive treatment. From 10% to 20% of all psychiatric patients are diagnosed with this disorder, which is approximately three times more common in women than men.

The major feature of BPD patients is that they are emotionally unstable and chaotic. They are often also impulsive and frequently self-harming. They tend to present to the ED in emotional crisis and/or having made a suicide attempt or gesture by overdose or cutting their wrists in response to some emotional stressor. The majority (approximately 75%) of BPD patients attempt suicide or display self-mutilating behaviors like cutting or burning. The risk of suicide is approximately 10%.

Antisocial personality disorder (ASPD) is a condition in which an individual chronically

manipulates others and violates their rights, disregarding their feelings without remorse. ASPD is more common in males than females, and ASPD is often comorbid with substance-abuse disorders, depression, anxiety disorders, attention-deficit/hyperactivity disorder, and legal problems. Patients with ASPD may be high users of ED services and may present to the ED with comorbid psychiatric conditions, but also with substance-abuse-, injury-, or violence-related problems. While the 12-month prevalence of ASPD in the general population is only 1%, it is likely to be much higher in the ED population.

Miscellaneous/Occult Mental Health Disorders

The prevalence and ED burden of many less common mental disorders remain unknown. Studies conducted by our laboratory and by others on the prevalence of occult, unmeasured, and often unrecognized mental disorders suggest that large segments of the ED patient population have relatively severe comorbid mental health problems, in addition to other somatic maladies. These relatively undercounted mental health conditions include delirium; dementia and amnesic and other cognitive disorders; somatoform disorders; dissociative disorders; conversion disorders; and factitious disorders. While many of these disorders, such as the somatoform and factitious disorders, are counted among the so-called ER frequent flyers, they are also seen in patients with asthma, diabetes, malignancies, and other nonpsychiatric health conditions. A significant proportion of ED patients with abdominal pain, chest pain, back pain, and headache are not ultimately diagnosed with somatic diseases that account for their typical symptoms. However, taking a better accounting of patients with somatoform and factitious disorders would be a first step toward targeting those who frequently use and sometimes misuse or abuse ED services.

Most mental health patients do not abuse ED services, however, and many ED patients suffer silently from occult and comorbid mental illnesses, resulting in significant diagnostic and

treatment delays at the local level, as well as a systematic epidemiologic undercounting of mental-health-related ED visits on the global level. Efforts to screen more aggressively for mental illness would certainly improve psychoepidemiologic estimates of the prevalence and true magnitude of the mental health problem. Uncovering more comorbid psychopathology may also benefit patients. However, many emergency departments and psychiatric services are currently too oversubscribed and underresourced to adequately manage those currently suffering in silence.

Conclusion

This chapter outlined the psychoepidemiology of mental illness, both in global terms and in terms of the reigning acute care system in most developed countries: emergency departments. Decreased stigmatization, enhanced legitimization, and increased public and clinical recognition of mental illness have led to significant, record-breaking, global increases in the point prevalence, and incidence of mental illness in the general population. These population increases in mental illnesses have, in turn, increased the census of mentally unwell emergency department patients in need of care at the local level.

Paradoxically, psychiatric patient population expansion has developed during a time of ED overcrowding and sharp reductions in both the total number of EDs and psychiatric beds in many communities. In addition, the willingness of mental health providers to make new DSM diagnoses appears to be out of step with either a systemic unwillingness or a provider inability to provide acute psychiatric and crisis care. Gaps in crisis care and the overall lack of affordable, 24/7 access to cost-effective mental health care services have fostered continued and increasing reliance on ED services. Unchecked, the growing tidal wave of mental health patients in need of care can be expected to rise significantly, flooding EDs throughout the world for the foreseeable future.

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