June 2006

Predictors of Utilization of Psychiatric Emergency Services

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MD, Semmelweis Medical School, 1989

A Thesis
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Public Health
at the
University of Connecticut
2006
Master of Public Health Thesis
Predictors of Utilization of Psychiatric Emergency Services

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2006
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I. **Summary**

Psychiatric emergency services are both the gateways to inpatient psychiatric and substance abuse units and the back-ups for outpatient psychiatric services. Their utilization is a function of the rate of psychiatric emergencies. In turn, the use of these services can be used as a proxy indicator to establish trends in the incidence of the exacerbation of psychiatric illnesses. Need as well as demand for psychiatric emergency services are affected by a complex of long-term and short-term factors.

Fluctuations in the prevalence of psychiatric conditions and the availability of other services determine the workload and the need for preparedness of the existing services. There is evidence in the literature for the role of the following factors in the utilization of psychiatric emergency services: availability of insurance, availability of outpatient and community services, recent increase in reporting suicidal ideation but decline of actual suicides, the time when substance users receive payments, alcohol consumption in the evening, the level of sunshine, ambient temperatures. On the other hand, there is no evidence that war and terrorism, decreased inpatient stays and telephone crisis lines have an influence on the rate of psychiatric emergencies. Furthermore, there is no support to the popular opinion that the full moon, atmospheric changes, holidays or weekends change the rate of psychiatric emergencies.
II. Introduction

II.1. The epidemiology of psychiatric illnesses

Although today the prevalence of many major psychiatric illnesses is considered relatively stable across times and borders, the epidemiology of specific psychiatric illnesses is complicated by the use of ever-changing diagnostic criteria. For example, schizophrenia has been much less frequently diagnosed in the US since the publication of DSM-III, which constituted a shift from the Bleulerian and Schneiderian to the Kraepelian concept of the illness. While Bleuler and Schneider considered specific symptoms (certain types of hallucinations, delusions and thought disorder) as pathognomonic for schizophrenia, according to Kraepelin’s concept, the deteriorating course of the illness is the basis for the diagnosis.\(^1,2\) It is unclear whether worldwide reports on the decrease of the incidence of schizophrenia are related to changing diagnostic criteria or real epidemiologic trends.\(^3\)

The issue is further complicated by some diagnoses becoming “trendy” in some periods, used both by psychiatrists and physicians from other specialties. Many if not most patients diagnosed in the 1970s with multiple personality disorder would be diagnosed today with borderline personality disorder. The diagnosis of bipolar disorder in children and adolescents is on the rise, at the expense of the previously favored attention deficit disorder. While the apparent prevalence of specific diagnoses changes with using different diagnostic criteria, these reclassifications should not affect the total prevalence of mental illness. It is unlikely that a diagnostic term, rather than severity of the symptoms, would determine the request for an emergency evaluation.
On the other hand, effects of different substances of abuse are not equally likely to prompt a request for a psychiatric evaluation. Symptoms solely caused by alcohol intoxication or withdrawal can be successfully managed by medical methods, and emergency physicians usually are comfortable treating them without psychiatry input. Substances like amphetamines, cocaine, PCP can cause symptoms resembling a psychotic illness, and psychiatry will more likely to be involved, for differential diagnosis or to help manage violence. Amphetamine use is on the rise, and intoxication with these compounds is especially likely to cause severe disturbance, necessitating involvement of the psychiatric services.⁴

Another shift in prevalence is related to the aging of the population, most prominent in the industrialized countries. Dementia is encountered with increasing frequency at all levels of psychiatric services.⁵

There are reports of increased incidences of mental illnesses following prenatal exposure to certain stressors. A retrospective cohort study found association between maternal nutritional deficiency during wartime famine in the Netherlands, and antisocial personality disorder in the offspring.⁶ However, the study was an ecological study, substituting actual exposure with a proxy measure, food rations in the community. (Varai G. University of Connecticut MPH course paper. Unpublished. 2000.) Recent studies provide evidence that maternal smoking is an independent risk factor for attention deficit hyperactivity disorder in the offspring.⁷
Economical and societal factors are well known to have an impact on many illnesses. Psychiatry for a long time has considered distress arising from interpersonal relationships or changes in social status as risk factors in the development of mental illnesses. Since the Great Depression of 1929 to 1933, there have been efforts to find a relationship between the state of the economy and the frequency of mental hospital admissions. The reason that admissions were used as an indicator is that these are the most reliable and available historical data that can be related to the prevalence of mental illnesses.8

The work of M.H. Brenner from the early 1970s was considered groundbreaking in this area. He found that the employment showed an inverse correlation with first psychiatric hospital admissions in New York State, between 1844 and 1967. The trend was true for most age, gender and diagnostic groups, regardless of ethnicity or socioeconomic status. The impact of the economy was independent of the effects of wars, hospital admission policies or bed availability. Brenner suggested three possible explanations: intolerance of mental illness in the society, the use of mental hospitals as an almshouse, and the development of psychiatric symptoms in economically deprived people. On a rather speculative basis, he concluded that the third explanation is the main effect. Although he acknowledged findings of his own and others that rapid economic upturns also increased hospitalizations for some subsets, he considered economic deprivation, and not the stress of individual life changes, the major risk factor for the manifestation of mental illness.9
Some further analyses of 19th and 20th century data from the United States could not reproduce Brenner’s results, and even found a positive correlation of admissions with employment and hospital capacity.\textsuperscript{10,11}

The Epidemiologic Catchment Area (ECA) Study in the early 1980s and the National Comorbidity Survey in the early 1990s collected and analyzed community-based data on the epidemiology of mental illnesses and service utilization. Some data are available specifically about emergency treatment for mental illnesses. The ECA project found that 11% of patients with major depression and 28% of patients with panic disorder visited emergency rooms with emotional problems. The odds ratios compared to people without these diagnoses are 4.34 and 12.68, respectively.\textsuperscript{12}

The National Hospital Ambulatory Medical Care Survey measures the use of emergency health care services, based on annually collected samples. Between 1992 and 2001, an estimated 52.8 million primarily mental health-related visits were made to emergency rooms, constituting 5.4% (but increasing from 4.9% to 6.3% during this period) of all emergency visits. Mental health-related visits increased from 17.1 to 23.6 per 1000 people of the total population. Substance-related disorders accounted for 30%, mood disorders for 23%, anxiety disorders for 21%, psychoses for 10%, and suicide attempts for 7% of all mental health-related visits. There was a trend of significant increase of visits for these categories with the exception of psychoses.
Between 1992 and 2001, significant increases were detected for the age group of 70 years or older (from 20.6 to 32.0 per 1000) and those of 15 to 69 years (from 18.9 to 25.0 per 1000), but not for people younger than 15 years (from 7.7 to 9.3 per 1000). Both men and women had increased visits (from 17.1 to 22.3 and from 16.2 to 22.4 per 1000, respectively). The visit rates were 31.2 for blacks and 18.6 for whites. The trend of increasing mental health-related visits was significant for whites (who constituted the largest group in the samples) but not for blacks or Hispanics. Visits in urban areas increased from 15.4 to 25.8, while in non-urban areas they decreased from 30.7 to 16.7 per 1000 population.13

II. 2. The place of psychiatric emergency services in the mental health system

Psychiatric emergency services are operated by many hospitals as parallel services to their emergency room. They are the gateways to inpatient psychiatric units and crisis stabilization facilities. Mobile crisis teams cover several facilities and sometimes even a whole metropolitan area. Some teams work as both emergency services in an emergency room and as crisis teams. Most admissions to inpatient psychiatry occur after an emergency consult, therefore hospitalization rates probably correlate with at least some of the same factors as emergency consultations.

Chronic, indiscriminate hospitalization of mentally ill patients was abolished in the 1960s. While political and ethical considerations might have played a role in initiating these changes, the reforms would have faced more difficulties without the emergence of specific psychopharmacologic treatments at the same time. However, the new community
mental health system did not provide full coverage for all the chronically ill, at least partially because of limited understanding and consequent poor compliance inherent to many psychiatric illnesses.

Although the utilization of psychiatric emergency services (demand) is obviously a function of the prevalence of actual psychiatric episodes (need), they are not the same. It is likely that some patients in an emergency will not use the services, while others without a true emergency will request them.

II. 3. Rationale: The need for a predictive model

For years I have been providing care for patients with psychiatric emergencies, in different locations and positions, as a counselor, a psychiatry resident, and a moonlighting physician. I frequently pondered why clinicians in mental services spend sometimes 24 hours with non-stop work, and the next time 24 hours reading or browsing the Internet. Why is the inpatient unit sometimes half-empty, while the next month our patients sleep in the emergency room waiting for the next available bed somewhere in the state? Is this a random phenomenon, or is the demand for these services predictable? “It is because of the full moon” one can hear frequently in the emergency room.

If we could better predict the prevalence of psychiatric problems that need emergency intervention, we could better allocate resources, increasing efficiency of the services, and provide faster and more effective care for the patients.
II.4. Hypothesis

Based on personal experience, anecdotal information and my previous knowledge of publications, I assumed that there are some specific environmental and societal factors that have effects on the exacerbation of mental illnesses and the rate of psychiatric emergency service utilization. These effects might be exacerbating (an environmental factor induces the worsening of a psychiatric condition), mitigating (availability of other services), or both (the quality of other services).

Psychiatric emergency services are an integral part of the health care system, and within it the mental health system. Parts of a system obviously have a strong effect on the function of each other. The efficacy, availability and attitudes of other players in the field of mental health, including inpatient units, outpatient programs and partial hospitals, as well as other health care providers, such as emergency room staff, are likely to have an influence on the workload of psychiatric emergency services. The efficacy of the emergency services themselves is also likely to affect their workload. The availability of telephone crisis lines might decrease emergency service utilization by defusing crises or, theoretically, might also increase it by referring clients for an evaluation.

The threshold to refer individuals for a mental health evaluation by the police is also a likely factor.

Crisis situations are mostly identified by the patients themselves or members of their support group (family, friends). Therefore, their changing expectations and
definition of need might both increase or decrease service utilization, and this change is superimposed on the rate of psychiatric conditions.

Stressful events, such as violence or disaster that traumatize communities, might exacerbate preexisting mental illness, as well as induce new illness, increasing the rate of service utilization.

Environmental factors, such as temperature or precipitation, might influence the decision of individuals to seek help both in real psychiatric emergencies, as well as for material needs. Environmental factors, such as sunshine or the lunar cycle, have long been assumed to have some biological effect on mental illnesses.

Holidays have been anecdotally reported to cause emotional crises. Psychiatric emergency services appear to be more frequently utilized in certain periods of the month, week or the day, indicating seasonal and circadian variables.

II.5. Objectives: Proposal for a predictive model

My goal is to specify a model that can be used to predict psychiatric emergency service utilization. This paper will review the possible categories of variables determining utilization, and will outline further studies that can investigate these variables. The number of the theoretical individual variables (e.g., the prevalence of specific diagnoses and the effects of possible environmental factors) is innumerable. Therefore, rather than intended to be comprehensive, this paper will discuss major effects. (Figure 1.)
I will delineate two somewhat arbitrary categories of presumed effects on psychiatric emergency service utilization, and will assess the evidence for possible predictors, based on a literature review.

**Figure 1. Possible predictors of psychiatric emergency service utilization**

![Diagram](image-url)
III. Methods

III.1. Definition of terms

*Psychiatric emergency* is defined by the American Psychiatric Association Task Force on Psychiatric Emergency Services as “an acute disturbance of thought, mood, behavior or social relationship that requires an immediate intervention as defined by the patient, family or the community” or “as a set of circumstances in which (1) the behavior or condition of an individual is perceived by someone, often not the identified individual, as having the potential to rapidly eventuate in a catastrophic outcome and (2) the resources available to understand and deal with the situation are not available at the time and place of the occurrence.”\(^\text{15}\)

The review of the literature will focus on two types of changes in utilization, long-term trends and cycles. By *long-term trends*, I mean definite changes in psychiatric service utilization, over years and decades. Their importance is that they effect the need for *creation of resources*: institutions, facilities, training of providers. Long-term trends may be related to the prevalence of mental diseases and management of symptoms of existing illnesses.

I will use the term *cycles* for changes in utilization that are temporary, show seasonality, within a year or over a period of years. The implication of acute cycles is for preparedness, *allocation of available resources*. How many clinicians (psychiatrists, residents, counselors) should be on call? Cycles can be related to the exacerbation of existing mental illnesses.
III.2. Determination of variables

I used two methods to identify possible independent variables affecting the exacerbation of mental illnesses and psychiatric emergency service utilization. I performed a literature search with the words that could yield correlations, based on my experience and popular assumptions. I also performed a wider search with the terms listed under Section III.3.b, to identify possible further variables.

III.3. Sources of information

III.3.a. Personal experience

Evidence, based on data and analysis, is today the accepted standard for decision making in medicine. However, it is personal experience that leads people to assume a correlation between particular variables and observed outcomes, and collect and analyze data. I have gained experience in assessing and managing psychiatric emergencies in different positions in several hospitals of Massachusetts: as a psychiatry emergency services counselor, as a resident physician, and as a cross-covering and moonlighting psychiatrist. Previously, I also worked as a crisis phone line counselor in Connecticut. During my work, I frequently encounter and discuss with my colleagues the problem of services being overloaded in certain periods and underutilized in others. Clinicians and managers alike try to estimate, based on previous experiences, the workload for a certain period, and schedule their or their teams’ work accordingly.
III.3.b. Literature review

Personal experience is always limited by both scope and robustness, and usually also by a lack of critical analysis of data. Therefore, I reviewed the literature by performing Medline searches with the following keyword combinations, and used data extracted from the full paper.

- psychiatry AND utilization AND trend
- psychiatry AND emergency AND trend
- psychiatry AND emergency AND utilization
- psychiatry AND time-series
- psychiatry AND emergency AND temperature
- psychiatric emergency AND weather
- psychiatric emergency AND hospitalization
- psychiatric emergency AND police
- psychiatry AND emergency AND hotline
- psychiatry AND emergency AND telephone
- psychiatry AND Christmas
- psychiatry AND holidays
- psychiatry AND Thanksgiving
- psychiatry AND moon or lunar
- emergency AND seasonal depression
- emergency AND completed suicide
- emergency AND suicide and reporting
- Epidemiologic Catchment Area AND emergency
I reviewed all the titles and retrieved the abstract if the title indicated that the publication was relevant, and not about another topic. Subsequently, I obtained the full publication if the abstract indicated that it contains relevant data. Publications were identified as relevant if they contained original research data on any variables that might affect the utilization for psychiatric emergency services.

IV. Findings

IV.1. Psychiatric service modalities

The interactions between psychiatric services and their mutual effects can be summarized as follows:

Intuitively, the availability and efficacy of outpatient services should influence the workload on emergency services, and subsequently on inpatient units. The efficacy of inpatient services in stabilizing the symptoms and severity of mental illness and to
schedule outpatient follow-up appointments could correlate with decreased emergency utilization.

Since the 1960s, there has been an ongoing trend of shifting care from inpatient facilities to outpatient providers. The share of the workload of psychiatric emergency services is a function of the rate of turnover in inpatient facilities and the availability of outpatient providers.8,16

IV.1.a. Admission to inpatient facilities

The decreasing length of stay in inpatient psychiatric units contributes to more frequent readmissions. In the old state hospital based system, remissions and exacerbations took place within the institution, so there was no need for new intake. While the modern model, hospitalizing only patients in acute crisis, is reasonable, the length of stay is arguably already reduced to a not-so-reasonable duration. The trend of shortening hospital stays continues, driven by managed care and the financial interests of the facilities.17

However, a recent study could not ascribe prophylactic effect to longer duration of a post-emergency hospitalization, with respect to preventing further emergency presentations.18

The question, at which point will shorter stay increase the risk of early readmission, remains open. A study in Atlanta, Georgia found that of 94 elderly patients
hospitalized with depression, 44% needed rehospitalization, with the greatest risk of readmission occurring within the first 18 months after discharge.\textsuperscript{19}

**IV.1.b. Access to outpatient services**

Outpatient psychiatric services play both a role in primarily preventing hospital admissions, and in monitoring and stabilizing patients after discharge. Many patients who were “stabilized” in inpatient units, were stabilized for the inpatient stay, but not necessarily for the “real world”. For example, the onset of action of antidepressant medications is 4-6 weeks. A depressed patient who feels much better and no longer suicidal in a unit, probably benefited from the milieu, of a structured, safe environment. These patients may be vulnerable to a “break down” after discharge when they realize that their social stressors are still there, and the specific pharmacological action of the medications does not yet protect them from depression. Reduction in outpatient services increases the workload of psychiatric emergency services.\textsuperscript{20}

Day hospitals play an important role in transitioning the patients from a 24-hour-structured inpatient stay to outpatient follow-up. Structured outpatient programs can be equivalent in efficacy to hospitalization. One randomized study found that home-based multisystemic therapy was initially more effective than hospital admission for children and adolescents who qualified for hospital level of care after a psychiatric emergency. Although the differences disappeared after 12 months of follow up, this experience supports the notion that availability of professional resources outside the hospital has a strong stabilizing effect in mental illness.\textsuperscript{21}
The access of patients to an outpatient provider often depends on their financial and employment status. Uninsured patients with any type of medical or psychiatric problems are more likely to use the emergency room where they will receive services, as mandated by the Emergency Medical Treatment and Active Labor Act of 1985.22

A recent study at Thomas Jefferson University, Philadelphia found that 40% of pediatric visits to the psychiatric emergency services were for non-urgent reasons. The suggested explanation was that there are considerable unmet mental health needs of children and adolescents.23

The availability of the patient’s existing outpatient provider probably has a major effect on use of emergency psychiatric services. Many psychiatrists or therapists have no cross-coverage, and their voicemail might advise their patients “in case of an emergency, go to the next ER or call 911”. Outpatient clinicians might refer their patients to an emergency service when there is no true emergency present.29 Increased rate of emergency hospitalizations during the time when outpatient services were not available has been reported.24

For men with substance abuse, short term case management after treatment on a dual diagnosis decreased subsequent emergency evaluations.20

A study in Dallas found that 21.7% of psychiatric consults were true emergencies, 21% resulted in hospitalization, but 25-30% of cases were not emergent and could have
been treated in another setting. The authors suggest that “acute behavioral dyscontrol or imminent dangerousness to self or others” should be the only criteria for legitimate requests for emergent psychiatric evaluation.\textsuperscript{25}

The experience at my workplace, St. Elizabeth’s Medical Center of Boston, shows that nursing home residents are referred to the emergency room with increased frequency on Friday evenings, for both medical and psychiatric reasons. The popular explanation is that their caretakers and physicians are concerned about the weekends, when the regular staff and physicians do not cover, and outpatient services are closed.

\textbf{IV.1.c. Telephone crisis lines}

In my experience, availability of psychiatric emergency services over the phone decreases emergency visits. Some patients who call in are already known to the clinician who can reassure them and make outpatient referrals.

In the United Kingdom, in a forest area frequented by people who killed themselves by exhaust gas, posting the Samaritans’ phone number at car parks decreased the average yearly suicides from 10 to 3.3.\textsuperscript{26}

Another study with patients admitted to hospitals after self-injury was conducted also in the United Kingdom. In contrast to the previous more anecdotal finding, in this randomized study, providing a 24-hour crisis line number did not decrease the risk of repeating the self-injury after discharge.\textsuperscript{27}
A study in Northern Italy with more than 18,000 elderly participants showed a robust preventive effect of telephone contacts: the suicide mortality was 28.8% of the expected rate (calculated using suicide rates in non-participants). However, here the participants were contacted by the counseling services twice a week, in contrast to usual crisis lines, when the clients themselves must initiate the calls to a volunteer-staffed phone line.

When I worked as a phone crisis line counselor for 1.5 years, none of the callers had a psychiatric emergency, in my judgment. It is possible that the patient populations calling crisis lines and emergency services are different.

In summary, crisis hotlines are valuable resources for the community, but their exact role in suicide prevention as well as their effect on the utilization of psychiatric emergency services remains to be explored.

**IV.1.d. Decision-making by the psychiatric emergency service**

The psychiatric emergency service can defuse a mental health emergency by admitting the patient to an inpatient unit, by arranging for follow up in the community, or even by acute interventions on site. Discharging patients without stabilization (acceptable referrals or inpatient admission) might result in their return to the emergency room, and increase the emergency team’s workload.
In summary, the existence of outpatient services has a major effect on the utilization of psychiatric emergency services and telephone contacts initiated by counseling services can decrease crisis situations. However, there is no consistent evidence for such effects by the length of hospitalization or the availability of volunteer-operated hotlines.

IV.2. Decisions by other medical specialties

In the emergency room, the decision on calling a psychiatry consultation is made by the ER physician. (There might be exceptions. For example, in Massachusetts, patients referred to a mandatory psychiatric evaluation under Section 11 of Chapter 123 of the statutes, have to be evaluated by a psychiatrist, as mandated by law.) Emergency medical personnel are frequently the first to recognize a psychiatric problem in patients who present with somatic complaints but have little insight regarding their mental illness.29

Patients mentioning suicide (the “S” word in ER jargon) are almost always automatically referred for psychiatric evaluation. Beyond that, there is an individual threshold of ER physicians for calling a psychiatry consult or discharging the patient without it. Teaching hospitals in every July start the training of a new batch of interns, and anecdotally, consult requests for all specialties surge in this period. Except for this period and setting, I never observed a trend of repeated requests for unnecessary psychiatric emergency consultation, and I did not find literature suggesting it.
Intensive care, medical or surgical units are the first to take care of patients who inflicted self-injury or who decompensated medically. However, psychiatry emergency services might be called for these patients in the emergency room, before admission to a medical unit. Depending on the psychiatric services of the given facility (whether the emergency and consult services are separate), the emergency clinician might be called for an evaluation on the medical unit, when the patient is stabilized. Patients whose psychiatric condition is stable might decompensate during medical admission, because of the illness-related stress, change of environment, or the medical need to hold psychiatric medications.

I never encountered written guidelines or policies about the indications for an emergency psychiatric consultation, and I could not identify literature about it.

In summary, while other medical services frequently make decisions about requesting psychiatric emergency evaluations, these decisions do not seem to be disconnected from actual necessity, and there is no evidence that they artificially inflate or deflate the utilization.

IV.3. Decisions by law enforcement agencies

No data were found in the literature on trends or statistics of how appropriately the police use psychiatric emergency services. In my experience, however, police in Massachusetts make reasonable assessments in bringing patients to the hospital for
emergency psychiatric evaluations. However, the threshold for involving healthcare might vary among departments and individual officers.

IV.4. Patient attitudes

A major determining factor in the utilization of any health care setting is the patient’s decision to seek care. In the US, between 1992 and 1999, emergency room visits for intentional self-injury increased from 600 to 1600 per 100,000. Patients’ attitude to seek care probably played the main role in this trend, and may be explained to some extent by destigmatization of mental illnesses and seeking psychiatric treatment. However, increased awareness of clinicians to identify self-injury and improved access to care might also be contributing. On the other hand, the annual completed suicide rate decreased from 12.38 to 10.71 per 100,000 between 1985 and 1999, which has been correlated with an increase in prescriptions of second-generation antidepressants.

Although one can argue that reporting suicidal ideation has a positive correlation with suicidal intent, and improved reporting decreases completed suicide, this is not likely to be the best explanation for two reasons. The first reason is that completed suicide is frequent after discharge from inpatient units. Therefore, identifying suicidal ideation in the context of increasing incidence of suicidal intent is not likely to decrease mortality. The second reason is that many patients who commit suicide do not seek professional help immediately before their attempt, and identifying patients at risk by the emergency services is not likely to reduce mortality in this group. For example, of the
patients who committed suicide in a county of Kentucky over 21 months, only 6.1% were seen by the local psychiatric emergency service in the 2 months prior to their deaths.\textsuperscript{32}

In summary, patients' attitude about mental illness, crisis and suicidal ideation plays a major role in their decisions to seek help at psychiatric emergency services. Many patients who are not at serious acute risk of hurting themselves report suicidal ideation, while many others commit suicide without their crisis being identified.

**IV.5. Historic traumas and disasters**

Disasters generate an immediate need for support services for surviving victims and relatives. Available services as hospitals and emergency rooms become overwhelmed and temporary crisis services are needed.\textsuperscript{33} This observation leads to the question whether collective traumas influence the epidemiology of mental illnesses and service utilization, beyond the acute surge of distress and immediate need for counseling.

The effect of wars is complex. In the United States, there was a marked decline in psychiatric hospitalizations during the second World War.\textsuperscript{9} This trend was most striking for young men, ages 25 to 34. It is possible that under the pressure of the war, many mentally ill might not have been able to avoid the service, but no data are available about possible changes in medical eligibility criteria in that period. However, a similar trend was true for most age-gender cohorts.
During the Gulf War, there was a statistically significant increase in psychiatric hospitalization of children of Navy families, half of the diagnoses being dysthymia, an otherwise rarely diagnosed illness in this group.\textsuperscript{34}

Posttraumatic stress disorder (PTSD) is related to stressful events, by definition. Therefore, its incidence can be expected to correlate with political-historical events characterized by violence. However, being a relatively new diagnosis, it is difficult to establish its prevalence in the past, although efforts were made to make parallels between PTSD and previous diagnoses, such as soldier’s heart or shell shock.\textsuperscript{1} PTSD also appears to be one of the popular diagnostic trends, possibly confused with acute stress response.

The first study attempting to assess the effects on mental health of the September 11, 2001 terrorist attacks was a nationwide phone survey days after the attack. It found high rates of stress symptoms: 90% reported at least “a little bit” of stress, based on at least one symptom, and 44% had “substantial” stress.\textsuperscript{35} However, the symptom checklist was not validated, the questions were rather non-specific (i.e., being upset, difficulty concentrating or with sleep) and the findings were not compared to a baseline prevalence of positive answers. When the same group repeated the survey after 2 months, it showed a substantial improvement: the above rates dropped to 80% and 21%, respectively.\textsuperscript{36}

Another phone survey conducted in Manhattan one to two months following the attacks, using validated questionnaires, found symptoms consistent with PTSD and major depressive episode in 7.5% and 9.7% of respondents, respectively. This is a marked
increase for PTSD and probable increase for major depressive episode, compared to the national 1-year prevalence rates, (3.6% and 6.5% to 10.1%, respectively). The prevalence rates showed a positive correlation with proximity to the World Trade Center. 37 38 The researchers later reported that their preliminary data suggested a decrease in the prevalence in PTSD and depression symptoms in New York City 4 to 5 months after September 11.39 They also observed that mental health service use was slightly but significantly lower in the fourth and fifth month after than in the month before the attacks.40

A Web-based national survey, also between one and two months after the attacks, with validated questionnaires, found that the prevalence of probable PTSD was 11.2% in the New York City metropolitan area, significantly higher than in other metropolitan areas or the rest of the country, where it remained within usual ranges (3.6% and 4%, respectively).41

The literature provides contradictory data on the contribution of the September 11 events to the rate of clinically diagnosed and treated PTSD and other mental illnesses. One study of Veterans Administration records in the New York-New Jersey metropolitan area in the nine months following the attacks found an increase over time both in the number of veterans who were treated for PTSD and in the number of newly diagnosed cases. There was an increase in the number of treated veterans with all diagnoses and across diagnostic categories, as well, but less robust than for PTSD. No relationship to the distance from the World Trade Center was shown. The authors felt that beyond the
effect of the trauma, other reasons for the increase could include bias in diagnosing and interpreting symptoms, other stressful events including an economic downturn, outreach to previously treated veterans, and staffing changes at clinics.\textsuperscript{42}

Another study of Veterans Administration data of utilization of mental health services (including inpatient and multiple outpatient settings) for PTSD or other mental or medical problems, over six months following the attacks, found no significant increase in use of services in New York City, the New York and Washington, D.C. metropolitan areas and Oklahoma City. There was an increase in PTSD treatment in other metropolitan areas of the country. The increase in Northeastern metropolitan areas other than New York was significant at $p<0.05$, but not significant at $p<0.004$ (the alpha level with Bonferroni correction for multiple comparisons). No increase was found in new cases of PTSD. The same authors in a separate analysis found that veterans with preexisting PTSD were less symptomatic and had more improvement after September 11. The authors' explanations include that the emotional reactions did not exacerbate psychopathology, and that the memorial services, frequent discussions and opportunities to volunteer helped veterans cope.\textsuperscript{43, 44} This is consistent with a classical observation by Durkheim: during periods of external threat, group cohesion increases and the suicide rate decreases.\textsuperscript{45}

A five-month analysis after September 11 in the Washington, D.C. area found no increase in mental health service utilization by military beneficiaries, although there were
increases in certain diagnostic categories (anxiety disorders and acute stress reactions in children and adjustment reactions in adults).\textsuperscript{46}

In summary, while collective traumas cause intense emotional distress nationwide and create an immediate need for crisis counseling locally, their effect on the prevalence of mental illnesses and rate of psychiatric service utilization is not proven. Although no specific data for psychiatric emergency service utilization are available, in the absence of changes in the prevalence of mental illnesses and rate of utilization of psychiatric services generally, an effect is unlikely.

**IV.6. Meteorological variables**

Studies trying to correlate violence and psychiatric decompensation with weather variables have resulted in inconsistent outcomes. A 1999 study in Kentucky found that acts of violence and emergency psychiatry visits, but not suicides or inpatient admissions, were associated with low barometric pressure. None of these four outcome variables correlated with humidity or wind speed.\textsuperscript{47}

One study from Ireland reported that admission rates for mania had a positive correlation with the level of sunshine and length of daylight.\textsuperscript{48} A recent study in Australia found a positive correlation between the level of sunshine and suicide. The correlation was especially strong for violent suicide.\textsuperscript{49}
A study in 1999 in Detroit distinguished two groups: frequent and infrequent visitors of the psychiatric emergency service. Based on a staff survey, frequent visitors were believed to be individuals lacking support and alternative treatment settings, and infrequent visitors were more likely to have an acute crisis. Utilization by frequent visitors correlated with daily precipitation and higher minimum daily temperature. The authors hypothesized that warmer weather increases activities and thus interpersonal conflicts. For infrequent visitors, there was a positive correlation with spring and summer, but no correlation with temperature or precipitation. None of the groups showed a correlation of visits with the lunar cycle, wind speed or humidity. However, as the authors could not obtain data on length of sunshine, it can not be excluded that increased sunshine was the real independent variable responsible for increased incidence of crisis situations, and temperature was a variable dependent on sunshine. This possibility is supported by the correlation with spring and summer. The observation that only infrequent visitors showed a significant correlation with spring and summer can be possibly explained by the fact that frequent visitors constituted 3.5% and their visits 23% of all visitors and visits, respectively. Therefore, it is possible that the power of the study was sufficient only to find the correlation for the larger group, infrequent visitors.

A recent study in San Diego conducted over a full year at the Naval Medical Center found that warm weather had a positive correlation, while precipitation had a negative correlation with the number of daily psychiatric emergency evaluations. However, subgroup analysis found that the correlations were significant only for the subgroup that was discharged after evaluation, and not for the subgroup of admitted
patients. There was no correlation with wind speed or lunar cycle, neither for all patients nor for the subgroups. These data suggest that in a warm climate, patients with not too severe illness are more likely to seek out the emergency service when the weather is hot, but less likely to present when it is raining.

Comparing the two previous studies, it appears that for less ill patients, high temperature increases psychiatric emergency visits both in moderate and warm climates, but precipitation increases it in moderate, decreases it in warm climate. This group of patients is likely to have a higher percentage of individuals with a secondary gain, i.e., seeking tangible advantages as shelter, food or drugs.

In summary, there is evidence to suggest that increased level of sunshine can exacerbate psychiatric illness, and weather variables as temperature or precipitation correlate with psychiatric emergency service utilization. The mechanism of action of these environmental factors is unknown, but their effect on everyday activities is at least as likely as physiological mechanisms. On the other hand, there are multiple studies showing that the lunar cycle does not have an effect on psychiatric emergency presentations. There is no sufficient evidence for the effect of wind speed, humidity or barometric pressure. It is possible that inconsistent data regarding the effects of weather variables are the consequence of patients in different climates responding differently to these variables.
IV.7. Calendar variables

Although there is a popular assumption that the suicide rate is increased during or after holidays, published data are scarce and contradictory. A study in Sweden found a significant increase in completed suicides on the first two days after weekends and holidays in patients with alcohol dependence. On the other hand, a study of prison-suicides in Finland found no increase during the holidays or weekends. In San Francisco, a study found that involuntary, but not voluntary, emergency psychiatric evaluations were lower during holidays.

The "check effect," an increase in psychiatric emergencies on the days following the receipt of disability benefits, led to the assumption that recipients were using their benefits to purchase drugs and alcohol. Therefore, federal income support to persons with alcohol and drug related disabilities was withdrawn in 1997. A study in San Francisco found that while psychiatric emergencies were more heavily utilized between the fourth and eighth day of the month, this periodicity of utilization was not reversed by ending benefits to persons with drug and alcohol related disabilities.

While emergencies related to intoxication are more frequent at the beginning of the month, drug seeking behavior or request for detoxification is frequently observed at the end of month. Many of these patients actually admit that they are worried about withdrawal, because they are at the end of their financial resources. The above cited study in Detroit found that psychiatric emergency evaluations of frequent visitors had a positive correlation with both the first and last week of the month.
In summary, there is little evidence for the effect of holidays on psychiatric crisis. The calendar-related changes of emergency service utilization appear to be substance use and payment period related.

IV.8. Circadian variables

A study found marked circadian variation in timing of self-injury, peaking between 10 p.m. and midnight. These late events were more likely to be related to alcohol intoxication, and less likely to involve a diagnosis of depression or psychiatric follow-up. Self-injury between 3 a.m. and 3 p.m. was significantly more likely to lead to admission to a medical ward, and involved more patient-identified problems than self-injury between 10 p.m. and midnight. In summary, the only proven circadian increases in self harm appear to be alcohol-use related.
V. Discussion

V.1. Further research

Currently available data are not sufficient to create a model that would meaningfully predict the utilization of psychiatric emergency services nationally or in any geographic area. Therefore, further research is warranted, focusing on the factors most likely to contribute to service utilization. The following questions regarding some of these factors remain still unanswered.

1) Can improved quality of psychiatric care decrease the rate of crises? Are the duration of inpatient hospitalization and frequency of outpatient appointments significant in the quality of care? Does insurance status influence the quality of care?

To answer these questions, first a catchment area including a psychiatric emergency service and inpatient unit(s) and outpatient providers should be identified. Next, the following data have to be collected, either retrospectively or prospectively, for all presentations of all patients of the emergency service. Data collection should continue over a period of at least one year, to eliminate variations related to a possible calendar effect, and to increase power.

- Diagnosis and demographics (age, gender, employment status).
- Presentation, including chief complaint, reason for seeking care, source of referral.
- Previous inpatient admissions within the last year (includes diagnosis, dates of admission and discharge, disposition: to home, or a structured environment). Source of information should be the inpatient unit.

- Insurance status (uninsured, Medicaid, Medicare, commercial) and insurance approval for requested care (denial, lower level of care; if requested level of care approved: how many days?)

- Outpatient services that the patient had: psychiatrist, therapist, frequency of visits, dates of admission and discharge of last visit.

- Is the reason for visit that another service, such as outpatient provider or detoxification facility, was not available? To avoid any bias on the part of the evaluators, this question should be answered by the patient.

- Disposition from the emergency service: psychiatric admission, medical admission, detoxification admission, follow up with existing outpatient provider, appointment with new outpatient provider, follow up with emergency service, no follow up necessary.

The next step is data management. Categories should be created that are sufficiently detailed to distinguish meaningful differences but broad enough to include a satisfactory number of cases and provide sufficient power for analysis. Diagnoses should be categorized to main groups, that are probably etiologically more or less homogenous such as schizophrenia, mood disorders, factitious disorder and malingering, PTSD, other anxiety disorders, and borderline personality disorder. The presenting problem, insurance status, availability of other services and disposition should also be categorized.
The final step is the statistical analysis of effect of the above variables on the presentation to psychiatric emergency services.

2) Is feeling of stigmatization, in fact, on the decline? Is there a trend of increasing exaggeration of complaints, especially of suicidality, in the mentally ill and substance abusing population, to ensure hospital admission?

These questions are obviously better answered in anonymous community-based surveys than in face to face interviews with patients seeking services. However, as most people never use psychiatric emergency services, the power of community-based surveys would be low, and resources for the research would be difficult to obtain. One resolution might be surveying patients in settings other then a psychiatric emergency, e.g. an outpatient clinic, with questions such as “Have you ever told a clinician that you wanted to kill yourself, while you did not, to make sure you would be admitted to a hospital? Have you ever told a clinician that you were more depressed than you actually were, to make sure you receive the care you thought you needed? Have you ever claimed that you were hearing voices, while you were not, in order to receive care?” These surveys also might be anonymous.

3) While data from the catchment area of one psychiatric emergency service have the advantage of being “raw” sources that can be analyzed from different aspects, and further details can be extracted, their utilization has limitations. They are likely to include only a modest number of cases from a specific geographic area. Also, service utilization
in a given emergency center is not only a function of epidemiologic trends, but is also influenced by microeconomic effects, i.e., closing or opening of other similar facilities in the area. These limitations could be overcome by analyzing state and nationwide data, e.g. from the National Reporting Program for Mental Health Statistics.⁸

Most of the data on the epidemiology of psychiatric emergencies are the result of ecological studies: the effect of environmental and societal factors on the emergence of a psychiatric crisis in the whole population is studied. While these effects are quite ubiquitous, there is no evidence that the patients who presented with symptoms were actually affected by them. Any study utilizing ecological analysis, could not establish e.g., whether a suicidal patient was actually exposed to sunshine, observed a major holiday, or a given substance user really depends on disability payments.

V.2. Policy implications

1) The available data consistently support the subjective experience and intuitive opinion of clinicians: lack of community and outpatient resources, both clinical services and other supports, increase the utilization of medical and psychiatric emergency services. This care is expensive and labor-demanding: in an emergency room, a patient is seen by at least a triage nurse, a nurse, an ER physician and a psychiatry clinician. In an academic center, an ER resident and a psychiatry resident can be added to those involved in the care of a psychiatric patient. In contrast, using outpatient services, the same patient usually could be evaluated and treated alone by his or her outpatient psychiatrist or
therapist. Even more importantly, patients seen in the emergency setting might have more advanced symptoms and endure more distress.

Although no specific type of community support is shown to prevent psychiatric emergencies, the lack of services definitely increases the incidence of these events. Lack of outpatient services is frequently associated with lack of insurance coverage. Improved insurance and community service availability would likely decrease the workload of psychiatric emergency services.

Case management of patients after discharge from the inpatient unit decreased emergency re-evaluations in a subgroup. It is likely that case management would be similarly beneficial for patients with a variety of psychiatric conditions, with a subsequent decrease in crisis situations and emergency evaluations. However, further studies are necessary to identify which groups of patients would benefit from this type of support.

2) While psychiatric emergency services frequently operate in lieu of outpatient services, psychiatric emergencies occur even in patients who are regularly seen by outpatient services. For these patients, optimal care in an emergency setting can be provided only if their history is available. The best sources of this history, with few exceptions, are the patient’s outpatient clinicians. Therefore, 24-hour availability of outpatient team members improves the efficacy of the work of the emergency services.\textsuperscript{29} However, many providers work alone or in small groups. In my experience, they are
frequently covered by clinicians who do not know the patient and do not have access to their files. One solution to this problem could be the voluntary establishment of central medical records by several outpatient providers in a geographic area. Clinicians would submit a copy of their records (this is easy with the spread of electronic records) and on-call personnel trained in confidentiality rules would release it after receiving proper authorization or proof of an emergency situation, as it is done by hospital medical record departments.

3) Cooperation within the same health care system is also crucial for the efficiency of psychiatric emergency services. Clinicians of other medical specialties are frequently the first to evaluate the mental health patient in crisis, and make the decision about requesting a psychiatric emergency evaluation. In case of over-utilization of these requests, discussions with and education of colleagues seem to be helpful. Some ER doctors informally ask the psychiatry clinician’s opinion about the need for official referral, and clinicians can make the decision if the presented information suggests a need for an evaluation. This seems to be a reasonable approach that fosters mutual trust and goodwill among specialties. Cooperation between somatic medicine and psychiatry rather than sequential care is necessary for managing both psychiatric and somatic conditions.29

Written guidelines for other professions about indications for referrals would be either too rigid, having too low or too high cut-off values, and would either put patients at risk or would actually increase the workload for the psychiatric emergency services. Alternatively, guidelines with all possible scenarios and detailed decision trees would be
too long, almost amounting to a training course in psychiatry. On the other hand, short presentations by mental health clinicians to other specialties about identifying emergencies are feasible and might decrease both over- and underutilization of the emergency services.

Misuse of the service can be caused by patients exaggerating their symptoms, outpatient clinicians making inappropriate referrals, and by the psychiatric emergency service itself if clinicians admit patients to inpatient units without real necessity.29

Significant emergency resources are spent on patients with drug seeking behavior, without a motivation to quit. Many services have unofficial lists of these patients or at least clinicians share the information verbally. Within health care institutions, treatment plans for these patients decrease inappropriate use of resources by them, but also foster a more adaptive behavior on their part.29 However, confidentiality rules render communication between different facilities almost impossible, and make prevention measures difficult.56

Periodic statistics sent to outpatient clinicians showing the admission rate of their referrals, compared to the community’s average, might be a useful feedback on their assessment of emergency. Likewise, emergency clinicians could receive data on the inpatient diagnosis, length of stay and disposition of their admissions, as a feedback on their assessment of necessity to admit.
4) A subset of substance users who are motivated to quit but are unable to maintain sobriety due to lack of access to residential rehabilitation or outpatient services, also utilizes emergency services. Increased capacity of residential and outpatient programs would predictably decrease emergency visits by these patients, beyond other beneficial effects.

Opioid withdrawal or the fear of it is an especially strong drive for patients to seek treatment. Currently two effective medications are available both in inpatient and outpatient settings: methadone and buprenorphine. The limitations of outpatient treatment capacities forces many patients to seek inpatient admission or narcotic medications for factitious symptoms. Methadone treatment requires daily clinic visits with frequent urine screens. As it is time consuming and felt humiliating, it is rejected by many patients, especially by those who are high functioning and work. In addition, methadone has most of the side effects of illegal narcotics, including being addiction forming. Buprenorphine is a recently approved treatment in the US. It can be prescribed on an outpatient basis by certified physicians, with less side effects and much less frequent patient visits. However, waiting lists are long and visit fees are enormous (up to $500, according to patients and substance use expert Alan Wartenberg, MD; personal communication). The reason is that prescriptions require a special license and most of the licensed prescribers are in private practice. This fact also discriminates against patients relying on the public sector for their mental health care. Any incentive for community and academic mental health centers to prescribe buprenorphine would likely improve care for this population and decrease the rate of their emergency presentations.
VI. Conclusions

As expected, there are environmental and societal factors that are repeatedly shown to correlate with an increased rate of exacerbations of mental illnesses and psychiatric emergency service utilization. However, the effects of many intuitively and popularly assumed variables were not proven in studies.

Among system-related variables, there is more evidence for the effect of outpatient than inpatient care. Lack of availability of outpatient services increases emergency service utilization; community-based mental health resources might decrease it, but there is no evidence for the effect of decreased length of inpatient hospitalizations. Telephone contacts by counseling services decrease the rate of psychiatric emergencies, but the data for efficacy in crisis prevention of volunteer-operator crisis lines are inconclusive.

Patients’ and the society’s attitudes determine seeking emergency care, but there is only indirect evidence that the net effect of attitude changes increases service utilization: there is an increase in reporting suicidal ideation while completed suicides are on the decline (possibly as an effect of better available treatment methods). This observation shows that of many possible assessments of illness severity, the perception of an emergency by patients (and possibly their support persons and health care providers) is the strongest predictor of service utilization.
Community-traumatizing events create an acute need for counseling services. On the other hand, the evidence for their effect on the prevalence of mental illnesses and rate of psychiatric service utilization is inconclusive.

Among meteorological variables, the level of sunshine appears to correlate with the incidence of manic and suicidal events, but there is no evidence for the effect of wind speed, humidity or barometric pressure. Temperature and precipitation correlate with psychiatric emergency service utilization. However, their differential effect on patients with different severity of illness suggest that they might exert their influence through everyday activities rather than a direct physiological exacerbation of psychiatric conditions. Contradicting a popular myth, multiple studies indicate that the lunar cycle has no effect on psychiatric emergencies.

There are calendar-related changes in emergency service utilization that appear to be related to payment periods and substance use. On the other hand, there is no consistent evidence for the effect of holidays on psychiatric crisis. The only evidence for circadian changes indicates that self-injury might be most frequent at night and this peak is alcohol-related.
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