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Brief Report

National differences between ED and ambulatory visits for suicidal ideation and attempts and depression

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ABSTRACT

Background: Many suicidal and depressed patients are seen in emergency departments (EDs), whereas outpatient visits for depression remain high.

Study objective: The primary objective of the study is to determine a relationship between the incidence of suicidal and depressed patients presenting to EDs and the incidence of depressed patients presenting to outpatient clinics. The secondary objective is to analyze trends among suicidal patients.

Methods: The National Hospital Ambulatory Medical Care Survey and the National Ambulatory Medical Care Survey were screened to provide a sampling of ED and outpatient visits, respectively. Suicidal and depressed patients presenting to EDs were compared with depressed patients presenting to outpatient clinics. Subgroup analyses included age, sex, race/ethnicity, method of payment, regional variation, and urban versus rural distribution.

Results: Emergency department visits for depression (1.16% of visits in 2002) and suicide attempts (0.51% of visits in 2002) remained stable over the years. Office visits for depression decreased from 3.14% of visits in 2002 to 2.65% of visits in 2008. Non-Latino whites had a higher percentage of ED visits for depression and suicide attempt and office visits for depression than other groups. The percentage of ED visits for suicide attempt resulting in hospital admission decreased by 2.06% per year.

Conclusion: From 2002 to 2008, the percentage of outpatient visits for depression decreased, whereas ED visits for depression and suicide remained stable. When examined in the context of a decreasing prevalence of depression among adults, we conclude that an increasing percentage of the total patients with depression are being evaluated in the ED, vs outpatient clinics.

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1. Introduction

1.1. Background

According to the World Health Organization approximately 1 million people die annually by suicide, with a global mortality rate of 16 per 100,000 [1]. In 2004, suicide was the 16th leading cause of death worldwide [2]. In the United States, suicide ranked as the fourth leading cause of death between the ages of 10 and 65 years [3]. Furthermore, these statistics do not capture the full impact of the disease, as there are additionally many unsuccessful suicide attempts with resulting injuries as well as visits to both the emergency department (ED) and psychiatric institutions for suicidal ideation. Suicide and self-inflicted injury are estimated to have resulted in more than 400,000 ED visits per year from 1997 to 2001 (0.4% of all ED

visits) [4]. The high burden of the disease has made suicide prevention one of the goals of Healthy People 2010 [4], and the US Surgeon General has recognized the need for improved identification, diagnosis, and treatment of suicidal ideation for over a decade [5].

1.2. Importance

Suicide is of particular importance to emergency physicians. Acutely suicidal patients often present to EDs, and suicidal ideation often culminates in life-threatening acts of self-harm requiring emergency intervention. In addition, a great number of patients who commit suicide were seen in the ED before their death, many for self-harm or other mental health complaints [4].

Although prior studies found that the number of patients presenting to the ED for suicidal ideation has been increasing [4,5], the number of inpatient psychiatric beds to handle these patients is decreasing. The increasing number of ED visits for suicide is and will continue to be a significant challenge [6]. Recognizing trends among

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different demographic groups of suicidal patients presenting to the ED may help with future public health strategies in reducing recidivism in specific populations.

1.3. Goals of this investigation

There are currently 2 major studies examining suicide trends related to ED visits; Larkin et al [5] examined overall trends in suicide from 1992 to 2001, whereas Doshi et al [4] examined rates of suicide from 1997 to 2001. However, there has not been more current literature published that examines ED visits resulting from suicide or suicide attempts. In addition, there is no published literature comparing ED visits for suicide with outpatient visits for depression.

This study attempts to determine if there is a relationship between the incidence of suicidal patients presenting to EDs and the incidence of depressed patients presenting to outpatient clinics from 2002 to 2008. In addition, the study also presents trends and general characteristics of patients visiting the EDs for suicide attempts/ideation between 2002 and 2008.

2. Methods

2.1. Study design

Data from 2002 to 2008 were obtained from both the National Hospital Ambulatory Medical Care Survey (NHAMCS) and the National Ambulatory Medical Survey (NAMCS) to compare trends between suicidal patients presenting to EDs vs patients presenting to outpatient clinics for depression. The NHAMCS/NAMCS databases are national surveys completed by the Centers for Disease Control that provide data from ED and outpatient visits (excluding federal, military, and veterans affairs hospitals). These data have been used in multiple studies to generate national estimates of outpatient and ED visits [4,5,7,8]. We examined the data from 2002 to 2008 to compare trends between presentations to the ED for suicide and depression, with presentations related to depression in outpatient clinics.

2.2. Data inclusion criteria

To ensure an accurate estimate, ED visits for suicide were included if they met 1 of 2 criteria in NHAMCS:

- 1) National Center for Health Statistics–assigned Patient Reason-for-Visit Classification codes related to suicidal attempts: suicide attempt (5820.0) and intentional overdose (5820.1).
- 2) Injury codes related to suicide attempt: self-inflicted injury (E950.0–E958).

Emergency department visits and outpatient visits for depression were included if they met the following 2 criteria:

- 1) *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition, Text Revision)–based depression-related *International Classification of Diseases, Ninth Revision, Clinical Modification*, diagnoses: episodic mood disorders (296), depressive type psychosis (298), and depressive disorder, not otherwise specified (311).
- 2) National Center for Health Statistics–assigned Patient Reason-for Visit Classification codes for depression (1110.0).

2.3. Methods of measurement

The data from both surveys are checked, coded, and keyed by a private contractor, the Constella Group, Inc, with quality control procedures to ensure accurate coding. The Centers for Disease Control reports that the keying error rate in the NHAMCS databases is less than 1% for nonmedical terms and less than 2% for medical terms.

Estimates for the study used an assigned patient visit weight, created using Census data. These are rounded to the nearest thousand. This is the most commonly used method of estimating overall national rates in studies using NHAMCS [4,5,8,9].

2.4. Primary data analysis

Data were analyzed using Stata (College Station, TX) [10]. All of the analyses accounted for the sample weighting and clustering using ultimate cluster models [11]. Trends in the percentage of depression- and suicide attempt–related visits were analyzed by age, sex, ethnicity, and region, between 2002 and 2008, and tested using linear regression on survey year. Rates were calculated using US census estimates of the civilian noninstitutionalized population [12].

3. Results

From 2002 to 2008, the NHAMCS database contains records of 253257 ED visits, of which 1362 were for suicide attempt and 3905 were for depression without mention of suicide attempt. Taking into account sample weighting, 1.1% of ED visits included depression as a diagnosis or a patient's reason for visit; 0.5% of ED visits included attempted suicide (including intentional overdose) as a diagnosis or a patient's reason for visit, whereas 3.2% of visits to office-based physicians had depression as a diagnosis or a patient's reason for visit.

The rates of office visits for depression and ED visits for depression and for suicide attempt by year are shown in Fig. 1.

There was no significant linear trend over the years in ED visits for depression or suicide attempt. Office visits for depression decreased from 3.1% of visits in 2002 to 2.6% of visits in 2008, a mean change of -0.09% per year ($P = .02$).

There was slightly higher percentage of ED visits for depression and suicide attempt among females, but the difference was not statistically significant. Females had a significantly higher percentage of office visits for depression (3.7%) than males (2.5%). Among males, the percentage of office visits for depression decreased from 2.5% to 2.0%, a mean change of 0.1% per year ($P = .03$). There was no significant trend over the years in ED visits for depression or suicide attempt in either males or females.

Non-Latino whites had a higher percentage of ED visits for depression (1.3%) and suicide attempt (0.5%) ($P < .05$) and higher percentage of office visits for depression (4.0%, $P < .05$) than Latinos, blacks, or non-Latinos of other or more than 1 ethnicity. There was no significant trend over the years in ED visits for depression or suicide attempt or office visits for depression in any of these groups.

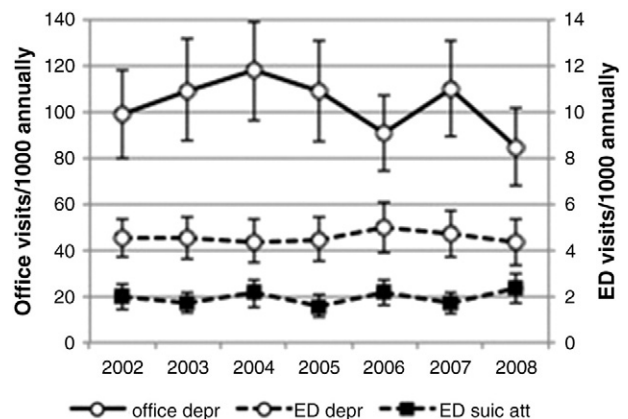


Fig. 1. Office visits for depression, ED visits for depression, and ED visits for suicide attempt. Office and ED visits for depression, along with ED visits for suicide attempt, are plotted for the years 2002 to 2008.

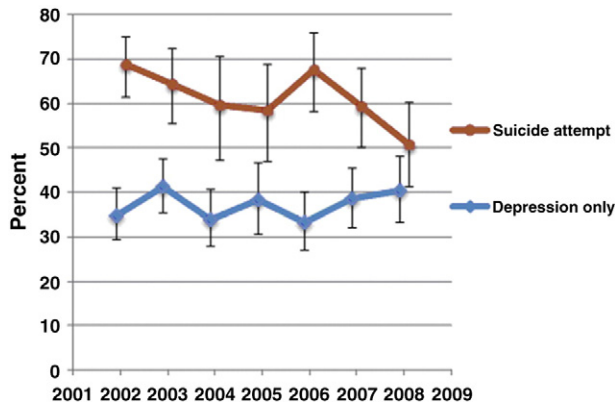


Fig. 2. Percentage of ED visits for depression and suicide resulting in hospital admission between the years 2002 and 2008.

Patients 15 to 29 years old had the highest percentage of ED visits for suicide attempt (0.87%). Patients 30 to 49 years old had the highest percentage of ED visits for depression (1.7%) and office visits for depression (5.25%). Among patients 30 to 49 years old, office visits for depression decreased from 5.3% in 2002 to 4.1% in 2008, or a linear trend of -0.19% per year ($P = .03$). Among patients 50 to 69 years old, ED visits for suicide attempt increased from 0.12% in 2002 to 0.44% in 2008, or a linear trend of 0.05% per year ($P = .0004$). There were no other significant trends over the years in office or ED visits for depression or suicide attempt in any of these age groups.

Among the 4 US census regions, the Northeast had the highest percentage of ED visits for depression (1.47%) and office visits for depression (3.58%) but the lowest percentage of ED visits for suicide attempt (0.38%). The West had the second lowest percentage of ED visits for depression (1.08%) but the highest percentage of ED visits for suicide attempt (0.71%). In the West, the percentage of ED visits for depression decreased, with a linear trend of -0.08% per year ($P = .0003$). Office visits for depression decreased in the Midwest and South. There were no other significant trends over the years in ED or office visits for depression or suicide attempt in any of the regions.

When comparing health care facilities in metropolitan areas to facilities not located in metropolitan areas, there was no difference in the percentage of ED or office visits for depression or suicide attempt. There were no significant trends in ED visits for depression or suicide attempt among metropolitan areas and nonmetropolitan areas. Office visits for depression decreased in metropolitan areas by a mean of 0.04% per year ($P = .01$).

In addition, homeless patients had a higher percentage of ED visits for depression (6.5%) and suicide attempt (2.5%) than patients who lived in private homes, nursing homes, other institutions, or other residence.

Medicare was expected to pay for only 12.2% of ED visits for depression and 6.8% of ED visits for suicide attempt (compared with 15.1% of other visits). Medicaid was expected to pay for 31.1% of ED visits for depression and 26.7% of ED visits for suicide attempts (compared with 23.5% of other visits). For 27.7% of ED visits for depression and 34.9% of ED visits for suicide attempt (compared with 25.6% of other ED visits), the expected source of payment was listed as self-pay, no charge, other, or unknown. For outpatient care, Medicare was expected to pay for 17.1% of office visits for depression and 22.8% of other office visits. For 16.1% of office visits for depression (compared with 10.1% of other office visits), the expected source of payment was listed as self-pay, no charge, other, or unknown.

There were no significant trends in the percentage of ED visits for depression and suicide attempt by payer. The percentage of office

visits expected to be paid by private insurance decreased by a mean of -1.27% per year, and the percentage expected to be paid by Medicaid increased by a mean of 1.03% per year over the study period.

In 2008, 40.4% of ED visits for depression and 50.8% of ED visits for suicide attempt resulted in a hospital admission. The percentage of ED visits for suicide attempt resulting in a hospital admission decrease by 3.1% per year (Fig. 2; $P = .01$).

4. Discussion

Several interesting points arose from the results of this study. Of particular importance, the percentage of total ED visits related to depression and suicide attempt remained relatively stable between 2002 and 2008, whereas the percentage of total office visits for depression significantly decreased between 2002 and 2008. Because recent data indicate that the overall prevalence of depression among US adults is decreasing [13], the decline in outpatient visits for depression is likely driven by decreasing rates of depression among adults.

The relatively constant level of ED visits for depression/suicide, viewed in context of the overall decrease in prevalence of depression, potentially indicates that the particular subset of patients visiting EDs for depression/suicide are refractory to the factors causing the overall decrease in the national prevalence of depression. One possible reason for this is that patients with more severe forms of depression (ie, suicidal patients) may not respond as well to psychiatric treatment as patients with milder forms of depression; this possibility is supported by recent studies [13,14]. It is also possible that patient groups with barriers to psychiatric care, such as the homeless and uninsured, are continuing to rely on the ED for treatment and, consequently, do not have the same positive outcomes as patients with access to outpatient mental health specialists. This is a potential topic that can be explored in future research.

Regardless of the cause, the rates of ED visits for depression/suicide have remained constant, despite a decrease in both the nationwide prevalence of depression and outpatient visits for treatment of depression. This suggests that an overall shift in the point of care for depressed patients may be occurring; a greater percentage of depressed patients are visiting EDs for treatment, and therefore, a greater percentage of the treatment for depression is occurring within the ED. As many recent studies have shown that nationwide ED capacity is currently strained [5,15,16], ED physicians will face the challenge of managing increased psychiatric patients and may benefit from additional psychiatric consultants staffing EDs. Chakravarthy et al [17] suggested additional psychiatric training as part of emergency medicine residency curriculums as well as the development of evidence-based interventions that may allow EDs to more efficiently manage psychiatric patients.

In addition to illustrating a possible shift in care of psychiatric treatment from outpatient clinics to EDs, data from the NHAMCS and NAMCS databases also present pertinent demographic information about acutely depressed and suicidal patients. Among patients 50 to 69 years old, ED visits for suicide attempt increased from 0.12% in 2002 to 0.44% in 2008, or a linear trend of 0.05% per year ($P = .0004$). In terms of trends among different ethnicities, it appears that non-Latino whites are far more likely to seek care for mental health-related issues than all other ethnicities. Explanations for this trend have been discussed in previously published psychiatric literature, where it has been found that the perceived stigma of having a psychiatric illness is a significant deterrent for many minority groups to seek psychiatric care [18,19]. Existing data also shows that oftentimes, members of minority groups do not feel that they have access to mental health care providers that they can culturally identify with [20]. Finally, it should be noted that although non-Latino whites have the greatest access to outpatient

psychiatric care, they are still more likely to visit EDs with a psychiatric presentation.

In regards to socioeconomic trends, data from this study indicate that homeless patients were more likely to seek treatment for psychiatric care in EDs vs outpatient clinics. This is understandable, as many of these patients do not have the same access to health care as nonhomeless patients. Furthermore, there is greater prevalence of psychiatric disorders and substance abuse among the homeless compared with the general population [21]. The higher rates of homeless patients presenting to EDs with psychiatric issues indicate that ED staff and psychiatric consultants should be skilled in managing mental health issues that are common among the homeless population.

Finally, the results of our study showed that the percentage of ED visits for suicide attempt resulting in a hospital admission decreased by 3.1% per year (Fig. 2; $P = .01$).

Although the data point toward an increase in rates of patients presenting in the ED for suicidal attempt, it is unclear of the exact etiology. We cannot assume that increasing inpatient capacity to treat psychiatric patients will decrease suicide attempts. Regardless, there may be several ambulatory care sensitive patient visits that could benefit from social support and access to outpatient treatment [22]. With the rise in ED visits related to suicide attempts and substance abuse, there is an indication for a shift in mental health care resources. This might include improving interdisciplinary care and coordination of patient services. Regardless of the cause, it is highly possible that EDs will see an increase in rates of patients presenting for suicidal attempt and repeat suicidal attempt.

4.1. Limitations

The primary limitations of this study stem from using a large national survey that provides probability samples. Although national surveys such as NHAMCS and NAMCS are valuable and can be very helpful for large epidemiologic studies, one must recognize the problems inherent in such a system. To create the trends and conclusions we have made in this study, a few assumptions must be made about the data: first, that the sample is representative of the target population (in our case, patients presenting to the ED with suicidal behavior) and, second, that the data were accurately compiled. Given that the data collection is done in a variety of ED and outpatient settings around the country, it should be an accurate representation of our patient population. However, as discussed in a recent study [23], the assumption that small representative data can always be extrapolated to larger populations is not always correct.

Other limitations within our study include potential errors in data collection and reporting. In addition to general coding errors, there are some errors that are created by the nature of our study; for example, certain disease codes may exclude unusual or severe attempts, and coding could miss suicidal ideation with other presentation.

We also considered several alternatives to NHAMCS/NAMCS. Medical examiner data from autopsies are limited in that it only measures completed suicides. The National Health Interview Survey is a survey that screens for a variety of mental health disorders but does not directly ask about suicidal thoughts or behaviors. The Behavior Risk Factor Surveillance System Questionnaire is an adult survey completed annually; however, it only includes information on suicide from 2009 to 2010.

5. Conclusions

In 2008, Larkin et al showed that between 1992 and 2001, rates of ED visits for suicidal ideation and attempt increased at a significantly faster rate than total ED visits. However, our study shows that, from 2002 to 2008, ED presentations for suicidal ideation/attempt and

depression remained stable and have not significantly increased. In addition, our study shows that there is a concurrent decrease in outpatient visits for presentation of depression. When viewed in context of an overall decreasing prevalence of depression [13], our data show that an overall greater percentage of psychiatric treatment for depression is now occurring within the ED, vs outpatient clinics. If this conclusion is correct, it indicates the need for a shift in mental health care resources, including additional mental health care coordination in EDs. Furthermore, it also highlights the need for additional training of ED staff in management of depressed/suicidal patients.

The management of psychiatric patients has been a significant challenge for EDs. According to a 2010 national survey of ED administrators, “86% of respondents reported that their EDs were ‘sometimes’ or ‘often’ unable to transfer patients to an inpatient facility quickly and 60% of respondents said these delays compromised patient care.” The difficulty in transferring psychiatric patients to inpatient facilities is a likely result of the sharp decrease in beds at mental health institutions combined with a concurrent increase in demand for mental health services [23]. Because most patients who present to the ED for self-harm will not successfully complete suicide in the following year, intervention for all is unrealistic [3]. Therefore, it is essential to develop methodologies to effectively identify high-risk patients. Interventions such as psychosocial assessments and therapeutic interviews have shown promise in identifying high-risk patients and reducing the risk of self-harm. Gairin et al found that patients who received psychosocial assessment before discharge were more readily identified as high risk, and Kapur et al [24] found that a psychosocial assessment halved the risk of repetition of self-harm [3,20]. Furthermore, efforts to identify possible ambulatory-sensitive psychiatric visits and their determinants may assist policy makers in reducing the utilization of psychiatric visits on acute settings such as the ED. Efforts to make these interventions more widely used may result in better outcomes for ED psychiatric patients.

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