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Predictors of suicide attempts in 3.322 patients with affective disorders and schizophrenia spectrum disorders

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ABSTRACT

This study explores risk factors for suicide attempts using the electronic health records of 3322 patients with either schizophrenia spectrum disorders or affective disorders who underwent a comprehensive psychiatric evaluation at the Emergency Department at the Long Island Jewish Medical Center or the Hillside Evaluation Center at The Zucker Hillside Hospital from August 3rd 2011 to July 5th 2012. Multivariate regression analyses showed, after adjusting for sex, that previous suicidal attempts and financial or relationship losses were significantly associated with a current suicidal attempt. Additionally, higher odds of having a suicidal attempt were also found in those subjects with a diagnosis of an affective disorder, compared to a schizophrenia spectrum diagnosis, and those patients in the children/adolescent group compared to those in the adult/elderly group. Our study results confirm and expand results from prior studies. Therefore, physicians should be alert for the presence of any or all of these factors upon evaluation of psychiatric patients, and if present, either psychiatric hospitalization or a close psychiatric follow up in collaboration with family and a therapist would be key in reducing the risk of potential suicidal behavior.

1. Introduction

Suicide is a public health problem with dramatic consequences to individuals, families and society as a whole. Suicide is among the three leading causes of death among those aged 15–44 years in some countries and is the second cause of death in the 10–24 years old group (WHO, 2012). Suicide contributes to approximately 11 out of 100,000 of deaths per year, which results in excess mortality and enormous economic burden (Mann et al., 2005).

Multiple factors have been associated with suicidal behavior. Beghi et al. (2013), in a systematic review of 76 studies of fatal and non-fatal recurring suicide attempts, found that the strongest predictor for a recurring suicidal attempt was a history of suicidal attempt. In addition, he found that having a history of sexual abuse, or psychiatric treatment or having current poor global functioning, depressive symptoms, anxiety symptoms or alcohol use disorders was also associated with a suicidal attempt. Similarly, Larkin et al. (2014) in another systematic review of 129 studies, found that living alone, having a history of self-harm or psychiatric treatment, having a diagnosis of personality disorder, schizophrenia, alcohol or drug dependence, and feeling hopeless, was significantly associated with a recurring suicidal attempt. Additional risk factors described by other authors include having a family history of suicide (Brent et al., 1996), certain genetic variations (Ben-Efraim et al., 2012), comorbid medical illnesses such as cancer or HIV (Cole et al., 2014; McManus et al., 2014); experiencing a social and/or financial crisis (Large et al., 2011) and having stressful life events (Pompili et al., 2011). Rates of suicidal behavior are significantly higher in psychiatric populations compared to the general population (Beghi et al., 2013), but most studies conducted so far have focused on specific psychiatric diagnoses such as bipolar disorder (Hauser et al., 2013), post-traumatic stress disorder (PTSD) (Pompili et al., 2013), depression (Hawton et al., 2013), schizophrenia (Witt et al., 2014), borderline

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personality disorder (Soloff et al., 2014), anxiety disorders (Thibodeau et al., 2013), eating disorders (Suokas et al., 2014) and other diagnoses. On the other hand, relatively few studies have directly compared suicidal rates across different psychiatric disorders in a single patient sample. For example, Holma et al. (2014) studied patients with bipolar disorder and Major Depressive Disorder (MDD) and found that rates of suicide attempts were twice as high in bipolar patients compared to MDD patients. Similarly, Haukka et al. (2008), in a nationwide study conducted in Finland from 1996 to 2003, found that 18% of the subjects that attempted suicide had schizophrenia and 28% had mood disorders. Also, in an epidemiological study with data from the US national hospital discharge survey from 1997 to 2006, Weber et al. (2013) found that the most common psychiatric disorders in individuals hospitalized due to non-fatal self-directed violence were affective disorders (57.8%) and substance abuse disorders (37.1%).

Therefore, to add to the current knowledge base and validate prior findings, we sought to determine predictors for suicidal attempts in a large representative sample of patients with schizophrenia spectrum disorders and affective disorders who were evaluated in the emergency services of a large tertiary academic hospital.

2. Methods

2.1. Data collection

For this study we obtained de-identified data from electronic health records (EHR) collected from 3322 adult patients who were evaluated from August 3rd 2011 to July 5th 2012 either at the psychiatry section of the Medical Emergency Department at the Long Island Medical Center or The Zucker Hillside Evaluation Center (HEC). The HEC is an evaluation center able to handle patients not only who walk-in looking for psychiatric treatment but also those patients being taken for evaluation by police and/or emergence medical services and who required involuntary admission. Both institutions are located in Glen Oaks, New York and are part of the North Shore-LIJ Health System; both serve as the primary rotating site for psychiatry residents and medical students from the Hofstra North Shore – LIJ School of Medicine and other medical schools. As part of the initial evaluation, all patients received a comprehensive psychiatric assessment conducted by either an attending psychiatrist or a first or second year psychiatry resident that was supervised by an on-site, salaried, board-certified psychiatrist. De-identified data derived from this comprehensive psychiatric evaluation from patients with ICD-9 codes 295.00–295.95 (schizophrenia-related disorders) and/or 296.00–296.99 (mood disorders) were extracted by the EHR specialist and used for our analyses. Extracted data included: demographic information; current and past psychiatric history including suicidal thoughts and behavior; family history of suicide; history of any type of abuse; and other relevant factors. Data about suicide thoughts or behavior was utilized as extracted from EHR. No post-hoc definitions of suicide ideation, intent, plan, or attempt were used for the analyses. We did not have access to data from patients who died of suicide before or after the comprehensive psychiatric evaluation, therefore all data corresponds to patients who were alive at the time of the evaluation. We obtained information in regard to diagnosis directly from the EHR. Of note, the psychiatric diagnosis was entered by clinicians in the EHR after performing the routine comprehensive psychiatric assessment. In our institution, clinicians use DSM-IV TR criteria to arrive to a diagnosis but patients did not undergo a structured clinical interview for DSM-IV (SCID). For analysis, patients were included either in the schizophrenia spectrum disorders group (SSD) or the affective disorders group. The SSD group included the following diagnoses: schizophrenia; schizophreniform disorder; or schizoaffective disorder. The affective disorders group included the following diagnoses: bipolar disorder, major depressive disorder; depressive disorder Not Otherwise Specified (NOS); mood disorder NOS; and dysthymic disorder. In the event than a single patient was evaluated more than once in the specific time period, only the first evaluation was extracted, so patients are only included once in the database. Our study was submitted for approval to the Institutional Review Board, North Shore-Long Island Jewish Health system (NS-LIJ), Manhasset, New York. However, given that our study used only de-identified data, our study was deemed exempt from IRB approval.

2.2. Statistical analyses

Chi-square tests were utilized to compare categorical variables and either *t*-tests or ANOVA tests were used to compare continuous variables. Statistical analyses were performed using STATA software version 11.2. Bivariate analyses were conducted by diagnostic groups (SSD vs. affective disorders) and age groups (children/adolescents vs. adults) and those variables with a p-value <0.1 were entered in a multivariate regression analysis to determine the variables independently associated with a current suicidal attempt. A backwards elimination approach was used and only those variables with a p value <0.05 were included in the final model, except for sex and age that were included to account for any potential confounding effects of those variables with the primary outcome. Four additional multivariate regression analyses were conducted for each diagnostic and age group using the same approach described above.

3. Results

3.1. Baseline characteristics of all subjects

De-identified data from 3322 subjects was used for the final analyses (Table 1). The mean age for all subjects was 35.2 years old (S.D.=19.1) and 1551 (46.7%) were male. Information about ethnicity or race was not available. 2402 (72.3%) subjects were classified into the affective disorders group and 920 (27.7%) were classified into the SSD group.

In the affective disorders group, the most common mood disorder was MDD ($n=1176$, 35.4%), followed by bipolar disorder ($n=768$, 23.1%) and mood disorder NOS ($n=687$, 20.7%). In the SSD group the most common diagnosis was schizoaffective disorder ($n=487$, 52.9%) followed by schizophrenia ($n=426$, 46.3%). In all subjects, the most common comorbid anxiety disorder was anxiety disorder NOS ($n=146$, 4.4%) followed by PTSD ($n=143$, 4.3%).

In regards to suicidal thoughts and behavior, 3077 patients (92.6%) presented with current suicidal ideation, 336 (10.1%) presented with ambivalent current suicidal intent, 79 (2.4%) presented with definite current suicidal intent, 434 (13.1%) presented with a current suicide plan and 150 (4.5%) presented after a suicidal attempt. In the six months prior to evaluation, 3123 (94%) subjects had suicidal ideation, 250 (7.5%) had an ambivalent intent to commit suicide, 93(2.8%) had a definite intent to commit suicide and 346 (10.4%) had a suicidal plan. Out of 1351 patients with available data, 386 (28.6%) had a lifetime history of a prior suicidal attempt.

In terms of current stressors and triggers, 234 patients (7%) reported despair, 223 (6.7%) reported health issues, 478 (14.4%) reported financial or relationship losses, and 188 (5.7%) reported recent humiliation or shame. Of note, despair, health issues, financial or relationship losses, and recent humiliation or shame were asked as such in the electronic health records. Also, 126 subjects (3.8%) had a family history of suicide, 215 out of 967 patients with data (22.2%) had history of physical abuse, 232 out of 958 (24.2%) had history of sexual abuse, and 41 out of 814 had history of neglect (5%).

3.2. Subject characteristics by diagnostic groups

As stated earlier, 2402 (72.3%) patients were included in the affective disorders group and 920 (27.7%) were included in the SSD group. There was a higher proportion of males in the SSD group compared to the affective disorders group (60.2% vs. 41.5%, $p<0.0005$). Patients in the SSD group were also older compared to the mood disorder group (41.5 years [S.D.=15.0] vs. 32.9 years [S.D.=19.2], $p<0.0005$). Patients in the affective disorders group showed significantly higher rates of comorbid PTSD (5.4% vs. 1.5%, $p<0.0005$), panic disorder (2.9% vs. 0.5%, $p<0.0005$), generalized anxiety disorder (GAD) (3.2% vs. 1.0%, $p<0.0005$) and anxiety disorder NOS (5.8% vs. 1.0%, $p<0.0005$) compared to the SSD group.

Despite the fact that patients in the SSD group had higher rates of suicidal ideation ($n=876$, 95.2%) compared to patients in the affective disorders group ($n=2201$, 91.6%), the latter group had higher rates of current ambivalent suicidal intent ($n=287$, 12% vs. $n=49$, 5.3%), current definite suicidal intent ($n=69$, 2.9% vs. $n=10$, 1.1%, $p<0.0005$), current

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