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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 3,322 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.

## Keywords

bipolar; psychosis; electronic records; self-harm; depression

## 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 and colleagues (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 and colleagues (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 having symptoms of hopelessness, 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 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 and colleagues (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 (Haukka et al., 2008), in a nationwide study conducted in Finland from 1996-2003, 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 and colleagues (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 3,322 subjects was used for the final analyses (Table 1). The mean age for all subjects was 35.2 years old (SD=19.1) and 1,551 (46.7%) were male. Information about ethnicity or race was not available. 2,402 (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, 3,077 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 6 months prior to evaluation, 3,123 (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 1,351 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, 2,402 (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 [SD=15.0] vs. 32.9 years [SD=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 suicidal plan (n=373, 15.5% vs. n=40, 4.3%, p<0.0005) and current suicidal attempts (n=136, 9.9% [in 1372 affective disorder patients with data] vs. n=14, 2.6% [in 540 SSD patients with data], p<0.0005).

Similarly, in the 6 month period prior to being evaluated at the emergency room or the HEC, patients in the affective disorders group experienced more ambivalent suicidal intent (n=225, 9.4% vs. n=25, 2.7%) definitive past suicidal intent (n=82, 3.4% vs. n=11, 1.2%, p<0.0005) and suicidal plan (n=306, 12.7% vs. n=40, 4.3%, p<0.0005) than those in the SSD group

Patients in the affective disorders group reported more feelings of despair (8.7% vs. 2.8%, p<0.0005), health issues (7.6% vs. 4.4%, p=0.00075), financial or relationship losses (17.8% vs. 5.4%, p<0.0005), anniversary of stressor or loss (1.7% vs. 0.8%, p=0.048) and recent humiliation or shame (7.1% vs. 1.7%, p<0.0005), than patients in the SSD group. Rates of family history of suicide were significantly higher among patients in the affective disorders group compared to the SSD group (n=106, 4.4% vs. n=20, 2.2%, p=0.0025). There were no statistically significant differences in rates of physical abuse, sexual abuse or neglect between both groups (Table 1).

## 3.3. Subject characteristics by age groups

As shown in table 2, out of 3,322 subjects, 797 (24%) were children or adolescents and 2,525 (76%) were adults. The mean age for patients in the children/adolescent group was 14.4 (SD=2.3) and 41.8 years (SD=17.2) for patients in the adult group.

Compared to adults, patients in the children/adolescent group had significantly higher rates of mood disorders (n=768, 96.4% vs. n=1634, 64.7%, p<0.0005, depressive disorder NOS (n=37, 4.6% vs. n=40, 1.6%, p<0.0005), mood disorder NOS (n=376, 47.2% vs. n=311, 12.3%, p<0.0005), PTSD (n=51, 6.4% vs. n=92, 3.6%, p=0.00083) and anxiety disorder

NOS (n=53, 6.7% vs. n=93, 3.7%, p<0.0005). Conversely, adults had significantly higher rates of SSD (n=891, 35.3% vs. n=29, 3.6%).

As shown in Table 2, patients in the children/adolescent group, compared to the adult group, had current higher rates of suicidal ideation (n=773, 97% vs. n=2304, 91%, p<0.0005), ambivalent suicidal intent (n=98, 12.3% vs. n=238, 9.4%) and definite suicidal intent (n=34, 4.3% vs. n=45, 1.8%, p<0.0005). Moreover, children and adolescents had higher rates of current suicidal attempts compared to adults (n=38, 16.6% [in 229 patients with data] vs. n=112, 6.7% [in 1683 patients with data], p<0.0005). Similarly, children and adolescents had higher rates of suicidal ideation in the 6 month period prior to the psychiatric evaluation (97.5% vs. 92.9%; p<0.0005). On the other hand, there were no significant differences between groups in suicidal intent, or plan in the same time period. Moreover, there was no significant different in the number of prior lifetime suicidal attempts between age groups.

Conversely, adults reported higher rates of despair (7.9% vs. 4.3%, p<0.0005), health problems (8.5% vs. 1.0%, p<0.0005), and financial or relationship losses (17.3% vs. 5.3%, p<0.0005). Adults reported significantly higher rates of physical abuse (24.2% vs. 15.3%; p=0.0053), however, there were no statistically significant differences in rates of sexual abuse or neglect between groups.

### 3.4. Multivariate regression analysis

As shown in Table 3, multivariate regression analyses revealed that prior suicidal attempts (OR: 2.92, 95% CI: 1.93-4.41, p<0.0005) and current financial or relationship losses (OR: 2.19, 95% CI: 1.43-3.37, p<0.0005) were significantly associated with a current suicidal attempt. On the other hand, and as observed in the bivariate analysis, a schizophrenia spectrum diagnosis was associated with a 71% lower odds of presenting with a suicidal attempt compared to affective disorder diagnosis (OR: 0.29; 95% CI: 0.13-0.63, p=0.0021). Lastly, being an adult was associated with 66% lower odds of having a suicidal attempt compared to children and adolescents (OR: 0.35, 95%CI: 0.21-0.57, p<0.0005). As observed in figure 1, the area under the curve (AUC) in a receiver operating characteristics (ROC) curve was 0.72.

### 3.5. Multivariate regression analysis by diagnostic and age groups

In the affective disorders group, a history of a suicide attempt (OR: 2.64; 95% CI: 1.71-4.053, p<0.0005), being children or adolescent (OR: 0.34, 95%CI: 0.21-0.56, p<0.0005) and having current financial or relationship losses (OR: 2.21, 95%CI: 1-42-3.42, p<0.0005) were significant predictors of a suicide attempt. In the SSD group only a past history of a suicide attempt was a significant predictor (OR:15.21, 95%CI: 1.79-128.82, p=0.013).

In the analysis by age groups, a past history of a suicidal attempt (OR: 2.83, 95% CI: 1.10-7.24, p=0.030) and having current financial or relationship losses (OR: 2.92, 95%CI: 1.14-7.46, p=0.025) were significant predictors in the children and adolescents group, while having financial or relationship losses (OR: 2.065, 95%CI: 1-27-3.35, p=0.0033), a history of a suicidal attempt (OR:2.96, 95%CI: 1.86-4.71, p<0.0005) and a schizophrenia spectrum

diagnosis (OR: 0.31, 95%CI: 0.14-0.69, p=0.0041) were the significant predictors in the adult group (Table 4).

## 4. Discussion

In our analysis of the electronic medical records of 3,322 patients presenting for evaluation in an emergency department or the HEC with either primary affective disorders or schizophrenia spectrum disorders, we found that having a history of a previous suicidal attempt, current financial or relationship losses, a primary affective disorder diagnosis, or being a child or adolescent was associated with higher rates of current suicide attempts. Similar findings have been described by other authors. For example, Haukka and colleagues (Haukka et al., 2008) found that a history of a suicide attempt was the strongest single predictor of a subsequent suicide attempt in 18,199 Finnish patients who were hospitalized due to a suicidal attempt. In an incidence cohort, Robinson and colleagues (Robinson et al., 2010) found that a history of self-harm was a key predictor for suicide in 661 patients with first episode psychosis. Moreover, this finding has been corroborated by large systematic reviews by Beghi and colleagues (Beghi et al., 2013), who included 76 studies in his analysis, and Larkin and colleagues (Larkin et al., 2014), who included 129 studies.

Our finding that affective disorders are more significantly associated with suicide attempts than schizophrenia spectrum disorders is consistent with prior findings from Haukka et al (Haukka et al., 2008), who found that 28% of the patients who were hospitalized due to a suicide attempt had an affective disorder diagnosis compared to the 19% of patients who had schizophrenia spectrum disorder diagnosis; and Weber (Weber et al., 2013) who used data from an United States national representative survey and found that the major contributor to self-injury was an affective disorder diagnosis.

Also, our results showing that financial or relationship losses increase the risk of suicide attempts also confirms some of the findings of Chang and colleagues (Chang et al., 2013), who found that after the 2008 economic crisis, the rates of suicide increased in some European and American countries. Relatedly, Classen and colleagues (Classen and Dunn, 2012), who studied monthly suicide rates and unemployment duration for 50 states between 1996 and 2005, found that the length of unemployment was associated with suicidality. Moreover, Turvey et al (Turvey et al., 2002) studied 1,617 subjects living in Iowa and found that financial losses were associated with higher rates of suicidal ideation. In regards to relationship losses, Roskar et al (Roskar et al., 2011) examined 1,614 suicide victims and 4,617 controls and found that suicide was associated with a change in marital status, especially in the first year right after the status change.

The fact that we found that children and adolescents had higher rates of suicide attempts in our study compared to adults is surprising given that rates of completed suicide usually increase with age, as demonstrated by Beghi and colleagues (Beghi et al., 2013). Similarly, Spicer and colleagues (Spicer and Miller, 2000) analyzed data from 10,892 suicides and 57,439 attempted suicides and found that rates of complete suicide were higher among the elderly. However, he also found that suicide attempts were most common in teenagers, young adults, women and black and whites aged 25-44 years old. Similar findings were

reported by Hauser and colleagues (Hauser et al., 2013) in a systematic review of children and adolescent patients with bipolar disorder, in which being adolescent was associated with high rates of suicide attempts. Therefore, it seems that even though the rates of completed suicide are higher in adults and elderly patients, the rate of suicide attempts is higher in adolescents. We could speculate that this result could be partially driven by self-injurious acts in the context of borderline personality disorder, which usually begins in adolescence, occurs more frequently in women and is accompanied by repetitive self injurious acts. Unfortunately, data regarding the diagnosis of personality disorders was not readily available for the purposes of our study. Lastly, despite the fact that sex (male/female) did not independently predict suicide attempts, this variable was kept in the regression model to account for any possible effects of sex on the outcome.

Our regression analysis by diagnostic and age groups did not yield any new predictors of suicide attempts. Moreover, most significant predictors in the pooled model, which were discussed in the paragraphs above, remained significant across diagnostic and age groups, except for the SSD group, in which the only significant predictor was a prior suicide attempt. However, the odds ratio for this factor was largely superior (OR:15.2) compared to the odds ratio observed in other diagnostic and age groups. The reason behind this effect is unclear but we might speculate that patients with affective disorders are more vulnerable to age effects or environmental influences such as relationship or financial losses,

Our study had limitations. First of all, this study was a chart review of data that was collected as part of a clinical encounter, and not as part of a research study; therefore, there was no systematic quality check at the time of entering the data in the EHR. Additionally, not all fields in the electronic database were required for the assessment to be finalized, which led to a substantial amount of missing information in variables that could have been very relevant in our analysis, i.e., a history of physical or sexual abuse, degree of lethality of suicidal attempts, etc. Also, due to the fear of being hospitalized, patients might have avoided disclosing some information, such as having a concrete suicidal plan, which could potentially explain the low suicidal plan rates that we found in our study, despite the very high rates of suicidal ideation. Unfortunately, in our study we did not capture patients who had the most severe suicide attempts, since those patients were likely admitted to the intensive care unit or the medical floor. Therefore, our findings apply to patients who had mild to moderate suicidal attempts that did not require immediate admission to the medical floor. Strikingly, our data show that the vast majority of patients who were evaluated in our ED or HEC had very high rates of suicidal ideation (>90%). Even though, this is certainly a manifestation of the acuity of their symptoms, it is unknown how other factors, such as the need to document illness severity to receive payment from insurance companies, could have influenced the documentation of suicidal thoughts or behavior.

Substance abuse is a well known predictor of suicidal behavior (Pompili et al., 2012). Unfortunately, data in regard to substance abuse and dependence was not systematically collected in the electronic health records, which prevented us from including this variable in our analyses.

Additionally, our study did not intend to look at predictors of completed suicide. Even though, the predictors of completed suicide and attempted suicide might overlap, it's not necessarily true for all variables, as suggested by other studies that found that rates of completed suicide are higher in older people, but rates of suicidal attempts are higher in adolescents and young adults. To conclude, our results confirm and expand the current knowledge base in regards to the most significant factors associated with suicide attempts. Our results are particularly applicable to patients being evaluated at the emergency department. The presence of these factors, in patients with acute psychiatric symptoms, should prompt clinicians to consider psychiatric hospitalization. For those patients not being hospitalized, a close psychiatric follow up and the involvement of family, social workers, and psychologists is then critical to decrease the risk of suicidal behavior.

Future studies investigating suicidal behavior should focus not only on describing new predictors of suicidal behavior, but also in developing interventions to try to reduce the incidence of suicidal attempts in high risk patients. Even though the use of dialectical behavioral therapy has become a standard treatment of borderline personality disordered patients with parasuicidal behavior (Shearin and Linehan, 1994), the development and implementation of similar strategies to address a wider patient population without personality disorders would be a big step forward in the prevention of suicidal behavior.

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## Highlights

- A history of prior suicidal attempts was associated with current suicidal behavior.

- Current financial or relationship losses were linked to current suicidal behavior

- An affective disorders diagnosis was associated with current suicidal behavior

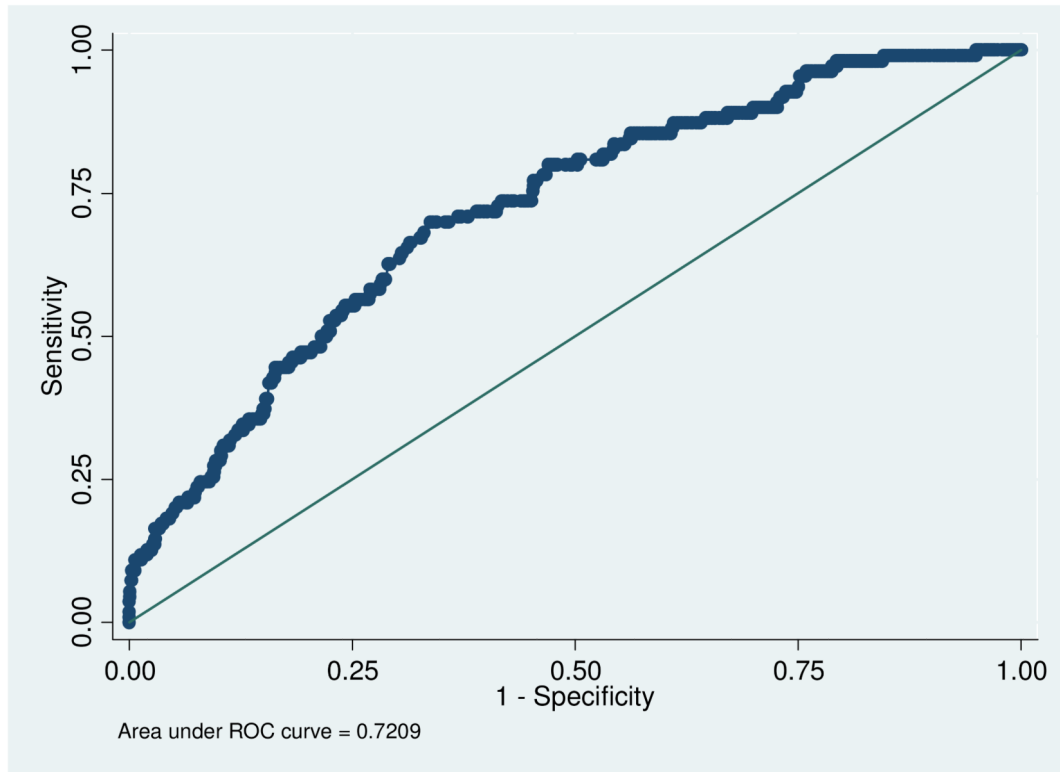- Children and adolescents had higher odds of current suicidal behavior than adults

**Figure 1. Receiver Operating Characteristics curve: predictors of suicidal attempts in Patients with Affective Disorders and Schizophrenia Spectrum Disorders**

**Table 1**

**Subject characteristics by diagnostic groups**

| Variable | All sample (N=3,322) | Affective Disorders (N=2,402) | Schizophrenia Spectrum Disorders (N=920) | p value |
|---|---|---|---|---|
| **Age, mean yrs (SD)** | **35.2(19.1)** | **32.9(19.2)** | **41.5(15.0)** | **<0.0005** |
| **Y/N** | **n(%)** | **n(%)** | **n(%)** | **p-value^** |
| Male | 1,551 (46.7) | 997 (41.5) | 554 (60.2) | <0.0005 |
| *Co-morbid Anxiety Disorder Diagnoses* | | | | |
| PTSD | 143 (4.3) | 129 (5.4) | 14 (1.5) | <0.0005 |
| Panic Disorder | 75 (2.3) | 70 (2.9) | 5 (0.5) | <0.0005 |
| OCD | 98 (3.0) | 79 (3.3) | 19 (2.1) | 0.062 |
| GAD | 82 (2.5) | 77 (3.2) | 5 (1.0) | <0.0005 |
| Anxiety NOS | 146 (4.4) | 138 (5.8) | 8 (1.0) | <0.0005 |
| *Current Suicidality* | | | | |
| Ideation | 3,077 (92.6) | 2,201 (91.6) | 876 (95.2) | <0.0005 |
| Definitive Intent | 79 (2.4) | 69 (2.9) | 10 (1.1) | <0.0005 |
| Ambivalent Intent | 336 (10.1) | 287 (12.0) | 49 (5.3) | |
| No Intent | 2907 (87.5) | 2046(85.1) | 861 (93.6) | |
| Plan | 434 (13.1) | 373 (15.5) | 61 (6.6) | <0.0005 |
| Attempt* | 150 (7.9) [1912] | 136 (9.9)[1372] | 14 (2.6)[540] | <0.0005 |
| *Past Suicidality (6 months)* | | | | |
| Past Ideation | 3,123 (94.0) | 2,241 (93.3) | 882 (95.9) | 0.0052 |
| Definitive Intent vs. | 93 (2.8) | 82 (3.4) | 11 (1.2) | <0.0005 |
| Ambivalent Intent vs. | 250 (7.5) | 225 (9.4) | 25 (2.7) | |
| No Intent | 2979(89.7) | 2095(87.2) | 884(96.1) | |
| Past plan | 346 (10.4) | 306 (12.7) | 40 (4.3) | <0.0005 |
| Past Attempt (lifetime)* | 386 (28.6) [1351] | 280 (27.5)[1017] | 106 (31.7) [334] | 0.14 |
| *Current Stressors* | | | | |
| Despair | 234 (7.0) | 208 (8.7) | 26 (2.8) | <0.0005 |
| Health Issue | 223 (6.7) | 183 (7.6) | 40 (4.4) | 0.00075 |
| Losses (financial or relationships) | 478 (14.4) | 428 (17.8) | 50 (5.4) | <0.0005 |
| Anniversary of stressor or loss | 47 (1.4) | 40 (1.7) | 7 (0.8) | 0.048 |
| Recent Humiliation/shame | 188 (5.7) | 172 (7.1) | 16 (1.7) | <0.0005 |
| *Other factors* | | | | |
| Family history suicide | 126 (3.8) | 106 (4.4) | 20 (2.2) | 0.0025 |
| Physical abuse* | 215 (22.2) [967] | 173 (23.1) | 42 (19.4) | 0.25 |

| Variable | All sample (N=3,322) | Affective Disorders (N=2,402) | Schizophrenia Spectrum Disorders (N=920) | p value |
|---|---|---|---|---|
| **Age, mean yrs (SD)** | **35.2(19.1)** | **32.9(19.2)** | **41.5(15.0)** | **<0.0005** |
| **Y/N** | **n(%)** | **n(%)** | **n(%)** | **p-value^** |
| Sexual abuse* | 232 (24.2) [958] | 190 (25.6) | 42 (19.6) | 0.069 |
| Neglect* | 41 ( 5.0) [814] | 32 (5.1) | 9 (4.8) | 0.84 |

*Total sample size for this variable was smaller due to missing data. Number of data points available is described within square brackets in case of variables with missing data.

^p-value derived from a chi-square test

**Table 2**

**Subject characteristics by age groups**

| Variable | All sample (N=3,322) | Children/Adolescents (N=797) | Adults/Elderly (N=2525) | p-value |
|---|---|---|---|---|
| age, mean yrs (SD) | 35.2 (19.1) | 14.4 (2.3) | 41.8 (17.2) | 0 |
| (Y/N) | N (%) | N(%) | N(%) | p-value^ |
| Male | 1,551(46.7) | 310(38.9) | 1,241(49,2) | <0.0005 |
| *Comorbid Anxiety Disorder Diagnoses* | | | | |
| PTSD | 143 (4.3) | 51 (6.4) | 92 (3.6) | 0.00083 |
| Panic Disorder | 75 (2.3) | 12 (1.6) | 63 (2.5) | 0.10 |
| OCD | 98 (3.0) | 27 (3.4) | 71 (2.8) | 040 |
| GAD | 82 (2.5) | 15 (1.9) | 67 (2.7) | 0.22 |
| Anxiety NOS | 146 (4.4) | 53 (6.7) | 93 (3.7) | <0.0005 |
| *Current suicidality* | | | | |
| Ideation | 3,077 (92.6) | 773 (97.0) | 2,304 (91.3) | <0.0005 |
| Definitive intent vs. | 79 (2.4) | 34 (4.3) | 45 (1.8) | <0.0005 |
| Ambivalent intent vs. | 336 (10.11) | 98 (12.3) | 238 (9.4) | |
| No Intent | 2907(87.5) | 665(83.4) | 2242(88.8) | |
| Plan | 434 (13.1) | 116 (14.6) | 318 (12.6) | 0.15 |
| Attempt* | 150 (7.9) [1,912] | 38 (16.6)[229] | 112 (6.7)[1683] | <0.0005 |
| *Past suicidality* | | | | |
| Past suicidal ideation | 3,123 (94.0) | 777 (97.5) | 2,346 (92.9) | <0.0005 |
| Past suicidal intent | 93 (2.8) | 23 (2.9) | 70 (2.8) | 0.87 |
| Past suicidal plan | 346 (10.4) | 85 (10.6) | 261 (10.3) | 0.79 |
| Past attempt (lifetime)* | 386 (28.6)[1351] | 40 (24.7)[162] | 346 (29.1)[1189] | 0.24 |
| *Current Stressors* | | | | |
| Despair | 234 (7.0) | 34 (4.3) | 200 (7.9) | <0.0005 |
| Health Issue | 223 (6.7) | 8 (1.0) | 215 (8.5) | <0.0005 |
| Losses (financial or relationships) | 478 (14.4) | 42 (5.3) | 436 (17.3) | <0.0005 |
| Anniversary of stressor or loss | 47 (1.4) | 5 (0.6) | 42 (1.7) | 0.031 |
| Recent Humiliation/shame | 188 (5.7) | 37 (4.6) | 151 (6.0) | 0.15 |
| *Other factors* | | | | |
| Family history suicide | 126 (3.8) | 22 (2.8) | 104 (4.1) | 0.080 |
| Physical abuse* | 215 (22.2) [967] | 33 (15.3) | 182 (24.2) | 0.0053 |
| Sexual abuse* | 232 (24.2) [958] | 46 (21.6) | 186 (24.9) | 0.31 |
| Neglect* | 41 (5.0) [814] | 11 (6.0) | 30 (4.76) | 0.51 |

*
Total sample size for this variable was smaller due to missing data. Number of data points available is described within square brackets in case of variables with missing data.

^
p-value derived from a chi-square test

**Table 3**

**Multivariate Analysis of Predictors of Suicidal Attempts**

| | OR | 95% CI | | p-value |
|---|---|---|---|---|
| Losses (financial or relationship) | 2.19 | 1.43 | 3.37 | <0.0005 |
| Past suicidal attempt | 2.92 | 1.93 | 4.41 | <0.0005 |
| Children/adolescents vs. Adults | 0.35 | 0.21 | 0.57 | <0.0005 |
| Mood D/O vs. SSD | 0.29 | 0.13 | 0.63 | 0.0021 |
| Sex | 1.22 | 0.79 | 1.87 | 0.35 |

**Table 4**

**Multivariate Analysis by Diagnostic and Age Groups**

| Affective disorders | OR | 95% CI | | p-value |
|---|---|---|---|---|
| Losses (financial or relationship) | 2.21 | 1.42 | 3.42 | <0.0005 |
| Past suicidal attempt | 2.64 | 1.71 | 4.053 | <0.0005 |
| Children/adolescents vs. Adults | 0.34 | 0.21 | 0.56 | <0.0005 |
| Sex | 1.17 | 0.75 | 1.81 | 0.49 |
| **Schizophrenia** | **OR** | **95% CI** | | **p-value** |
| Past suicidal attempt | 15.21 | 1.79 | 128.82 | 0.013 |
| Sex | 2.16 | 0.46 | 10.15 | 0.35 |
| **Children/adole** | **OR** | **95% CI** | | **p-value** |
| Losses (financial or relationship) | 2.92 | 1.14 | 7.46 | 0.025 |
| Past suicidal attempt | 2.83 | 1.10 | 7.24 | 0.030 |
| Sex | 1.14 | 0.43 | 3.011 | 0.79 |
| **Adults** | **OR** | **95% CI** | | **p-value** |
| Losses (financial or relationship) | 2.065 | 1.27 | 3.35 | 0.0033 |
| Past suicidal attempt | 2.96 | 1.86 | 4.71 | <0.0005 |
| Mood D/O vs. SSD | 0.31 | 0.14 | 0.69 | 0.0041 |
| Sex | 1.27 | 0.79 | 2.038 | 0.33 |