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A comparison of correlates of suicidal ideation prior to initial hospitalization for first-episode psychosis with prior research on correlates of suicide attempts prior to initial treatment-seeking

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Abstract

Aim—Individuals with first-episode psychosis, like those with chronic psychotic disorders, are at elevated risk for suicidal ideation and suicide attempts. However, relatively little is known about suicidality among first-episode patients prior to their initial presentation for treatment. This analysis was designed as a U.S.A.-based examination of recent findings on prior suicide attempts from Dublin, Ireland, here focusing on prevalence and correlates of suicidal ideation two weeks prior to initial treatment-seeking.

Methods—Participants included 109 first-episode inpatients with primary psychotic disorders in public-sector settings that serve an urban, low-income, socially disadvantaged, predominantly African American population. Eligible patients had received <3 months of prior antipsychotic treatment and had not been hospitalized >3 months prior to the index admission, though most were completely treatment naïve. Assessments included the *Positive and Negative Syndrome Scale*, *Calgary Depression Scale for Schizophrenia*, *Birchwood Insight Scale*, and a rigorous method for determining age at onset of first psychotic symptoms and duration of untreated psychosis.

Results—Disconcertingly, nearly one-quarter of patients (23%) endorsed a history of suicidal ideation in the two weeks prior to first admission. In the model designed to replicate the prior study in Ireland, Calgary Depression score (calculated omitting hopelessness and suicidal ideation as these were separate variables in the analysis) was a predictor of suicidal ideation ($P < 0.01$). In separate bivariate analyses analogous to the original study, two domains of insight were associated with suicidal ideation.

Conclusions—Findings suggest that depression, insight, and suicidality should be carefully monitored among first-episode patients initiating treatment and during the early course of illness. As insight improves, coping strategies should be enhanced with a goal of minimizing depression and preventing suicidality.

Keywords

depression; first-episode psychosis; insight; suicidality

INTRODUCTION

Individuals with psychotic disorders are at elevated risk for suicidal behavior, including completed suicide.^{1–5} In fact, suicide is the leading cause of premature mortality in this patient population.⁶ A person with a psychotic illness is at about 16 times the risk of suicide as compared with someone in the general population.⁷ Approximately 20–40% of individuals with psychosis attempt suicide in some manner in their lifetime,^{8,9} and about 10–15% complete suicide.^{4,8,10,11} Several risk factors have been associated with suicidal behavior in people with psychotic disorders, including being within the first few years since illness onset, having a high intelligence quotient, and good premorbid adjustment.⁶

Many of the studies undertaken thus far have focused on individuals with chronic psychotic disorders; much remains unexamined with regard to those with first-episode psychosis.^{3,12,13} Extant studies suggest that rates of deliberate self-harm, suicide attempt, and completed suicide are comparably high at the time of the first episode and during the first few years of the early course.^{14–17} A recent longitudinal study from the Early Psychosis Prevention and Intervention Centre (EPPIC) in Melbourne, Victoria, Australia found that depression, hopelessness, poor premorbid social adjustment or work history, problem alcohol use, previous self-harm, and suicidal tendencies were predictive of one or more suicide attempts during a mean length of follow-up of 7.4 years.¹⁸ Of the factors associated with suicidality, awareness of illness or insight has been examined,^{19–23} in addition to other predictors such as depression, hopelessness, and importantly, prior suicidality.^{15–18}

The present study was designed specifically as a U.S.A.-based examination of findings from a recent study by Foley and colleagues²³ in Dublin, Ireland, which examined rates of suicidal ideation and suicide attempts in a cohort of 107 patients with first-episode psychosis and explored demographic and clinical correlates of previous suicide attempt prior to initial presentation. Such re-examinations and replications are crucially important for clinicians and policy makers because of the severity and prevalence of suicidal ideation, suicide attempts, and completed suicide within this population. Therefore, an assessment of this issue across diverse samples should be a priority for the field.

This analysis differed from the prior study in that the present one examined correlates of suicidal ideation rather than suicide attempts. Research has clearly established that the most important factor in predicting suicidal behavior is a previous history of suicidality.^{24–27} Thus, because suicidal ideation has been clearly documented as perhaps the most important risk factor for future suicidal behavior, including suicide attempts and completed suicide (although some individuals who commit suicide may not have had earlier suicidal ideation), suicidal ideation is also a crucial aspect of the suicidality spectrum deserving of research. Although the outcome variables in the two studies differed (the present study focusing on suicidal ideation in the two weeks prior to the initial hospitalization), research on all aspects of suicidality among first-episode patients is of great importance. The present sample was obtained from three inpatient psychiatric units that serve an urban, predominantly African American, socially disadvantaged population in Atlanta, Georgia, U.S.A. (*Atlanta Cohort on the Early course of Schizophrenia*, ACES), whereas the sample of Foley and colleagues²³ was collected from an early intervention service (inpatient and outpatient) in the communities South Dublin and North Wicklow, Ireland (*Dublin East Treatment and Early Care Team*, DETECT).

METHOD

Participants were recruited from three inpatient psychiatric units providing services for patients with no insurance or with only public-sector insurance (e.g., Medicaid). By

comparison, participants in the Foley et al.²³ study were recruited from both inpatient and outpatient settings in a defined catchment area in Dublin. A total of 281 patients were screened for eligibility between July 2004 and June 2008. As reported previously,^{28,29} 89 were ineligible based on the following exclusion criteria: being outside of the age-range of 18–40 years, not receiving a clinical diagnosis of primary psychotic disorder, having known or suspected mental retardation or a *Mini-Mental State Examination*^{30,31} score of <24, having had >3 months of prior antipsychotic treatment, or having been hospitalized >3 months prior to the index admission. Among the 192 eligible patients, 83 did not participate—52 (62.7%) declined participation and 31 (37.3%) were discharged before an assessment could be conducted. These 83 eligible but not enrolled patients did not differ from the 109 participating patients in terms of age, gender, or race/ethnicity. Study enrollment was conducted as follows: (1) clinicians at the three inpatient psychiatric units contacted study staff about consecutively admitted first-episode patients, (2) study staff reviewed the medical record and briefly met with the patient to determine eligibility, and (3) eligible patients were then invited to participate and a thorough review of the informed consent document was provided. As such, the sample represents a non-random, convenience sample of consecutively hospitalized first-episode psychosis patients in a defined catchment area.

Baseline characteristics of the 109 first-episode patients are shown in Table 1, which is directly comparable to the Table 1 presented by Foley and colleagues.²³ Although not shown, it is also noteworthy that the mean age at hospitalization was 23.1 ± 4.7 years (range: 18–39) and 98 of the participants (89.9%) were African American. Descriptions of other social variables are given elsewhere, including in-depth information on high rates of high school drop-out (44.0%),³³ prior incarceration (57.8%),³⁴ and unemployment prior to hospitalization (38.5%).³⁵ The majority of participants (82, 75.2%) were admitted to an inpatient unit with an average length of stay of about 10 days, with smaller numbers admitted to a crisis stabilization unit in the same hospital with an average length of stay of about 6 days (17, 15.6%), and a similar crisis stabilization unit in a neighboring urban county (10, 9.2%).

Detailed clinical research assessments, typically lasting 3–4 hours, were conducted once patients were adequately acclimated to the inpatient unit and psychotic symptoms were stabilized enough to allow for informed consent. Assessment of most participants (87, 79.8%) was conducted between hospital day 3 and 10 (mean: 9.1 ± 6.7 , mode: 7). The study was approved by all relevant institutional review boards, and all participants gave written informed consent prior to participation. Diagnoses of psychotic disorders and substance use disorders were made using the *Structured Clinical Interview for DSM-IV Axis I Disorders* (SCID),³² based on all available information gathered through a semi-structured interview, review of the patient's hospital chart, discussions with treating clinicians, and collateral information from family members when available.

As in the Irish sample, depressive symptoms were measured with the *Calgary Depression Scale for Schizophrenia* (CDSS),³⁶ which is a reliable, sensitive, and valid researcher-administered questionnaire designed for use specifically in patients with schizophrenia. The instrument is composed of nine items defined according to operational criteria and rated on a 4-point scale ranging from 0 (absent) to 3 (severe). The internal consistency reliability value for the 9-item CDSS in the present sample was $\alpha = 0.80$. Hopelessness, one of the independent variables in the logistic regression, was rated with item #2 of the CDSS, which queries about hopelessness in the past two weeks using the following probe questions: “How do you see the future for yourself? Can you see any future, or has life seemed quite hopeless? Have you given up or does there still seem to be some reason for trying?” For this analysis, the sample was dichotomized as having a score of 0 (59.6%) versus having hopelessness, represented as a score of 1–3 (40.4%). The hopelessness variable was

dichotomized because of insufficient variability in the ordinal-level variable (33.7% were rated as having mild hopelessness, 4.8% with moderate hopelessness, and 1.9% with severe hopelessness). Suicidal ideation, the dependent variable in the present analysis, was rated with item #8 of the CDSS, which queries about suicidal ideation in the past two weeks using the following probe questions: “*Have you felt that life wasn’t worth living? Did you ever feel like ending it all? What did you think you might do? Did you actually try?*” For this analysis, the sample was dichotomized as having a score of 0 (77.1%) versus having suicidal ideation, indicated as a score of 1–3 (22.9%). Dichotomization allowed for a binary outcome variable to be used in the logistic regression, much in the same way that Foley et al.²³ had a binary variable pertaining to prior suicide attempts. Given that these two items were examined separately (as an independent and dependent variable, respectively), a Calgary Depression score was computed omitting those two items.

Insight was measured using the *Birchwood Insight Scale* (BIS),³⁷ a widely used, 8-item, self-report instrument. Each item is a statement to which the participant responds “agree,” “disagree,” or “unsure.” Items are summed using established conventions to determine a total score,³⁷ with a higher score indicating greater insight. Satisfactory internal consistency ($\alpha = 0.75$) and test-retest reliability ($r = 0.90$) have been reported, and construct and concurrent validity have been demonstrated.³⁷ The internal consistency for the BIS in the present sample was $\alpha = 0.81$. The BIS assesses three domains of insight: *recognition of mental illness*, *ability to relabel psychotic symptoms*, and *recognition of need for treatment*. The first represents the recognition that the person is experiencing a mental illness, more than just acknowledging specific symptomatology. Relabeling of symptoms refers to the attribution that the symptoms associated with psychosis may be attributed to a mental illness rather than external factors (i.e., external voices or messages from God). The third domain of insight, recognition of need for treatment, was born out of David’s³⁸ identification that an individual may accept treatment without acknowledging illness and vice versa.³⁷

Symptoms were assessed with the *Positive and Negative Syndrome Scale* (PANSS),³⁹ a 30-item, 7-point rating scale, with items grouped into three rationally derived categories: positive symptoms (7 items); negative symptoms (7 items); and general psychopathology symptoms. The PANSS was completed by clinically trained research staff using data gathered from a chart review and an in-depth, semi-structured interview focused on the patient’s symptoms over the past 1-month period. Studies of the PANSS have provided evidence of criterion-related validity with antecedent and concurrent measures, predictive validity, drug sensitivity, and utility for both typological and dimensional assessment.³⁹ To assess inter-rater reliability of the PANSS positive and negative subscale scores, intraclass correlation (ICC) coefficients were calculated using a two-way mixed (judges fixed) effects analysis of variance model in which three assessors were the fixed effect while twelve target ratings were the random effect. ICC coefficients were 0.84 and 0.69 for the positive and negative subscales, respectively.

DUP was defined as the number of weeks from onset of positive psychotic symptoms to first hospital admission,⁴⁰ and as described previously,²⁸ was measured in a systematic manner using data from both patients and informants/family members when available from the *Symptom Onset in Schizophrenia* (SOS) inventory,⁴¹ as well as select items from the semi-structured *Course of Onset and Relapse Schedule/Topography of Psychotic Episode* (CORS/TOPE) interview.⁴² Date of onset of positive symptoms (and thus age at first psychotic symptom) was operationalized as the date when hallucinations or delusions met the threshold for a PANSS³⁹ score of ≥ 3 . Systematic methods were used to resolve ambiguities in obtaining exact dates for onset of symptoms. Cross-referencing with milestones and memorable events was used to enhance accuracy of dating. A consensus-based best estimate of DUP was derived based on all available information.

In order to follow the data analysis of Foley et al.²³ as closely as possible, we used a logistic regression model to examine the relationship between suicidal ideation and: age at first psychotic symptom, total BIS score, hopelessness score (item #2 of the CDSS), PANSS positive symptoms score, PANSS negative symptoms score, history of alcohol abuse/dependence, history of cannabis abuse/dependence, gender, the log-transformed DUP, and Calgary Depression score. These are the same variables included in the model of Foley and colleagues²³ except history of cannabis abuse/dependence was used instead of history of illicit substance abuse/dependence, and diagnoses were not included because the present sample did not include patients with affective psychoses. Again, to replicate the methods of Foley and colleagues²³ as closely as possible, after running the logistic regression model, the association between suicidal ideation and insight was further analyzed in terms of each of the three domains assessed by the BIS (*recognition of mental illness*, *ability to relabel psychotic symptoms*, and *recognition of need for treatment*). Analyses were conducted with the Statistical Package for Social Sciences Version 17.0.

RESULTS

Clinical characteristics, in terms of age at first psychotic symptom, mean DUP, and mean scores on the BIS, PANSS positive and negative symptom subscales, and CDSS, are shown in Table 1. Of 105 participants with available data from the CDSS, 24 (22.9%) endorsed suicidal ideation during the past two weeks.

Results of the binary logistic regression analysis are given in Table 2, which again can be easily compared to Table 2 of Foley and colleagues,²³ though suicidal ideation, rather than past suicide attempt, was the outcome variable in the present analysis. Age, insight, PANSS positive and negative symptom scores, as well as several other variables were examined. In the model, the only independently significant predictor variable was the Calgary Depression score ($\beta = 0.31$, Wald $\chi^2 = 9.67$, $P < 0.01$); the total Birchwood Insight score did not reach statistical significance ($\beta = 0.18$, Wald $\chi^2 = 3.62$, $P = 0.06$).

As examined by Foley and colleagues,²³ when each of the three domains of insight were compared between those with and without suicidal ideation, mean rank scores of the *recognition of mental illness* and *ability to relabel psychotic symptoms* domains were significantly higher for those with suicidal ideation than those without (Mann-Whitney $U = 631.5$, $P < 0.01$; and $U = 715.5$, $P = 0.04$, respectively). The *recognition of need for treatment* domain did not reach statistical significance (Mann-Whitney U , 735.5, $P = 0.08$).

DISCUSSION

Given that this analysis attempted to methodologically replicate the analysis of Foley and colleagues²³ to the largest extent possible, the studies' similarities and differences should first be pointed out when considering the results. In terms of characteristics of the two samples, a number of similarities were observed; there was a majority of male patients in both samples (63% in Dublin and 76% in Atlanta), and most were single and never married (87% in Dublin and 92% in Atlanta). Alcohol abuse or dependence was prevalent in both samples (34% in Dublin and 28% in Atlanta), and 37% of participants in Dublin had drug abuse or dependence, compared to 58% in Atlanta with cannabis abuse or dependence. Whereas the sample of Foley and colleagues²³ was 67% inpatient and 82% voluntarily admitted, all participants in the present study were hospitalized, and few (17%) were voluntarily admitted. The Dublin sample included affective psychoses (25%), whereas the Atlanta sample focused entirely on primary psychotic disorders; this difference likely accounted for differences such as the earlier mean age at first psychotic symptom in the

present sample (21.8 years compared to 30 years) and longer median DUP (22.3 weeks compared to approximately 13.5 weeks).

In general, the variables used were remarkably similar. Both studies included the same demographic features in the analysis, both used the SCID to confirm diagnoses, and both relied on the BIS and CDSS to quantify insight and depressive symptoms, respectively. Alcohol abuse or dependence was rated in both studies, though whereas Foley and colleagues²³ also examined drug abuse or dependence generally, the present study limited this category to cannabis abuse or dependence in particular, which represents by far the most commonly abused substance at this site.^{43,44} Positive and negative symptoms were measured in both studies, though the present study used the PANSS rather than the *Scale for the Assessment of Positive Symptoms* and *Scale for the Assessment of Negative Symptoms*. DUP was carefully assessed by both research teams, though the operationalization and measurement methods used differed somewhat. Most importantly, whereas the dependent variable of the logistic regression conducted by Foley and colleagues²³ was history of suicide attempt, the present analyses focused on suicidal ideation within the last two weeks.

The prevalence of suicidal ideation in the past two weeks (23%) was somewhat lower than that noted by Foley and colleagues²³ for the past month (38%), which is likely attributable to the predominance of African American participants in the present study (who are known to have a lower rate of suicidality compared to Caucasian Americans) and the fact that this study did not include patients with affective psychoses. In comparing the findings of the logistic regression, whereas Foley and colleagues²³ found that the BIS score was the only independently significant predictor of a history of suicide attempt, the present analysis indicated that the CDSS score (excluding the hopelessness item and the suicidal ideation item) was the only independently significant predictor of suicidal ideation. Although the insight score did not reach statistical significance as a predictor ($p=0.06$), we explored the relationship further using a simplified bivariate analysis of the three insight subscales analogous to that conducted by Foley et al.,²³ which did reveal significant bivariate associations. Importantly, the present study confirmed the lack of association between suicidality prior to initial presentation and factors such as gender, age at first psychotic symptom, DUP, and negative symptoms. When the three domains of insight were examined, findings across the two sites were generally comparable. The *recognition of mental illness* domain was associated with suicide attempt status in the analysis by Foley and colleagues;²³ in the present analysis, both the *recognition of mental illness* and *ability to relabel psychotic symptoms* domains were associated with suicidal ideation.

Several limitations of the present study should be noted. First, the sample was relatively homogeneous, being focused on hospitalized first-episode psychosis patients in an urban, public-sector setting that primarily serves low-income, socially disadvantaged African Americans. However, this allowed us to replicate the analysis of Foley and colleagues²³ within a very different population. Second, because the present study did not specifically set out to address suicidality, the suicidal ideation item of the CDSS was used as a proxy for suicidality that ideally would have been measured more thoroughly. Yet, doing so allowed for a broader representation of suicidality, rather than focusing only on a history of suicide attempt. It should be noted, however, that the assessment of suicide risk and suicidality could have been much more thoroughly conducted given available instruments, some of which were developed specifically for use among individuals with psychotic disorders, as reviewed elsewhere.⁴⁵ Third, like the study by Foley and colleagues,²³ this analysis focused on suicidality prior to first presentation. Longitudinal information, exemplified by the recent report by Robinson and colleagues¹⁸ is also crucial. Fourth, although a number of salient factors were examined (e.g., depression, insight, DUP), other characteristics, including premorbid adjustment and prior suicidal or self-harming behavior, would be important to

evaluate in more complex models. Finally, although the 83 eligible but not enrolled patients did not differ from enrolled patients in terms of age, gender, or race/ethnicity, we cannot exclude the possibility that they differed in terms of other variables; therefore, a potential selection bias cannot be excluded.

An understanding of suicidality prior to presentation is critical given that past suicidality is perhaps the strongest predictor of future suicidality, thus serving as a key prognostic indicator in the early course of psychotic disorders. Previous literature has clearly established that people suffering from psychotic symptoms are at a greatly increased risk of suicidality.^{14–18} The findings herein are generally consistent with prior results,^{23,46,47} and highlight the importance of assessing and monitoring suicidal ideation and behaviors in patients with first-episode psychosis. It is recommended that mental health professionals engaged in treatment with individuals with psychotic symptoms, especially those recently identified as having a first episode of psychosis, monitor insight and depression because these clinical features relate to suicidal ideation.

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TABLE 1

Baseline characteristics of the 109 hospitalized first-episode patients

Gender, male	83 (76.1%)
Voluntary admission status	18 (16.5%)
Single/never married	100 (91.7%)
Alcohol abuse/dependence	30 (27.5%)
Cannabis abuse/dependence	63 (57.8%)
Mean age at first psychotic symptom	21.8 years (SD, 4.7 years)
Mean duration of untreated psychosis	67.5 weeks (SD, 126.1 weeks; median, 22.3 weeks)
Mean Birchwood Insight score	4.7 (SD, 1.5)
Mean PANSS positive symptoms score	24.2 (SD, 5.0)
Mean PANSS negative symptoms score	21.4 (SD, 6.7)
Mean Calgary Depression score	4.5 (SD, 4.0)

TABLE 2

Logistic regression, with suicidal ideation^a as the outcome variable

	β	Wald χ^2	<i>P</i>
Age at first psychotic symptom	<0.01	0.02	0.90
Insight score	0.18	3.62	0.06
Hopelessness ^b	-0.08	0.02	0.90
PANSS positive symptoms score	<-0.01	<0.01	0.98
PANSS negative symptoms score	0.04	0.63	0.43
Alcohol abuse/dependence	-1.12	2.18	0.14
Gender	0.30	0.20	0.66
Cannabis abuse/dependence	0.21	0.13	0.72
Log DUP	0.03	0.01	0.94
Calgary Depression score ^c	0.31	9.67	<0.01

^a Suicidal ideation was based on the presence of mild, moderate, or severe suicidal ideation as rated by item #8 of the CDSS.

^b Hopelessness was based on the presence of mild, moderate, or severe hopelessness as rated by item #2 of the CDSS.

^c The Calgary Depression score was calculated as the total score minus item #2 (hopelessness) and item #8 (suicidal ideation).