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Prevalence and clinical correlates of depression in the acute phase of first episode schizophrenia

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Abstract

Background: Reported rates of depression in schizophrenia vary considerably.

Objective: To measure the prevalence of depression in a first episode sample of people with schizophrenia.

Methods: All referrals with a first episode of schizophrenia diagnosed using SCID interviews were assessed pre-discharge and again six months later. We used the Calgary Depression Scale for Schizophrenia (CDSS) and Positive and Negative Syndrome Scale (PANSS) to assess the severity of symptoms.

Results: Pre-discharge, 10.4% of the sample met CDSS criteria for depression. According to the PANSS depression (PANSS –D) subscale, 3% of patients were depressed, with a mean score of 7.48 (SD = 2.97). Only 3% of patients pre-discharge were found to be depressed on both the CDSS and the PANSS-D. Six months later 6.5% were depressed according to the CDSS. However none reached depression criteria according to the PANSS-D. The CDSS correlated with PANSS-D both pre-discharge and at follow-up. Feelings of depression and self-deprecation were the most common symptoms at baseline and follow-up. The CDSS was unrelated to negative symptoms at both stages. A lifetime history of alcohol abuse increased the risk for depression.

Conclusion: Rates of depression in this sample were low. The CDSS appears to discriminate between depression and negative symptoms. Like the general population, alcohol misuse is a risk factor for depression in first episode schizophrenia.

Key words: First episode psychosis; Schizophrenia; Depression; Calgary depression scale.

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Introduction

Depression among people with schizophrenia is associated with poorer quality of life, readmission and increased mortality through suicide.[1] Estimates of the prevalence of depression in schizophrenia vary widely, from 7 to 75%.[2] One possible explanation for the wide variance in estimates may be the instrument used to measure depression. The Beck Depression Inventory (BDI), the Hamilton Rating Scale for Depression (HAM-D), and the depression subscale of the PANSS (PANSS-D)[1] have all been used but, they may have difficulty in distinguishing between depressive symptoms, negative symptoms and side-effects from medications.[3] The PANSS – D has been found to have a significant association with negative symptoms in a previous study of a stable group of schizophrenic patients.[1]

Another possible reason for the wide variance in prevalence estimates may be that studies have examined patients at different phases of illness. Yet, depression can occur in the prodromal phase, acute or the post-psychotic/stable phase and the rates, reasons and the nature of depression may vary across phases. One way to circumvent this methodological problem is to examine patients at the same phase of illness.

Addington and colleagues formulated the Calgary Depression Scale for Schizophrenia (CDSS) specifically to measure distinctive depressive symptoms in schizophrenia.[4] The scale was developed in three stages and was found to have construct validity, good inter-rater reliability and divergent validity from negative symptoms or side-effects of medication such as akathisia, hypokinesia and sedation.[4-8] It has been translated into many other languages including Danish, Greek and French.[9-11] However, despite the scale of the problem there are no published estimates of the prevalence of depression among people in Ireland with first episode schizophrenia.

We sought to determine the prevalence of depression in a first episode sample and its clinical correlates. Additionally, we examined the relationship between the CDSS and the PANSS. The scale has been found to have significant association with negative symptoms in a previous study of a stable group of schizophrenic patients while the CDSS had no such association.[1] However, in a study of acutely psychotic patients, the CDSS scores were correlated with the PANSS positive subscale scores (PANSS – P).[12] Our study aims to investigate the relationship between the CDSS and the PANSS in a group of first-episode schizophrenia patients to establish if these findings can be replicated.

Methods

Population

The original sample consisted of all 165 people presenting with first episode psychosis between 1995 and 1999 who resided within the geographically defined catchment area with a population of 165,000 at the time of the study. They presented either to the Cluain Mhuire Family Centre, which provides the public psychiatric service to the catchment area, or to St John of God Hospital, a private facility which provides care to persons from the catchment area and elsewhere.

First-episode psychosis was defined as first lifetime presentation to any psychiatric service with a psychotic episode, including mania, among all adolescents (12 years of age or over) and adults (no upper age limit). If neuroleptic medication had been prescribed before presentation, for example by a family practitioner, patients were incepted provided they had not been receiving medication for more than 30 days before referral to the service. Following approval by the Provincial Research Ethics Committee of the Hospitaller Order of St John of God all those approached gave verbal consent to their participation in the study.

Assessments

We assessed each person with a comprehensive range of standardised clinical measures pre-discharge and at six months follow-up and these are described in detail elsewhere.[13]

Briefly, all patients were assessed using structured clinical interviews for diagnoses, positive and negative symptoms and quality of life as well as neurological functioning. At presentation, depressive symptoms were assessed with the CDSS, which is a nine-item observer rating scale, originally formulated by factor analysis from the Present State Examination and the Hamilton Depression Rating Scale.[4] Each item on the scale has a possible score of 0-3 (absent, mild, moderate, severe), giving a possible range of 0-27.

The scale has been assessed for reliability and found to have a 0.895 intra-class correlation with 86% agreement on specific items after 5-10 practice interviews, and is useful both in clinical and research settings.[5] It has high discriminant ability and as mentioned earlier, has been found to have no significant association with the PANSS – negative subscale (PANSS – N) ($r = 0.228$, ns).[8] The CDSS assesses the previous two weeks unless otherwise stipulated.

A score of 6 or 7 or more has 77% or 82% specificity respectively for major depression, rising to 100% for a score of 13 or more. We, like previous studies used a score of greater than 6 on the CDSS as constituting depression.[6,7]

Table 1: Characteristics of those assessed and not assessed by the CDSS

Characteristic	CDSS performed	CDSS not performed
Gender	70.1% male	71.4% male
Mean/median age	25/23 yrs	25.15/23 yrs
Inpatient status	95.5%	87.6%
Voluntary admission	78.8%	79.3%
Previous admission	6.5%	2.9%
Family history of schizophrenia	10.7%	18.5%
Married once	3.0%	3.1%
Living alone	3.2%	12.9%
Higher professional	20.0%	31.8%
Lower professional	42.0%	18.2%
Other occupation	10.0%	28.8%
Skilled	10.0%	4.5%
Semi-skilled	2.0%	6.1%
Manual	14.0%	10.6%
Paranoid schizophrenia	43.1%	38.3%
Catatonic schizophrenia	.0%	3.3%
Disorganized schizophrenia	11.8%	6.7%
Undifferentiated schizophrenia	25.5%	31.7%
Residual schizophrenia	2.0%	3.3%
Schizophrenia subtype n/a	17.6%	16.7%
Lifetime history of alcohol abuse	19.4%	20.0%
Lifetime history of drug abuse/ dependence	30.6%	35.6%

We assessed positive, negative and depressive symptoms using the Positive and Negative Syndrome Scale (PANSS).[14] The PANSS has three subscales which assess positive, negative and depressive symptoms. Each subscale grades symptoms from absent (score = 1) to extreme (score = 7). The PANSS – D has a total score of 28, the PANSS-N a total of 49, as does the PANSS-P. Other studies have taken remission of symptoms as being classified by no score greater than 3 over the previous month on any PANSS item.[15,16] We propose using a cut-off score of >16 (corresponding to an average score of >4 on each item) to define depression as measured by the PANSS-D.

When the patients were clinically stable, a DSM-IV diagnosis was ascertained using the up-dated version of the Structured Clinical Interview for DSM-III-R – Patient Version.[17]

Inter-rater Reliabilities

We assessed the inter-rater reliability for the PANSS with the consecutive examination of 10 patients with chronic schizophrenia. Inter-class correlation co-efficients (ICCs)

were 0.73 for the PANSS-N and in excess of 0.84 for the remaining subscales and the total score.

Statistical analyses

We used Chi-square tests and independent Student's t-tests to look for any significant distinguishing factors between those who were and those who were not assessed with the CDSS. Pearson product moment correlations were used to evaluate the relationship between negative and depressive symptoms – as measured by both the CDSS and PANSS-D - in first episode schizophrenia, and again at six month follow-up. We employed logistic regression analysis to establish whether there was any association between depression on the CDSS and possible risk factors using the Statistical Package for the Social Sciences, Version 12 (SPSS Inc., Chicago, IL, USA).

Results

The original first episode group included 165 people who received a diagnosis of psychosis. Valid data for PANSS were available for 162 cases. The mean PANSS-P score was 17 (SD 7.3), mean PANSS-N score was 22 (SD 6.6) and PANSS-D score was 2.5 (SD 1.5). The CDSS was introduced in the third year of the study and 67 of the entire sample were assessed with the CDSS. There were no statistically significant differences between those who were, and those who were not assessed with the CDSS in terms of age, gender, admission status, lifetime history of drug/alcohol abuse and duration of prodrome at baseline *(see Table 1)*. The 67 patients assessed with the CDSS included 47 men and 20 women who had a mean age of 25 years (SD 9.78). They had a mean of 13 years in education (SD 2.6). Thirty-one of these patients were followed up with the CDSS at six months (46.3% follow-up).

Pre-discharge, the mean CDSS score of the sample was 2.16 (SD 3.07) and 10.4% met criteria for depression. The most prominent CDSS items at baseline were feelings of depression, followed by thoughts of self-depreciation. According to the PANSS-D, 3% of patients were depressed, with a mean score of 7.48 (SD 2.97). Only 3% of patients met criteria for depression on both the CDSS and the PANSS-D.

At six month follow-up, 6.5% of patients were depressed on the CDSS, and the mean overall score for the sample was 1.45 (SD = 2.82). Self-depreciation was the highest scoring item, with feelings of depression being the next most common symptom. Early morning wakening was a significant complaint at baseline, but was completely absent at follow-up. None of the patients were depressed at follow-up according to the PANNS-D, where the mean score was 6.53 (SD = 3.39). Of the seven patients found to be depressed on the CDSS at baseline, only two were followed up with another CDSS at six months, and neither of these was found to be depressed. Of the 6.5% of patients who met criteria for depression at follow-up on the CDSS, none had met the criteria for depression at baseline.

CDSS and PANSS-D

Pre-discharge, CDSS scores were positively correlated with those of the PANSS-D ($r = 0.744$, $p < 0.00$), but not with the PANSS-N ($r = 0.005$, ns). There was no positive relationship between the overall CDSS score and overall PANSS –P ($r = 0.17$, ns). We found further positive correlations between total CDSS score and PANSS items G2 (anxiety) ($r = 0.38$, $p = 0.002$); G3 (guilt) ($r = 0.67$, $p = 0.00$); G4 (tension) ($r = 0.35$, $p = 0.004$); G14 (poor impulse control) ($r = 0.36$, $p = .003$); G16 (active social avoidance) ($r = 0.36$, $p = 0.003$) and finally with the total general psychopathology score ($r = 0.49$, $p = 0.00$). This final item is thought to accurately reflect disease severity. We found CDSS did correlate with PANSS N2 (emotional withdrawal) ($r = 0.29$, $p = 0.02$), but no other negative subscale items.

At six month follow-up, the relationship between the CDSS and PANSS-D was still statistically significant ($r = 0.0.888$, $p = 0.000$) and there was no significant association between the CDSS and PANSS-N ($r = -0.06$, $p = 0.75$) or the PANSS – P ($r = 0.081$, $p = 0.67$).

There were no significant relationships between the PANSS –D and PANSS – N ($r = -.052$, $p = 0.686$) pre-discharge, however there was a significant relationship between PANSS –D and P ($r =- .337$, $p = .007$). However at six months higher PANSS – D scores were associated with higher PANSS – P scores ($r = .37$, $p = .001$).

Factors known to relate to depression in psychosis such as gender, age, treatment status, martial status, living situation, education and alcohol misuse were subjected to a binary logistic regression analysis. We found that lifetime history of alcohol abuse was the only significant risk factor for the presence of depression at baseline.

Discussion

The prevalence of depression in this Irish population with first episode schizophrenia was 10.4% according to the CDSS. This is a lower rate than the only directly comparable study examining patients in the same phase of illness with the same instrument and same criteria; Addington and colleagues found 21% of a first episode cohort in Canada to be depressed.[7] While the difference might be accounted for by random variation, it is noteworthy that this Irish sample had higher positive symptoms and higher negative symptom scores than that of Addington and colleagues.[7]

This may indicate either a greater severity of illness or perhaps indicate that the assessments were carried out in the acute phase of psychosis. Although we know that the Irish sample was assessed within thirty days, the Canadian study did not specify the timing of assessment. It may be that even when restricting samples to first episode cohorts the timing of assessment of depressive symptoms within that first episode may influence CDSS scores.[18]

However, timing alone is unlikely to account for the disparity in rates since the rates of depression among the Canadian cohort (17%) at six months were still more than double this Irish sample (6.5%).[7] Another possible explanation is that we restricted our analyses to cases of schizophrenia and schizophreniform disorder but Addington and colleagues included those with schizoaffective disorder and delusional disorder. Despite these differences the numbers of such cases are unlikely to account for the disparity in rates.

PANSS-D rates were 3% and 0% at inception and six months respectively. Pre-discharge there was only 3% agreement between the PANSS-D and the CDSS. At six month follow up there was even less agreement. PANSS-D showed no significant association with the PANSS-N at inception or

at six month follow-up, unlike Collins and colleagues who found PANSS-D and PANSS-N to have a significant relationship, albeit in a group of stable schizophrenic patients.[1]

Although the final number of people for whom we had all consecutive assessments was only 31 cases, these data confirm that choice of assessment instrument affects the rates of depression identified in the same group of patients at the same phase of illness. There is an emerging consensus favouring the CDSS because it distinguishes true depressive symptoms from negative symptoms and medication side-effects.[1,6] The present study extends these findings by indicating that the CDSS can distinguish depression from negative symptoms in first episode schizophrenia in the acute phase even in the presence of relatively high levels of positive and negative symptoms.

Risk factors

We found no relationship between gender, age, martial status or living situation and depression among people with first episode schizophrenia. Educational attainment also had no relationship with depression. However, lifetime alcohol abuse was associated with the risk of depression at first presentation. Substance misuse, including alcohol misuse has a detrimental impact on recovery from psychosis.[19] However, there is a wealth of literature confirming an association between alcohol misuse and later depression in the general population.[20] Therefore, alcohol misuse is likely to be a non-specific risk factor for depression in schizophrenia as it is in many other conditions.

Conclusion

As the CDSS has become widely used, translated into many languages and has a high degree of specificity, it seems to have earned its place as the assessment of choice for evaluating depression in schizophrenia. This first report in an Irish first episode population and one of a handful of first episode studies internationally, indicates a rate of depression of about 10% which is lower than that reported by the group who developed the scale, albeit similar to their rate reported in a group with established schizophrenia.[4] As depression, schizophrenia and alcohol misuse are all associated with increased risk of suicide the confluence of such risk factors in the one individual may merit specific interventions.[8]

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