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Suicidality in middle aged and older patients with schizophrenia and depressive symptoms: relationship to functioning and Quality of Life

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SUMMARY

Background—Suicidality is a health concern in patients with schizophrenia. We examined the hypotheses: (1) Middle aged and older patients with schizophrenia, depressive symptoms and suicidality would exhibit worse quality of life and worse everyday functioning, social skills and medication management relative to those without suicidality; (2) higher levels of suicidality would be significantly associated with worse functioning, worse quality of life and older age.

Methods—We examined 146 outpatients with schizophrenia and depression. Patients were at least 40 years old and were diagnosed with schizophrenia or schizoaffective disorder and had two or more depressive symptoms based on DSM-IV criteria for major depression. We assessed suicidality with the Intersept Suicide Scale (ISS) and functioning with the UCSD Performance-based Skills Assessment (UPSA), Social Skills Performance Assessment (SSPA), and Medication Management Ability Assessment (MMAA). Quality of life was assessed with the Heinrichs Quality of Life Scale (QLS).

Results—The mean age of patients was 52.4 ± 6.9 years. Subjects with suicidality (ISS scores > 0) had lower QLS scores compared to those without suicidality. However, there were no differences in UPSA, SSPA nor MMAA scores between the two groups. In addition, based on Spearman's rho correlational analysis, there were significant associations of QLS scores with ISS scores ($r = -0.236$) and with MMAA "total errors" scores ($r = 0.174$). Logistic regression demonstrated that only QLS scores predicted suicidality.

Conclusion—Thirty-six percent of our sample had at least mild degrees of suicidality. Lower quality of life appears to be an important predictor of suicidality.

Keywords

suicidality; schizophrenia; geriatric middle aged; depression; functioning; Quality of Life

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INTRODUCTION

Suicidality is a health concern in middle aged and older adults with schizophrenia and depressive symptoms. The mean age of patients with schizophrenia who commit suicide is approximately 33 (Roy *et al*., 1983; Caldwell and Gottesman, 1990).

In general, elderly suicide completers tend to have greater physical health burdens and more functional disabilities than those who do not commit suicide (Conwell *et al*., 2000, 2002). However, most studies that have examined the roles of health and disability on suicidal behaviors have not focused on individuals with chronic psychotic disorders. For example, not one of the 42 elderly suicide completers in Conwell's (Conwell *et al*., 2000) study of elderly patients who committed suicide had schizophrenia, although one did have an unspecified nonaffective psychosis. In an earlier series of patients analyzed by Conwell *et al*. (1996) only two subjects (out of 50) between the ages of 55 and 92 had a primary psychotic disorder as their Axis I diagnosis. Similarly, only 4% (4 of 100) of another elderly sample who committed suicide as assessed by Harwood *et al*. (2001) carried a diagnosis of schizophrenia and related syndromes.

In the present investigation, our primary aim was to assess the relationship between suicidality and quality of life, everyday functioning and age in a group of middle aged and older patients with schizophrenia/schizoaffective disorder and depressive symptoms. We wished to investigate two relationships. First, we hypothesized that patients with suicidality would exhibit significantly worse quality of life, worse everyday functioning, social skills and medication management relative to those without suicidality. Secondly, we hypothesized that higher levels of suicidality would be significantly associated with worse functioning, worse quality of life and older age. In the event that there was a significant relationship between suicidality and functioning/quality of life, we wished to investigate whether any of the other demographics modified this effect. A companion paper (Montross *et al*., submitted) is currently under review and focuses on other predictors of suicidality in the same data set.

METHODS

All subjects gave written informed consent in order to participate in this study. They were recruited for an NIMH sponsored trial to study the effectiveness of citalopram versus placebo as an augmenting agent in the treatment of patients with schizophrenia/ schizoaffective disorder and subsyndromal depressive symptoms. Subjects were outpatients at two sites: (1) University of California, San Diego/Veterans Affairs San Diego Healthcare System (VASDHS) and (2) University of Cincinnati/Cincinnati VA Medical Center. The Institutional Review Board at both sites approved the study. After signing a written informed consent, patients underwent assessment. Patients' diagnosis of schizophrenia or schizoaffective disorder, but not presently in a major depressive or manic episode, was verified by the Structured Clinical Interview for DSM-IV Axis 1 disorders (SCID). They had been recruited over an approximate 3-year period. Patients needed to have at least two of the nine items required to meet criteria for major depression and also required a baseline 17 item Hamilton Depression score (HAM-D) of at least 8.

In addition patients needed to be (1) ≥ 40 years of age; (2) have outpatient status; (3) have adequate decisional capacity and (4) have a caregiver. Patients were excluded if they had: (1) a dementing disorder; (2) major depression or mania within the past 2 months or (3) active substance abuse/dependence. During the same time that the SCID was administered, age, age of onset of illness, gender, marital status, living situation, educational level and race was documented.

Scales assessing psychopathology included the following:

1. The Positive and Negative Syndrome Scale for Schizophrenia (PANSS; Kay *et al*., 1987)
2. The Calgary Depression Rating Scale (Addington *et al*., 1992) and the
3. The 17 item Hamilton Depression Rating Scale (HAMD-17, Hamilton, 1960).

For assessing suicidality, we administered the 12-item InterSePT scale for Suicide Thinking (ISS; Lindenmeyer *et al*., 2003); with this scale, higher scores reflect worse suicidal behavior.

Other assessments included performance based scales examining functioning appropriate for an older population of patients with schizophrenia/schizoaffective disorder:

1. UCSD Performance-based Skills Assessment (Patterson *et al*., 2001a),
2. Social Skills Performance Assessment (SSPA; Patterson *et al*., 2001b),
3. Medication Management Ability Assessment (MMAA; Patterson *et al*., 2002).

In addition, we administered the Heinrichs Quality of Life Scale (QLS; Heinrichs *et al*., 1984). Higher scores on the UPSA, SSPA and QLS scales indicate higher levels of functioning or quality of life. Higher scores on the MMAA reflect worse medication management ability.

Statistical analysis

Continuous variables were assessed for normality of distribution within groups and for homogeneity of variance across groups (ISS = 0 and ISS > 0). Descriptive statistics were obtained to characterize the two groups regarding means and standard deviations or medians and their ranges in case they were not normally distributed. Groups were initially compared using chi-square for categorical data and analysis of variance for continuous variables. For correlation analyses, hypotheses were tested by using the Spearman correlation and logistic regression procedures of the Statistical Package for Social Sciences (SPSS, Version 15). For the Spearman correlation analysis, scores were ranked as per standard procedure. All tests were two-tailed with a significance level of alpha < 0.05.

RESULTS

A total of 146 patients *initially* entered the study. The proportion of the patients aged 40–49 were 44%, the proportion aged 50–59 were 39%; the proportion aged 60–70 were 16% and those aged 70 or greater were 1%. Furthermore, 29% were 55 or older and 7% were 65 or older. Not all of the patients received all of the assessments; thus we did not have equivalent numbers of measures for all of our variables. Furthermore, all measures except ISS scores were normally distributed. The median ISS score was 0 with a range of 0–16. The frequency of suicidal behavior based on suicide severity (Potkin *et al*., 2003, using ISS scores) was as follows: none (score of 0): 93 (64%); mild (score of 1–5): 35 (24%); moderate (6–10): 12 (8%) and high (≥11): 5 (4%). Thus, based on the ISS scale, 36% of our sample had at least a mild degree of suicidality.

We initially tested whether there were any differences between the two sites with regards to demographic characteristics. The only statistically significant difference between these variables was found with regards to the age of the patients. As per ANOVA ($F_{1,143} = 4.55$, $p = 0.035$), the average age at San Diego was slightly but significantly lower than that at Cincinnati: respectively, 51.3 ± 6.5 *vs* 53.7 ± 7.2 (means ± SD).

The first hypothesis was tested by dividing subjects into two groups—those with suicidal behavior (ISS score > 0) or those without suicidal behavior (ISS score = 0). We compared these two groups with regards to the demographics (age, age of onset, educational level, race, gender, marital status, living situation) and diagnostic variables and found no significant difference in demographics between the two groups (see Table 1). The two groups were then compared with regards to quality of life and performance based scales assessing function (see Table 2). The group with suicidality had significantly worse quality of life ($F = 6.67$; df = 1,105; $p = 0.02$) but there were no significant differences between the two groups with regards to UPSA, SSPA or MMAA total error scores.

We then tested our second hypothesis: higher levels of suicidality would be associated with worse functioning, worse quality of life and older age. Table 3 displays correlations of ISS scores with functional or quality of life measures. We found a significant negative correlation of ISS scores with QLS scores (rho = −0.236, $p = 0.015$, $n = 106$) which was consistent with the hypothesis that worse scores on suicidality are associated with worse quality of life scores. However, there were no significant associations between the ISS and UPSA or SSPA. The ISS did exhibit positive significant associations (rho = 0.174, $p = 0.046$, $n = 133$) with the MMAA subscale—'Total Error', consistent with the hypothesis that worse scores on suicidality are associated with worse medication management. Furthermore, no significant association was detected when correlating age with ISS scores (rho = −0.140, $p = 0.09$, $n = 145$).

Following this, the data was analyzed using a logistic regression analysis to determine what variables would be predictive of ISS scores as defined by no suicidality (ISS = 0) or the presence of suicidality (ISS > 0). When all of the variables were entered into a stepwise logistic regression, only QLS was a significant predictor of suicidality (Wald = 5.61, df = 1, $p = 0.02$). Furthermore, when we controlled for age, QLS was still a significant predictor.

DISCUSSION

In this well characterized and understudied sample, we determined that suicidal symptoms are common (36% mild or greater levels of suicidal ideation based on the ISS severity score) in middle aged and older adults with schizophrenia/schizoaffective disorder and depressive symptoms. Our results are consistent with the premise that many of our subjects exhibited mild levels of suicidality as defined by Potkin *et al*. (2003).

The patients had levels of psychopathology typical of an outpatient group of chronically psychotic individuals with schizophrenia/schizoaffective disorder as evidenced by the mean PANSS score of 62.5 ± 15.3 (mean ± SD). In addition, the HAMD-17 and CDRS scores (respectively 13.6 ± 4.2 and 6.7 ± 3.2) were consistent with a group of individuals with moderate levels of depressive symptoms. Furthermore, our group of patients only included mid-life and older individuals, thus providing data on a cohort of schizophrenic patients largely overlooked in previous studies.

Recent studies by our group have reported that middle aged and older patients with schizophrenia have lower level of functioning as assessed by the UPSA, SSPA and MMAA compared to normal control subjects (Patterson *et al*., 2001a, 2001b, 2002). Since symptoms of depression are known to exacerbate the psychosocial and vocational disability already experienced by patients with schizophrenia (Tollefson and Andersen, 1999) it was not surprising that we found impaired levels of functioning in the middle aged and older participants with schizophrenia and depressive symptoms who were the subjects of this study. Nor was it surprising that participants exhibited problems with medication management. For instance, the mean level of 'under-medication' errors was 3.4 which was

comparable to values reported by Patterson *et al*. (2002); in their series they demonstrated that when patients with schizophrenia participated in the MMAA they made an average of 5.1 'under-medication' errors while a normal comparison group made only an average of 1.2 of such errors.

The literature is supportive of the premise that worse medication management is associated with worse suicidality. For instance, Ward *et al*. (2006) found a significant association between good medication compliance and decreased risk of suicide in patients with schizophrenia of all ages. In addition, our preliminary bivariate correlational analysis appeared to support such findings. However, the logisitic regression analysis was not consistent with this hypothesis.

It was somewhat surprising that suicidality was not associated with levels of function and performance on UPSA and SSPA and the reason for this is unknown. For instance, Kaplan and Harrow (1999) demonstrated in patients discharged from inpatient units, that poor functioning is related to later likelihood of suicidal behavior. Furthermore, Muller *et al*. (2005) found that suicide attempts in patients with schizophrenia were associated with poor premorbid social adjustment while Dassori *et al*. (1990) reported in their studies that suicidal risk is associated with progressive impairment in adaptive functioning.

In our previous studies, we (Kasckow *et al*., 2001) demonstrated similar low levels of quality of life in a cohort of patients with similar HAMD 17 item scores. In these patients, both cognitive status and psychopathology predicted decreased quality of life over 6 months. In another series, our group found that depressive symptoms in older outpatients with schizophrenia negatively impacted quality of well being (Jin *et al*., 2001). These findings can be extended to the realm of suicidality and it appears that lower quality of life in this population of patients with schizophrenia and depressive symptoms is predictive of suicidality.

There were several limitations to the study. Although approximately 146 subjects represent a relatively large group, a larger group would have allowed us to look at other clinically important subtypes (such as late-onset *vs* early-onset schizophrenia and paranoid *vs* nonparanoid patients). Similarly, since the group was limited to individuals over age 39, we could not study age effects throughout the age spectrum. In addition, the study was cross-sectional; a longitudinal design would have permitted us to learn more about the meaning, course, and consequences of suicidal symptoms in these patients.

In conclusion, our results indicate that mild suicidality is common in middle aged and older adults with schizophrenia/schizoaffective disorder and accompanying depressive symptoms. We were able to find significant associations between levels of suicidality and quality of life. Since causal relationships cannot be inferred from this cross sectional study, we cannot say whether interventions directed towards decreasing levels of suicidality would lead to better quality of life and ability to manage medication, or whether improving quality of life and medication management would lessen suicidality, or both. An important next step would be to extend these findings to the entire age range of patients with schizophrenia and to assess the course and consequences of symptoms of depression, both before and after treatment, over suitable follow-up periods. Such a study might help pinpoint rational and feasible targets for intervention that could improve quality of life, medication management skills and reduce suicidality in this important group of patients.

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Table 1

Patients' characteristics as a function of ISS group differences

	Total	N	ISS = 0	N	ISS > 0	N	χ^2 or *F* value	df	*P*-value
Age#	52.4 ± 6.9	145	52.8 ± 6.7	93	51.7 ± 7.2	52	0.87	1,144	0.35
Education Level#	11.9 ± 2.3	146	11.9 ± 2.3	93	12.0 ± 2.5	53	0.05	1,145	0.83
Age of Onset#	28.1 ± 11.1	126	28.4 ± 11.3	77	27.6 ± 10.9	49	0.15	1,125	0.70
Marital Status									
Single	42.8%	62	27.6%	40	15.2%	22	3.8	2	0.15
Married	12.4%	18	10.3%	15	2.1%	3			
Sep/Div/Widowed	44.8%	65	26.2%	38	18.6%	27			
Living Situation									
Alone	28.1%	39	16.5%	23	11.5%	16	1.05	2	0.59
With Someone	25.9%	36	17.3%	24	8.6%	12			
B&C/SNF/ASSI	46.0%	64	31.7%	44	14.4%	20			
Diagnosis									
Schizophrenia	61.6%	90	40.4%	59	21.2%	31	0.35	1	0.55
Schizoaffective	38.4%	56	23.3%	34	15.1%	22			
Gender									
Female	21.2%	31	15.1%	22	6.2%	9	0.90	1	0.34
Male	78.8%	115	48.6%	71	30.1%	44			
Ethnicity									
Caucasian	55.5%	81	39.0%	57	16.4%	24	3.5	1	0.061
Non-Caucasian	44.5%	65	24.7%	36	19.9%	29			

represents mean ± SD and the rest are expressed as percentage of the total number of subjects.

ASSI = assisted living; B&C = board and care; DIV = divorced; N = total number of subjects; SEP = separated; SNF = skilled nursing facility.

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Table 2

ISS group differences based on functional and Quality of Life Scores

	ISS = 0	N	ISS > 0	N	F	df	*P*-value
UPSA	76.3 ± 16.7	82	76.3 ± 12.4	43	0.00	1,124	0.99
SSPA	33.87 ± 6.21	85	32.01 ± 6.34	47	2.65	1,131	0.11
MMAA-total errors	8.4 ± 6.6	87	10.6 ± 6.6	46	3.36	1,132	0.07
Quality of Life	64.1 ± 26.0	69	51.6 ± 19.09	37	6.67	1,105	0.02

Table 3

Correlations between qualify of life and functional measures with suicide ratings

Dependent variable	N	Rho	*P*-value
Quality of Life	106	−0.236	0.015
UPSA	125	−0.063	0.482
SSPA	132	−0.119	0.176
MMAA Total Error	133	0.174	0.046