Does Age Moderate the Relationship Between Depressive Symptoms and Suicidal Ideation in Middle-Aged and Older Patients with Schizophrenia and Subthreshold Depression?

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Background: *Suicidal deaths in middle-aged and older individuals with schizophrenia are a public health concern. Depression and schizophrenia are major risk factors for suicide. However, it is unknown whether age moderates the relationship between depression and suicidal ideation in patients with schizophrenia and subthreshold depression.* **Methods:** *Suicidal ideation was assessed with the InterSePT Scale for Suicidal Ideation and the Clinical Global Impression–Suicide Severity Scale in outpatients older than 39 years with schizophrenia and subthreshold depression (n = 213). Using linear regression, we examined whether depression (based on Calgary Depression Rating Scale scores), age, and "age by depressive symptoms" predicted suicidal ideation.* **Results:** *Depressive symptoms predicted suicidal ideation. Neither age nor "depressive symptoms by age" predicted suicidal ideation.* **Conclusions:** *In this population, age does not appear to moderate the relationship between depressive symptoms and suicidal behavior. Thus, assessing depressive symptoms as a risk factor is important at all ages in this population.* (Am J Geriatr Psychiatry 2014; 22:437–441)

Key Words: Age, depression, moderation, schizophrenia, suicidal ideation

Suicide is a leading cause of premature death among people with schizophrenia and depressive symptoms are a risk factor. Cohen et al.[1] studied patients with schizophrenia older than 54 years and determined that a history of prior suicide attempts was associated with depressive symptoms. Although the risk of completed suicides in individuals with schizophrenia is highest in those younger than 40 years,[2] suicidal behavior in middle aged and elderly patients with schizophrenia is still a public health concern. For instance, a psychological autopsy case series of individuals with schizophrenia who completed suicide indicated that one-third of suicide victims were older than 45 years;[3] furthermore, 64% of

the suicides occurred while patients experienced depressive symptoms.

In this study, we examined the relationship between depressive symptoms, age, and suicidal ideation in middle-aged and older individuals with schizophrenia and subthreshold depressive symptoms. We hypothesized that age moderates the relationship between depression and suicidal ideation. From a public health perspective, answering this question is important because it can help guide clinicians in determining suicide risk in middle-aged and older patients with schizophrenia.

METHODS

Participants were recruited for a National Institute of Mental Health—sponsored trial to study the effectiveness of citalopram versus placebo in augmenting the treatment of patients with schizophrenia/schizoaffective disorder and subthreshold depressive symptoms. The study was described by Zisook et al.[4] Subjects were outpatients at 1) the University of California, San Diego/Veterans Affairs San Diego Health Care System and 2) the University of Cincinnati/Cincinnati VA Medical Center. The institutional review board at both sites approved the study.

Patients needed to have a diagnosis of schizophrenia or schizoaffective disorder as verified by the structured clinical interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Axis I disorders. Patients also needed to have at least 2 of 9 items required for major depression and a baseline 17-item Hamilton Depression score[5] of 8 and greater. In addition, patients needed to 1) be older than 39 years; 2) have adequate decisional capacity; and 3) have a caregiver. Patients were excluded if they had 1) dementia; 2) major depression or mania within the past 2 months; or 3) active substance abuse/dependence. The average Hamilton Depression Rating scores (± standard deviation) was 13.6 ± 4.2. In addition, age, gender, marital status, living situation, educational level, and race were documented.

Our primary outcome scale assessing depression was the Calgary Depression Rating Scale (CDRS).[4] For assessing suicidality, we administered the 12-item InterSePT Scale for Suicide Thinking (ISS)[4] and the Clinical Global Impressions—Severity of Suicide Scale (CGI-SS).[4]

Statistical Analysis

Continuous variables were assessed for normality of distribution within groups and for homogeneity of variance across groups. Descriptive statistics were obtained to characterize our sample. Our analysis used Pearson correlation and multiple linear regression methods with standard moderation analyses using multiple regression. SPSS version 19 (IBM, Armonk, NY) was utilized. All analyses were two tailed, where applicable, with $\alpha = 0.05$.

RESULTS

The sample included 213 participants. The mean age ± standard deviation was 52.5 ± 7.0 years; the median age was 52 years, and the range was 40—75 years; 94% were age 40—64 years and 6% were 65 years and older. Furthermore, 78% of the participants were men, 59% Caucasian, 33% African American, 1% Native American, 2% Asian American, and 5% "other" (e.g., multiracial). Fourteen percent were married/cohabitating and 40% had a diagnosis of schizoaffective disorder and 60% had a diagnosis of schizophrenia. The average CDRS score was 6.7 ± 3.2 (n = 192), the average ISS score (n = 195) was 1.09 ± 2.4, and the average CGI-SS score was 1.19 ± 0.493 (n = 192). The frequency of responses from the HAM-D is given in Table 1.

We initially determined that there was a significant correlation between depressive symptoms (CDRS scores) and measures of suicidal ideation (CGI-SS: $r = 0.366$, n = 194, $p < 0.001$; ISS: $r = 0.425$, n = 197, $p < 0.001$). There was no significant correlation between CDRS scores and age ($r = -0.087$, n = 209, p = 0.212). We then tested whether each of the two measures for suicidal ideation could be predicted by a linear regression model involving age, depressive symptoms, and the interaction term "depressive symptoms by age." Although in both cases the models were significant, the interaction term "depressive symptoms by age" was not. Specifically, the models containing the interaction term yielded the following F values and significance levels (see also Table 2): for CGI-SS, $F_{[3, 188]} = 9.85$; $p < 0.001$; for ISS, $F_{[3, 191]} = 14.48$; $p < 0.001$. Without the interaction term, the values for CGI-SS were $F_{[2, 189]} = 14.81$, $p < 0.001$, and for ISS, $F_{[2, 192]} = 21.61$, $p < 0.001$. Furthermore, in each of the two factor models, CDRS scores significantly predicted suicidal ideation: