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Case–Control Study of the Relationship of Functioning to Suicide in a Community-Based Sample of Individuals with Schizophrenia in China

John Kasckow,

VA Pittsburgh Health Care System MIRECC, Behavioral Health Service, 7180 Highland Dr., Pittsburgh, PA 15206, USA

Center for Health Equity Research and Promotion, 7180 Highland Dr., Pittsburgh, PA 15206, USA

Western Psychiatric Institute and Clinics, University of Pittsburgh Medical Center, 3811 O'Hara St., Pittsburgh, PA 15213, USA

Nancy Liu, and

Department of Psychiatry, University of California, San Francisco, Box 0852, 7M, San Francisco, CA 94110, USA

Michael R. Phillips

WHO Collaborating Center for Research and Training in Suicide Prevention, Beijing, Huilongguan Hospital, Beijing, China

Shanghai Research and Prevention Center, Shanghai Mental Health Center, Shanghai Jiaotong University, 3210 Humin Road, Shanghai 201108, China

Departments of Psychiatry and Global Health, Emory University School of Medicine, Atlanta, GA, USA

John Kasckow: kasckowjw@upmc.edu

Abstract

Suicide is a leading cause of premature death among people with schizophrenia. Some studies indicate that increased difficulties in functioning are associated with suicidality in persons with schizophrenia. We conducted a secondary analysis of 74 suicides (cases) and 24 accidental deaths (controls) among persons with schizophrenia identified in a national psychological autopsy study in China. Between cases and controls, we compared the effect of schizophrenia on work, daily activities, emotions, social relationships and self-care at the time the illness was most severe. There was no difference in the overall maximum dysfunction associated with the illness between groups. None of the 5 measures (work, activities, emotions, relationships, self-care) were different between the two groups. This study of individuals with DSM-IV schizophrenia who died by suicide in a non-western culture only partially supports findings from clinical studies in western cultures.

Keywords

Functioning; Suicide; Schizophrenia; China; Psychological autopsy

Introduction

Suicide is one of the leading causes of premature death among persons with schizophrenia. Among persons with schizophrenia 40–50% report suicidal ideation at some point in their lives and 4–13% eventually die by suicide (Montross et al. 2005).

A review by Hawton et al. (2005) reported that death by suicide among persons with schizophrenia is associated with a history of depression, symptoms of agitation or motor restlessness, worthlessness or low self esteem, hopelessness, a family history of depression and recent losses.

Studies which have examined how levels of functioning are associated with suicidal behaviors yield conflicting results. One study found that the number of suicide attempts was associated with poor work function (Landmark et al. 1987); however in a sample of middle-aged and older individuals with schizophrenia or schizoaffective disorder, Kasckow et al. (2007) determined that neither everyday functioning nor social functioning was associated with the presence of suicidal ideation.

To our knowledge, no prior studies have utilized data from controlled psychological autopsy studies to directly assess the relationship between social functioning during the illness with suicidal death in persons with schizophrenia. To address this issue, we conducted a secondary analysis of 74 suicides (cases) and 24 accidental deaths (controls) among persons with schizophrenia identified in a national community-based psychological autopsy study of suicide in mainland China (Phillips et al. 2002, 2004). Our goal was to test the following hypothesis: compared to persons with schizophrenia in China who die of other causes, those who die of suicide experience more severe impairments in functioning during the most severe period of their illness in the following domains: work, daily activities, emotions, social relationships, and self-care.

Methods

Sample

This study was approved by the institutional review boards of the Beijing Hui Long Guan Hospital and the Chinese Academy of Preventive Medicine where the data was derived from. This national psychological autopsy study, conducted in 23 geographically representative locations around China, has been described in detail in previous reports (Phillips et al. 2002, 2004; Yang et al. 2005). Briefly, deaths of persons over 10 years of age in which the cause of death recorded on the death certificate was suicide, accidental causes, undetermined injury, or mental illness that occurred in 3 of the sites from 1 August 1995 to 31 August 2000 and in the other 20 sites from 1 January 1997 to 31 August 2000 were reported to the research group at 3-month intervals. All deaths with suicide or an undetermined injury as the recorded cause of death and a random selection of those with other accidents as the recorded cause of death were selected for detailed investigation. Trained mental health professionals took 2–3 h to complete separate interviews with the decedents' family members and close associates.

Measures

Diagnoses were assessed using an expanded and adapted version of the Structured Clinical Interview for DSM-IV (SCID). The SCID was translated, back-translated and revised for use with proxy informants; the inter-rater reliability for psychotic disorders of this version of the SCID is satisfactory (ICC = 0.83, Phillips et al. 2002). The problem of recall bias—a problem common to all psychological autopsy studies—was reduced by combining the information provided by two independent proxy informants for each decedent, a co-resident

family member and a non-co-resident associate. Their responses were “coded up,” meaning that if a symptom was reported by either informant, it was considered present. Using accidental deaths instead of living subjects as controls also reduced differential recall bias between cases and controls which can occur when using living controls because both sets of respondents had recently experienced the death of a relative or close associate.

A functioning scale was developed as part of the psychological autopsy for persons who met symptomatic criteria of schizophrenia. Proxy informants were asked the following: “When the symptoms [of schizophrenia] were worst, how much did they affect the functioning of the deceased in the following areas”: (1) Work function, (2) Daily activities, (3) Psychological condition, (4) Social functioning, (5) Self-care. Answers for each item were on a 4-point Likert scale (0 = not at all, 1 = a little, 2 = a moderate amount, 3 = a lot). An overall dysfunction score (0–100) was computed based on the sum of these scores [$100 * (\text{sum of five scores}) / 15$] with higher scores representing greater dysfunction. The concordance of the overall dysfunction score between the two respondents in the main study was high (ICC = 0.70, 95% CI = 0.54–0.80), indicating good agreement between independent observers about the functioning of the deceased subjects. For the present analysis we used the mean of the two total scores (0–100) and item scores (0–3).

Statistical Methods

SPSS (version 11.0) software was used to conduct the analysis. Descriptive statistics were obtained for all variables, including distributions, means, variances and standard deviations. Comparisons between cases and controls used *t* tests with a two-tailed alpha at 0.050 as the level of statistical significance.

Results

Demographic and clinical characteristics of the cases and controls included the following. The mean (sd) age of cases and controls (respectively) were 44.4 (14.6) versus 46.8 (16.6) years; $t(96) = 0.96$; $P = 0.767$. The proportion of females in the 2 groups was 29.7% versus 37.5%; $\chi^2(1) = 0.50$; $P = 0.672$ and the age of onset of symptoms was 33.5 (12.6) versus 28.6 (12.4); $t(96) = -1.65$; $P = 0.282$. The mean years of education were: 6.1 (4.8) versus 5.1 (3.6); $t(96) = 0.94$; $P = 0.35$; the proportion of rural residents was 68% versus 67%; $\chi^2(1) = 0.01$; $P = 0.999$ and the mean duration of illness was 33.5 (12.6) versus 18.3 (13.1) years; $t(96) = 2.50$, $P = 0.066$; reported also in Kasckow et al. 2010).

There were no statistically significant differences between suicide and accidental decedents with each of the component measures which assessed function. This included the following (suicide vs. accidental decedents): self-care [1.96 (0.93) vs. 1.62 (0.95); $t(96) = 1.55$; $P = 0.124$]; daily activities [2.10 (0.92) vs. 1.93 (0.90); $t(96) = 0.81$; $P = 0.423$]; work function [2.35 (0.87) vs. 2.13 (0.98); $t(96) = 1.00$; $P = 0.319$]; emotions [2.44 (0.76) vs. 2.24 (0.77); $t(96) = 0.44$; $P = 0.662$] and social relationships [2.23 (0.86) vs. 2.14 (0.85); $t(96) = 0.44$; $P = 0.664$]. There was also no significant difference in the mean (sd) of maximum overall dysfunction scores associated with the illness between the suicide and accident decedents; respectively, 73.9 (26.9) versus 67.8 (26.7); $t(96) = 0.96$; $P = 0.338$.

Discussion

The results did not support our hypothesis. Compared to persons with schizophrenia who died of accidental causes, those who died by suicide were not different in terms of the maximum dysfunction in self-care, daily activities, work function, emotions and social relationships. In addition, there were no differences in the maximum overall dysfunction scores between the 2 groups. Our findings are not consistent with studies of Landmark et al.

(1987) who found that poor work functioning in this population was associated with past history of suicide attempts.

Shrivastava et al. (2010) followed a cohort of 61 patients with schizophrenia who were much improved on the Clinical Global Impression Scale-Improvement (CGI-I) scale at the endpoint of a 10-year follow-up. However, many of these patients, although clinically improved, experienced emergent suicidal behavior such as suicidal ideation and attempts during the 10-year follow-up period. There were no sociodemographic or clinical variables at baseline that predicted suicidal status.

The severity of dysfunction during the most severe episode of illness does not necessarily reflect the functioning status of the patient at the time of death, but it is, perhaps, a proxy for the severity of the illness. Furthermore, we thought that individuals with schizophrenia may be more likely to be distressed by the social limitations and stigma associated with the illness and more inclined and capable of making an effective plan for ending their lives to escape this distress. Consistent with this premise are studies of Barrett et al. (2010) who determined that higher levels of insight in first episode patients with schizophrenia are associated with higher levels of suicidal behavior.

Future studies will be directed towards determining whether insight may predict completed suicide. Finally, some limitations need to be considered when interpreting our results. The sample size was small. In addition, the small number of accidental deaths among persons with schizophrenia ($n = 24$) may have resulted in Type II errors (i.e., indicating that there is no difference between groups when in reality there is a difference). Despite these limitations, to the best of our knowledge, this is the only study which has examined the relation of functioning to completed suicide in this population using a psychologic autopsy method with an accidental control group.

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