Criminal Behavior among Persons with Schizophrenia in Rural China

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Abstract

Objective—This study is to explore the prevalence and risk factors for self-reported criminal behavior among persons with schizophrenia in rural China.

Methods—We used data from a 14-year prospective follow-up study (1994–2008) of criminal behavior among a cohort (n=510) of persons with schizophrenia in Xinjin County, China.

Results—The rate of criminal behavior was 10.0% among persons with schizophrenia in a rural community during the follow up period. Bivariate analyses showed that the risk of criminal behavior was significantly associated with being male, unmarried, previous violent behavior, homelessness, no family caregivers, and high scores on measures of total symptoms of illness. In multivariate logistic regression analyses being male and previous violent behavior were identified as independent predictors of increased criminal behavior in persons with schizophrenia in the follow up period.

Conclusions—Criminal behavior is a common phenomenon among patients with schizophrenia in rural China. The findings of risk factors for criminal behavior should be considered in planning mental health interventions for high-risk patients and their families.

Keywords

Criminal Behavior; Schizophrenia; Risk Factors; Community; China

Introduction

Although most studies of criminal recidivism have found little relationship between mental illness and criminal behavior, recent research suggests that psychosis is a risk factor for crime (Lamberti, 2007). Compared with the general public, individuals with schizophrenia have higher rates of violence and criminal conviction for both nonviolent and violent offenses (Tiihonen et al., 1997; Brennan et al., 2000). Individuals with schizophrenia who are involved in the criminal justice system pose special challenges to mental health professionals. However, clinical practice guidelines offer little guidance to clinicians about how to address the problem of criminal behavior among these patients (Lamberti, 2007).

Is there an association between schizophrenia and criminal behavior? Evidence indicated that there was a modest but significant relationship between schizophrenia and violence and crime (Modestin, 1998). Although most people with mental health problems do not exhibit violence or criminal behavior, the likelihood of committing violence is greater for people with mental health problems than for those without (Sil Silver, 2008). The risk factors of criminal behavior in patients with schizophrenia are not well defined. Evidence indicates that the criminal behavior is not only a result of the illness but also the result of psychiatric comorbidity (e.g., substance abuse, personality disorder) and medication non-adherence (Moran et al., 2003; Zhang et al., 2002). However, other evidence indicates that schizophrenia may actually decrease the risk of violence (Brekke et al., 2001). Moreover, clinicians who treat schizophrenia patients in the community are increasingly expected to assess and manage the risk of criminal behavior in those under their care. More research is needed to further our understanding of the association between schizophrenia and criminal behavior.

There are few studies on criminal behavior among patients with schizophrenia in China, especially in rural communities, where most patients with schizophrenia (over 90%) are cared for by their relatives at home (Ran et al., 2003a). Homelessness, a public mental health concern, is a common phenomenon in rural China (Ran et al., 2006). Given the large size of the rural population in China and the lack of research on criminal behavior, a study examining the prevalence and risk factors of criminal behavior among patients with schizophrenia is needed in rural China.

Previous studies have been limited by use of retrospective or cross-sectional designs, small samples, and narrow assessment of clinical symptoms (Swanson et al., 2006). There were few studies focusing on self-reported criminal behavior among patients with schizophrenia in community. Therefore, a long-term prospective follow-up study of self-reported criminal behavior with large samples in persons with schizophrenia living in the community should be worthwhile. Our longitudinal follow-up studies in Chengdu, China provide a unique opportunity to understand criminal behavior in persons with schizophrenia in rural communities. The objectives of this study were to explore the prevalence of self-reported criminal behavior among persons with schizophrenia, and to identify risk factors of criminal behavior among these patients in rural China.

Method

Study population

All subjects with schizophrenia (N=510) were identified from an epidemiological investigation of 123 572 people aged 15 years and older in six townships of Xinjin County (total population: 149,231 people in the six township) in March 1994. Subjects were identified through screening procedures for psychosis (face-to-face interviews with the head of each household together with the key informant method) and general psychiatric interview. The details of this

investigation have been described in previous papers (Ran et al., 2001, 2003b, 2007). All subjects lived in rural communities and met ICD-10 criteria (WHO, 1992) for a diagnosis of schizophrenia based on standardized administration of the Present State Examination (PSE-9) (Wing et al., 1974) by trained research interviewers. According to the baseline data in 1994, we followed up and interviewed 95.9% of the subjects (489 cases) with schizophrenia and/or their key informants in May 2004 and again in June 2008. The study was approved by the Committee on Human Research Subjects (CHRS) and all respondents gave informed consent for each stage of the study.

Measurement

The principal assessment tools included the PSE and Social Disability Screening Schedule (SDSS) in the baseline investigation in 1994 (Ran et al., 2001, 2003b). For living subjects at the visits in 2004 and 2008 at least one person familiar with each subject's life and circumstances and/or the subjects themselves were interviewed. For deceased subjects the next-of-kin or at least one person familiar with the subject was interviewed. All the interviews were conducted by trained psychiatrists using the Patients Follow-up Schedule (PFS) in 2004 and 2008. PFS (2004 or 2008 Schedule) was used to collect information concerning demographic characteristics, causes and time of death, clinical symptoms, treatment information, criminal behavior, social functioning, and social support. For all subjects, medical and psychiatric treatment records were obtained from hospital, village doctors' clinics, and traditional healers. For deceased subjects, information from the death certification and suicide note, where applicable, was also obtained.

The classification of each death as due to suicide, accident, or natural causes represented the consensus opinion of interviewers and independent researchers after reviewing all information obtained during the interviews. Subjects were defined as homeless and lost to follow-up if informants reported that they had wandered and slept in public places and that their whereabouts was now unknown. Subjects were defined as without caregiver if the patients had nobody (e.g., family member) to provide care (e.g., food, housing, financial support, treatment, etc). Family economic status was defined according to the family mean income. Marked symptoms were defined according to the assessment of PSE and current mental health status.

Criminal behavior (e.g., arson, physical and sexual assault behaviors, and murder) was defined according to the reports of the subjects and informants (e.g., relatives) in 2004 and 2008. The subjects and informants were asked about any criminal behavior and type at any time during the follow up period. Violent criminal behavior was defined if the subject or informants reported was arson, sexual assault, physical assault, and murder. Non-violent behavior was defined if the criminal behavior consisted of damage to property and other non-violent criminal acts.

Statistical Analysis

We explored the link between a baseline assessment (1994) and later evaluation (2004 (2008) of criminal behavior and other variables. The risk of criminal behavior during the follow-up period (1994–2008) was assessed through comparing the demographic, psychological, and social environment characteristics of groups with and without criminal behavior. Bivariate associations with individual risk factors of criminal behavior were first estimated. Chi-square tests were used for the categorical data.

A binary logistic regression analysis was then performed to examine the predictor variables from 1994 evaluation of self-reported criminal behavior in the 2004 and 2008 evaluations. All variables from 1994 evaluation in the bivariate analysis were entered into this analysis. The presence or absence of criminal behavior during the follow-up period (1994–2008) was

considered the dependent variable, while all the other variables from 1994 evaluation (baseline data) were the independent variables. The significant independent predictors from these analyses (only those variable that reached a significance level in bivariate analyses of p<.05) were then selected for possible use in the overall model. We tested both backward and forward inclusion of variables in the logistic regression equation to identify the most stable model. Statistical analyses were performed using SPSS for Windows software (version 13.0).

Results

Current Status of the Cohort

Of the 510 people identified as having schizophrenia in 1994, 21 subjects were excluded because they were lost to follow up in 2008. Therefore 489 people (95.9%) were followed up from 1994 to 2008. Their characteristics are described in Table 1. Of the 489 patients who were followed up, 328 (67.1%) were alive, 24 (4.9%) had killed themselves, 97 (19.8%) died due to other causes and 40 (8.2%) were homeless. Among all the 489 patients, 49 (10.0%) had criminal behavior during the follow-up period. Among all the 49 patients with criminal behavior, 1 male patient (2.0%) was in jail at the time of the follow-up in 2004 and 2008, and 4 male patients (8.2%) had been arrested once or more by the Department of Police.

Gender and Criminal Behavior

Male patients had significantly higher rate of any criminal behavior (13.8%) than female patients (6.8%) (χ^2=6.7, df=1, p=0.01). Gender differences in subtypes of criminal behavior are showed in Table 2. Compared with female subjects (6 cases, 20.0%), male patients had significantly higher rate of violent criminal behavior (e.g., arson, sexual assault, physical assault, and murder) (24 cases, 80.0%) (χ^2=9.3, df=1, p=0.002).

Correlates of Criminal Behavior

Table 3 provides the relative risk associated with demographic, clinical, and psychosocial environment characteristics of patients with and without criminal behaviors. The risk of criminal behavior was significantly higher in patients who were male, unmarried, homeless, with previous violent behavior, without family caregivers, and high total scores of PANSS (P<0.05).

Table 4 provides the multivariate model of risk factors for criminal behavior among patients with schizophrenia (logistic regression analyses). Two factors were identified as significant independent risk factors for criminal behavior: male and previous violent behavior. The proportion of the variance that the model explained was 38.1%.

Discussion

To our knowledge this is the first longitudinal (14-year) follow-up study of self-reported criminal behavior among patients with schizophrenia in a rural community. The main advantages of this study include the use of a large representative community sample in rural China, longitudinal 14-year follow-up data, and a high rate of follow-up.

The results of this study indicate that criminal behavior is a common phenomenon among patients with schizophrenia (Tengström and Hodgins, 2002). We found that the rate of any self-reported criminal behavior in this community sample of schizophrenia patients during the follow up period was 10.0%. This is similar to 10.2% of patients convicted in the 7–12 years after discharge (data for convictions and not arrests) in Germany (Soyka et al., 2007), lower than the 19.1% 6-month prevalence rate of any violent behavior (assault with or without injury) in a sample of schizophrenia patients selected for a randomized clinical trial in the U.S. (the

CATIE study) (Swanson et al., 2006), and higher than the 8.1% of violent arrest in a sample of schizophrenia patients in a birth cohort study (actual arrest records) in Denmark (Brennan et al., 2000). Many patients in China, especially rural China do not receive medication, and their medication is short-term if they do receive it (Ran et al., 2001, 2003a,b). Therefore, it is possible the risks for criminal behavior may be higher than would be found in countries providing more adequate mental health services. Moreover, even though criminal behavior may carry a high human and social cost (Link et al., 1999), most criminal behavior among persons with schizophrenia never results in arrest in rural China. This may be related to the common idea among general people in China, especially rural China, that it is common, normal and expected for patients with mental disorders to have violent or criminal behaviors. Further studies should be conducted to explore the differences of self-reported criminal behavior between general population and patients with schizophrenia.

Although evidence indicates that women may show more mild violence than men, some studies have not found gender differences in serious violence and committed assault (Swanson et al., 2006; Walsh et al., 2004). The results of this study indicated that the total rate of criminal behavior in male patients was significant higher than that in female patients. Male patients were also more likely to engage in violent criminal behavior than female patients. The findings of this study support that schizophrenia is related to increased propensities for criminal behavior among both men and women, and male patients may be more likely to be convicted due to the violent nature of their criminal behavior (Brennan et al., 2000; Soyka et al., 2007).

Evidence indicated that young age was found to be a risk factor of crime among persons with schizophrenia (Sirotich, 2008). As in the general population, individuals with mental disorder in their late teens and early twenties were at highest risk for violent and criminal behavior (Warren et al., 2002). The findings of this study also suggested that the mean age of first onset of illness in patients with criminal behavior was late twenties. However there were no significant differences of the mean age between the patients with criminal behavior and those without criminal behavior.

The risk factors for criminal behavior among patients with schizophrenia should be understood within a particular social context. Evidence has indicated that patients living alone in U.S. were significantly less likely to engage in any violence than their counterparts who were living with family (Swanson et al., 2006). Family relationships that apparently provided a supportive audience were protective of violent behavior. Although family and/or marriage might be strong predictors of criminal behavior (Modestin, 1998; Andrews et al., 2006), evidence also indicated that unmarried patients had higher risk of criminal behavior as they would have less family members or caregivers in their social networks than married patients (Melle et al., 2000). The results of this study indicated that criminal behaviors were associated with being unmarried and without caregivers. In rural China most patients are cared for by their families at home (Ran et al., 2003a,b). Traditionally marriage and family are crucial for the patients' treatment and care of routine life. Individuals who tend toward criminal activity may be estranged from family. The findings in this study may indicate the importance of marriage and family caregiver in prevention of criminal behavior. However, we also support that family co-residence may affect violence risk in complex ways, either preventing or provoking violent behavior, depending on whether the family environment serves as a protective matrix or a stimulus for aggressive interactions.

The results of this study showed that homelessness was associated with the criminal behavior in persons with schizophrenia as well. The result is consistent with a few previous studies (McGuire and Rosenheck, 2004). The results of CATIE also indicated the relationship between homelessness and serious violence (Swanson et al., 2006). The higher rate of homelessness among these patients may be due in part to fewer community resources for these patients, lack

of health insurance, and poor family caring status (Ran et al., 2007, 2009). Evidence indicates that housing programs (e.g., supported group residence, SGR) may be crucial for the patients who do not have family and housing (Chan et al., 2007). How to prevent homelessness and provide services for homeless patients is a big challenge for further community mental health services.

Evidence has indicated the relationship between psychotic symptoms and crime or violence (Link et al., 1998). Positive symptoms among individuals with schizophrenia significantly increased the risk of violence but only when negative symptoms were low. Increased negative psychotic symptoms were significantly associated with decreasing risk of serious violence (Swanson et al., 2008). The results of this study support the relationship between total scores of symptoms and criminal behavior. The effect of positive and negative symptoms on criminal behavior does need further study. Moreover the results of this study also support the relationship between previous violent behavior and later criminal behavior.

Although evidence showed that treatment non-adherence is associated with violence and increased rates of arrest and incarceration (Ascher-Svanum et al., 2006), the results of this study did not find the relationship between criminal behavior and previous medication and hospitalization. The reasons may be related to the poor treatment status among all the patients with schizophrenia in rural China. Due to their poor family economic status, a lot of patients could not receive any treatment for their illnesses (Ran et al., 2001, 2009). The effect of regular medication (e.g., antipsychotic drugs) on criminal behavior needs further study.

The limitations of this study include the possible recall bias for interviews with subjects and informants at long-term follow-up intervals, but such bias may be minimized by the use of multiple follow-up data sources. It is unclear whether there is differential reporting of criminal behavior in patients with different situation (e.g., age, marriage status, economic status, etc). Moreover criminal behavior might be underreported due to severe stigma of mental disorders and criminal behavior in China and lack of criminal records for those without arrest in this study area.

In conclusion, the likelihood that some individuals with schizophrenia may commit criminal behavior is a significant risk to be addressed by health care providers and caregivers. Prevention of criminal behavior among patients with schizophrenia should focus on preventing clinical and psychosocial risk factors of criminal behavior. Effective treatment and interventions (Hodgins and Müller-Isberner, 2000), especially family interventions, may help to improve family care and reduce the criminal behavior among these patients. Family should be supported via specific family interventions, such as psychoeducational approaches. Research is needed to further define and test the intervention elements as foundations for future service delivery efforts (Lamberti, 2007). Community mental health policy should emphasize medication, family intervention and support services, including as steps towards prevention of criminal behavior.

Acknowledgments

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Table 1

Status of the cohort patients in 2008

	Without Criminal Behavior (N=440)	Criminal Behavior (N=49)	Total (N=489)
	N (%)	N (%)	N (%)
Alive Patients	301 (68.4)	27 (55.1)	328 (67.1)
Deaths			
Suicide	20 (4.5)	4 (8.2)	24 (4.9)
Death due to other causes	87 (19.8)	10 (20.4)	97 (19.8)
Homelessness	32 (7.3)	8 (16.3)	40 (8.2)

Table 2

Gender and Criminal Behavior in 2008

	Male (N=224)	Female (N=265)	Total (N=489)
	N (%)	N (%)	N (%)
Without criminal behavior	193 (86.2)	247 (93.2)	440 (90.0)
Damage to property	4 (1.8)	8 (3.0)	12 (2.5)
Arson	2 (0.9)	1 (0.4)	3 (0.6)
Sexual assault	3 (1.3)	0 (0.0)	3 (0.6)
Physical assault	15 (6.7)	4 (1.5)	19 (3.9)
Murder	4 (1.8)	1 (0.4)	5 (1.0)
Other	3 (1.3)	4 (1.5)	7 (1.4)

Table 3

Characteristics of Criminal Behavior in Persons with Schizophrenia

	Follow-up in 2008				
	Without Criminal Behavior	Criminal Behavior	χ^2	df	P
	N (%)	N (%)			
Sex			6.7	1	0.010
Male	193 (43.9)	31 (63.3)			
Female	247 (56.1)	18 (36.7)			
Marriage			4.6	1	0.032
Unmarried	116 (26.4)	20 (40.8)			
Married	324 (73.6)	29 (59.2)			
Education			0.5	1	0.490
≤ primary school	321 (73.0)	38 (77.6)			
≥ middle school	119 (27.0)	11 (22.4)			
Family economic status			0.0	1	0.987
< mean	243 (55.2)	27 (55.1)			
≥ mean	187 (44.8)	22 (44.9)			
Family caregiver (2004) *			12.2	1	0.000
With	397 (90.2)	36 (73.5)			
Without	43 (9.8)	13 (26.5)			
Positive family history of mental illness			0.2	1	0.695
Yes	123 (28.0)	15 (30.6)			
No	317 (72.0)	34 (69.4)			
Violence behavior at baseline			6.5	1	0.011
Yes	13 (3.0)	5 (10.2)			
No	427 (97.0)	44 (89.8)			
Mental Status			2.2	2	0.336
Complete remission	108 (24.5)	12 (24.5)			
Partial remission	57 (13.0)	10 (20.4)			
Marked symptoms	275 (62.5)	27 (55.1)			
Antipsychotic Treatment			0.4	1	0.507

Follow-up in 2008

	Without Criminal Behavior	Criminal Behavior	χ^2	df	P
	N (%)	N (%)			
Never treated	137 (31.1)	13 (26.5)			
Once treated	303 (68.9)	36 (73.5)			
Previous Hospitalization			0.2	1	0.651
Yes	93 (21.1)	9 (18.4)			
No	347 (78.9)	40 (81.6)			
Level of Disability (SDSS)			0.3	2	0.853
Severe	192 (43.7)	23 (47.0)			
Mild or moderate	85 (19.3)	8 (16.3)			
None	163 (37.0)	18 (36.7)			
Homelessness[#]			4.8	1	0.028
Yes	32 (7.3)	8 (16.3)			
No	408 (92.7)	41 (83.7)			
	Mean (SD)	Mean (SD)	T	df	P
Age (years)	45.1 (15.4)	42.0 (17.4)	1.4	487	0.178
Duration of illness (years)	12.6 (11.2)	11.8 (12.3)	0.5	487	0.617
Age of first onset (years)	31.5 (13.3)	28.5 (10.7)	1.5	487	0.132
Total positive score (PANSS)[#]	12.2 (5.9)	13.8 (7.2)	−1.5	377	0.132
Total negative score (PANSS)[#]	15.3 (8.8)	19.0 (11.0)	−1.9	273	0.056
Total general mental score (PANSS)[#]	25.7 (9.4)	28.0 (10.6)	−1.1	251	0.283
Total score (PANSS)[#]	55.5 (20.3)	67.1 (28.9)	−2.4	229	0.017

Note:

[*] data in 2004;

[#] data in 2008; all the other variable data were collected in 1994.

Table 4

Predictors of Criminal Behavior in Persons with Schizophrenia

	Wald	OR	95% CI	P
Male	6.879	2.285	1.232 – 4.236	0.009
Violence behavior at baseline	6.326	4.097	1.365 – 12.293	0.012

Note: all independent variable data were collected in 1994