

Original Article

Prevalence and attributes of criminality in patients with schizophrenia

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KEY WORDS

Prevalence

Criminality

Schizophrenia

Abstract:

Background: Existing research in law and psychiatry point to schizophrenia as a risk factor for violence and offense behaviors. The present study aims to: 1) report on the prevalence and types of offensive or criminal acts in patients with schizophrenia; 2) identify attributes of schizophrenic offenders; and 3) examine factors associated with offensive or criminal behaviors within a sample of schizophrenic offenders.

Methods: This was a cross-sectional study of 358 patients with schizophrenia who were admitted to a psychiatric ward in Iran between 2004 and 2008. Study data was collected using patients' medical, criminal records, as well as via personal interview with the family member. Study variables included criminality or offensive behavior, types of schizophrenia (paranoid vs. nonparanoid), experiencing hallucination, disease onset, and patients' demographics.

Results: Of the sample, 64.8% were male, 80.7% were 45 years old or younger, and 74.1% were either single or divorced. Slightly over 59 % were offenders with criminal status, of which, 9.8% were legal offenders and 48.6% were hidden offenders. The results of unadjusted logistic regression between these variables and criminality show, except for employment, marital status, and opium use, all other variables were statically associated with criminality.

Conclusions: Methodological difficulties arising from this study, as well as, the role of mental health professionals, family, and legal system for prevention of violence in and by patients with schizophrenia are discussed.

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Received: 2014-04-04

Accepted: 2014-05-15

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Introduction

Schizophrenia is a form of chronic psychosis that may include bizarre behavior, paranoia, anxiety, delusions, withdrawal, and suicidal tendencies.¹ The causes of

schizophrenia are unknown, but there is evidence of heredity factors and imbalance in brain chemistry. Its prevalence between men and women is equal, and two million new cases of this disease appear around the world each year.²

A crime is an act that is prohibited by law through penalty. According to Goldoozian, for human behavior to be considered a crime, three elements are necessary: 1) Legally, the criminal act should be prohibited by law; 2) materially, the criminal act should be executed or realized; and 3) "spiritually," the criminal act should be accompanied by criminal intention or guilt. These three elements must be present for an act to be labeled as a crime.³

The association between schizophrenia and committing violent acts or different forms of crime is evident in literature, encompassing interpersonal attack and murder.⁴⁻⁷ Compared to their healthy counterparts in the general population, individuals diagnosed with schizophrenia are 4 to 6 times more likely to commit a violent crime.⁸ In Western countries, 6% of the homicide perpetrators in the populations were labeled schizophrenic.⁹ Existing research also indicates that the prevalence of crime in patients with schizophrenia is significantly associated with male sex, being single, refusing to accept treatment, substance abuse and duration of illness.¹⁰⁻¹²

The present study brings two different branches of science together, namely law and psychiatry, to: 1) report on the prevalence and types of offensive/criminal acts in patients with schizophrenia; 2) identify attributes of schizophrenic offenders; and 3) examine factors associated with criminal behaviors within a sample of schizophrenic offenders.

Methods

Study Design and Data Collection

This was a cross-sectional study of 358 patients with schizophrenia who were admitted to a psychiatric ward in Zanjan, Iran between 2004 and 2008. Zanjan is the capital of Zanjan Province in northwestern Iran. In 2011 its population was estimated at 386, 851 and it is considered the 20th largest city in Iran. Study data were collected using patients' medical and criminal records, as well as via personal interview with the family members.

Study Variables

To measure criminality or offensive behavior, we borrowed the categories used by the Iranian legal system: offender, hidden offender, and having no criminal record.³ Based on these categories, patients were grouped into criminal (including both legal and hidden offenders) vs. non-criminals. Addiction data were extracted from the medical chart indicating whether a patient has addiction to alcohol or narcotics. Measurement variables for mental illnesses were the types of schizophrenia (paranoid vs. nonparanoid), experiencing hallucination (yes vs. no), and

disease onset (including early vs. late onset). Other measures included demographics (e.g., age, gender, level of education, employment status, and marital status). The Zanjan University of Medical Sciences Institutional Review Board approved all procedures.

Data Analysis

Univariate analysis was used to report pattern of criminology in the sample and illustrate the overall characteristics of the sample with respect to the study variables. Unadjusted logistic regressions were performed to identify predictors of criminality at bivariate level. Data were analyzed using IBM SPSS Statistics 20. Odds ratios and 95% confidence intervals (CIs) are presented and statistical significance was set at P values ≤ 0.05 .

Results

Of the 358 patients, 59.2% ($n=149$) were offenders with criminal status. Of these, 9.8% (35) were legal offenders and 48.6% (174) were hidden offenders (data not shown). **Table 1** presents the overall characteristics of the sample. With respect to demographic characteristics of the sample, 64.8% were male, 80.7% were 45 years old or younger, 74.1% were either single or divorced, and 71.5% had less than a high school education. Alcohol was abused by 57.5% of the sample, and 95.0% had a record of using opium on a daily basis. With respect to mental health, 68.2% were experiencing hallucinations. 63.4% were suffering from paranoid type vs. 36.6% who suffered from nonparanoid type (**Table 1**). **Table 2** illustrates a breakdown of the types of offenses patients were engaged in during their illness period. Of 10 offensive behaviors ranging from premeditated homicide to setting fire, spouse abuse (41.9%), damage to property (26.8%), and child abuse (24.0%) were the top three offensive behaviors highly prevalent in this sample.

Table 3 presents the results of unadjusted logistic regressions to identify factors that are associated with having a criminal status. Column 3 in the tables indicates that male vs. female (64.7% vs. 49.2%), younger vs. older patient (71.6% vs. 7.2%), more educated patients vs. less educated (68.0% vs. 37.3%), those employed before diagnosis of schizophrenia vs. unemployed (98.0% vs. 39.0%), married vs. single (100.0% vs. 55.9%) and divorced (19.0%) were more engaged in criminal behaviors. Similarly a higher percentage of offenders were alcohol abusers (72.8%), opium users (62.4%), experienced hallucinations (66.4%), were paranoid type (66.1%), and experienced early onset of schizophrenia (83.3%). The unadjusted association between these variables and criminality is present in the last two columns of **Table 3**. Except

Table 1: Sample overall characteristics (N = 358).

Variables	F(%)
Gender	
-Male	232(64.8)
-Female	126(35.2)
Crime	
-Non offender	146(40.8)
-Offender	212(59.2)
Patient characteristics (%)	
Age	
16-25	52(14.5)
26-35	143(39.9)
36-45	94(26.3)
46-55	43(12.0)
56-65	21(5.9)
66-75	5(1.4)
Marital status	
-Married	93(26.0)
-Single	186(52.0)
-Divorced	79(22.1)
Employment	
-Employed before schizophrenia	153(42.7)
-Unemployed after schizophrenia	46(12.8)
-Unemployed before schizophrenia	159(44.4)
Education	
-Illiterate	83(23.2)
-Secondary school	173(48.3)
-High school graduate	42(11.7)
-Pre-university	48(13.4)
-University	12(3.4)
Alcohol abuse	
-Yes	206(57.5)
-No	152(42.5)
Opium abuse	
-Yes	340(95.0)
-No	18(5.0)
Hallucination	
-Yes	244(68.2)
-No	114(31.8)
Type of Schizophrenia	
-Paranoia	227(63.4)
-Nonparanoid	131(36.6)
Disease onset	
-Early onset	180(50.3)
-Late onset	178(49.7)

for employment, marital status, and opium use, all other variables were statically associated with criminality ($P < 0.05$). The results of unadjusted logistic regressions between these variables and criminality are presented in the last two columns of Table 3. Except for employment, marital status, and opium use, all other variables were statically associated with criminality ($P < 0.05$).

Discussion

Our findings point to a high prevalence of criminality among the patients with schizophrenia in the study. In addition, the overwhelming majority of the offenders were engaged in hidden offenses facing no legal consequences.

Table 2: Distribution patterns of different types of offenses in the sample.

Type of Offense	F (%)
Premeditated Homicide	3(0.8)
Children abuse	17(4.7)
Child abuse	86(24.0)
Spouse abuse	150(41.9)
Damage to property	96(26.8)
Insult	30(8.4)
Assault	35(9.8)
Theft	13(3.6)
Rape	1(0.3)
Setting fire	1(0.3)

A closer look at the data shows that 97% of victims of the hidden-offenders were family members. This is alarming since people often have a difficult time reporting offensive behaviors committed by family members with mental disorders, fearing stigmatization or persecution by the legal system. The complexity of this issue should remind health professionals to be more proactive in understanding the interplay of schizophrenia and offensive behaviors in the family setting and suggest violence prevention strategies and provide adequate referrals.

The existing evidence supports our findings.¹³⁻¹⁵ A review study using national and international data concluded an increased risk of criminality in schizophrenia patients¹⁶ and suggested a greater need to integrate an understanding of aggressive behaviors and schizophrenia in present-day psychiatry. Others have reported that inadequate attention to association between criminality and schizophrenia consequentially generates substantial increase in admissions of such patients to forensic mental hospitals,^{17,18} and inappropriate patient shifting to the judicial system.¹⁹

Similar to our findings, other studies have attributed an increased risk of violent offense in schizophrenia to younger age, male sex,²⁰ co-morbid substance abuse,²¹⁻²⁴ experiencing hallucination,²⁵ and early onset of the disease.

National and international researchers have found that male sex predicates earlier onset, different symptomology, and poorer disease course and outcome of schizophrenia, as well as violent behaviors due to the interplay of sex hormones and neurodevelopmental and psychosocial sex differences.²⁶⁻³⁰

The findings of substance abuse studies suggest that the risk of criminality and violent behaviors in comorbid patients with schizophrenia with substance abuse is similar to that of substance abusing individuals without schizo-

Table 3: Unadjusted logistic models predicting committing crime versus not committing in the sample (n=358).

Independent Variables	No Crime Non-offenders	Committed Crime Offenders	Unadjusted OR (95% CI)	P-value
Demographics				
Gender				.005
-Male	82(35.3)	150(64.7)	1.88 (1.21-2.93)	
-Female	64(50.8)	62(49.2)	Reference:	
Age				.000
-16-45	82(28.4)	207(71.6)	32.3 (12.5-32.1)	
-46-75	64(92.8)	5(7.2)	Reference	
Education				.000
-Illiterate/some high school	82(32.0)	38(37.3)	3.57 (2.21-5.77)	
-High school or more	64(62.7)	174(68.0)	Reference:	
Employment				.000
-Employed before schizophrenia	3(2.0)	150(98.0)	0.13(.004-.042)	
-Unemployed before schizophrenia	97(61.0)	62(39.0)	Reference:	
Marital status				.186
-Married	0(0.00)	93(100.0)	---	
-Single	82(44.1)	104(55.9)	1.33(.871-2.03)	
-Divorced	64(81.0)	15(19.0)	Reference	
Addiction Characteristics and Mental Illness				
Alcohol Abuse				.000
-Yes	56(27.2)	150(72.8)	3.88 (2.89-6.07)	
-No	90(59.2)	62(40.8)	Reference:	
Opium				---
Yes	128(37.6)	212(62.4)	---	
No	18 (100.0)	0(0.0)	---	
Illusion				.000
-Yes	82(33.6)	162(66.4)	2.52 (1.60-3.98)	
-No	64(56.1)	50(23.9)	Reference	
Type of schizophrenia				.001
-Paranoid	77(33.9)	150(66.1)	2.16(1.39-3.36)	
-Nonparanoid	69(52.7)	62(47.3)	Reference	
Disease onset				.000
-Early onset	30(16.7)	150(83.3)	0.107 (0.01-0.17)	
-Late onset	116(65.2)	62(34.8)	Reference:	

phrenia, suggesting that violence reduction efforts should consider focusing on primary and secondary substance abuse prevention strategies.^{10,31} Also, since crime is most often the offender's response to delusions or hallucinations,²⁵ the significance of early treatment of delusions and hallucinations should be underscored.³²

Age at onset of psychosis may carry clinical significance across psychotic disorders and appears to be associated with specific genetic abnormalities; specifically, differential clinical and behavioral features, and notably, a history of lifetime cannabis abuse/dependence and violence.^{33,34} Clinicians are in a unique position to screen for and identify risks associated with the manifestation of violence between early and late-onset schizophrenia.³⁴

Methodological difficulties arising from this study limit the interpretation of the findings on the association between offensive behavior/criminality and schizophrenia. This includes a lack of clear data on the diagnostic tools

used in the sample, use of a different definition of illegal behavior in Iran, and use of data from one psychiatric site. In addition, a small sample size limited our ability to perform subgroup analyses and use rigorous tests to identify the independent predictors of criminality or offensive behaviors. These limitations restrict the generalizability of our findings to other populations of patients with schizophrenia. Nevertheless, our findings add to the body of knowledge regarding this topic, which is rarely investigated in low- and middle-income countries.³⁵ And like most national and international studies, this study shows a high percentage of criminal activities among patients with schizophrenia and an association, albeit statistically limited, between criminality and some measures of socio-demographics, substance abuse, and type of schizophrenia.

Larger and longer longitudinal studies are needed to provide better knowledge of the association between the

stage of schizophrenia and type of offense committed by such patients in the context of the patient's biological, psychosocial make up, as well as institutionalization and deinstitutionalization experiences. Findings from such studies could support appropriate and timely actions regarding the prevention, treatment and management of this disease and its association with criminality. Early assessment and identification of violent behaviors in patients with schizophrenic-spectrum disorder by qualified psychiatrists who are familiar with the national legal or professional guidelines on this issue can be cost and time saving. It also may assist the risk assessment process in schizophrenia. It could also prevent premature passing of the patient to the jail and psych wards, which could be more traumatic and damaging to a vulnerable person.³⁶

Conclusion

The present study was an attempt to delineate relevant statistics concerning schizophrenia and criminality. Five years of data on patients with schizophrenia show a high percentage of offensive/criminal behaviors in these patients. More specifically, hidden offenses and those that target family members were prevalent. These findings, although limited, point to the potential association between criminality and gender, age, education, substance abuse, type of schizophrenia, and disease onset among schizophrenia patients.

While more replication of this study is warranted to substantiate our results, they are informative for early detection and outreach services especially to family and criminal justice settings. In middle-income countries such as Iran, adequate community-based facilities and outreach services can result in lifting the burden of schizophrenia-

related violence in families and patients, and reduce the financial cost of premature hospitalization.

Mental health professionals can play a crucial role in raising awareness of and communicating with family members the risk of violent behaviors in patients with schizophrenia. They can also raise community awareness regarding the potential victimization of patients with schizophrenia.^{20,37} They can promote the notion that people with major mental health disorders need highly empathetic and supportive therapies to keep them safe. People with schizophrenia who are actively paranoid or experiencing hallucinations may be vulnerable, and living within a system or society that labels anything unknown or different as bad/wrong could only aggravate their treatment.

Further interventional studies are needed to report on the criminality outcome of integrated and comprehensive care for patients with schizophrenia living in the community. There are also limited local studies on the attitudes of mental health professionals and their inclination to integrate aggressive behavior into their understanding of psychosis.¹⁷ Furthermore, a lack of knowledge on behalf of the judicial system regarding the mental state of the accused may cause an increasing numbers of patients with schizophrenia-spectrum disorders to be referred to forensic psychiatric institutions, raising concerns regarding efforts to destigmatize both patients and psychiatry.

Funding: This study was funded by Zanjan University of Medical Sciences.

Competing interests: None declared.

Ethical Approval: The Zanjan University of Medical Sciences Institutional Review Board approved all procedures.

References

1. Kredentser MS, Martens PJ, Chochinov HM, Prior HJ. Cause and rate of death in people with schizophrenia across the lifespan: a population-based study in Manitoba, Canada. *J Clin Psychiatry*. 2014 Feb;75(2):154-61.
2. Mansouri N, Chimeh N, Dehghani M, Malakouti SK, Taherkhani H, Abarashi Z. Risk factors associated with psychiatric hospitalization among Iranian schizophrenic patients. *Iran J Psychiatry Behav Sci*. 2013 Fall;7(2):16-23.
3. Goldoozian I. *Margins of Islamic Punishment Law*. 12th ed. Iran: Majd Publication, 2009.
4. Soyka M, Graz C, Bottlender R, Dirschedl P, Schoech H. Clinical correlates of later violence and criminal offences in schizophrenia. *Schizophr Res*. 2007 Aug;94(1-3):89-98.
5. Ragsdale KA, Bedwell JS. Relationships between dimensional factors of psychopathy and schizotypy. *Front Psychol*. 2013 Jul 26;4:482.
6. Hodgins S, Muller-Isberner R. [Schizophrenia and violence]. *Nervenarzt*. 2014 Mar;85(3):273-4, 276-8.
7. Hodgins S. Violent behaviour among people with schizophrenia: a framework for investigations of causes, and effective treatment, and prevention. *Philos Trans R Soc Lond B Biol Sci*. 2008 Aug 12;363(1503):2505-18.
8. Fazel S, Langstrom N, Hjern A, Grann M, Lichtenstein P. Schizophrenia, substance abuse, and violent crime. *JAMA*. 2009 May 20;301(19):2016-23.
9. Richard-Devantoy S, Bouyer-Richard AI, Jollant F, Mondoloni A, Voyer M, Senon JL. [Homicide, schizophrenia and substance abuse: a complex interaction]. *Rev Epidemiol Sante Publique*. 2013 Aug;61(4):339-50.

10. Ellouze F, Ayedi S, Masmoudi S, Bakri L, Chérif W, Zramdini R, et al. [Schizophrenia and violence, incidence and risk factors: a Tunisian sample]. *Encephale*. 2009 Sep;35(4):347-52.
11. Drake RE, McHugo GJ, Xie H, Fox M, Packard J, Helmstetter B. Ten-year recovery outcomes for clients with co-occurring schizophrenia and substance use disorders. *Schizophr Bull*. 2006 Jul;32(3):464-73.
12. Nordström A, Kullgren G. Victim relations and victim gender in violent crimes committed by offenders with schizophrenia. *Soc Psychiatry Psychiatr Epidemiol*. 2003 Jun;38(6):326-30.
13. Richard-Devantoy S, Olie JP, Gourevitch R. [Risk of homicide and major mental disorders: a critical review]. *Encephale*. 2009 Dec;35(6):521-30.
14. Woodward M, Nursten J, Williams P, Badger D. Mental disorder and homicide: a review of epidemiological research. *Epidemiol Psychiatr Soc*. 2000 Jul-Sep;9(3):171-89.
15. Munkner R, Haastrup S, Joergensen T, Kramp P. Registered criminality and sanctioning of schizophrenia patients. *Nord J Psychiatry*. 2009 Nov;63(6):485-92.
16. Schanda H, Stompe T, Ortwein-Swoboda G. [Increasing criminality in patients with schizophrenia: fiction, logical consequence or avoidable side effect of the mental health reforms?]. *Neuropsychiatr*. 2010;24(3):170-81.
17. Schanda H, Stompe T, Ortwein-Swoboda G. Dangerous or merely difficult? The new population of forensic mental hospitals. *Eur Psychiatry*. 2009 Sep;24(6):365-72.
18. Salize HJ, Schanda H, Dressing H. From the hospital into the community and back again - a trend towards re-institutionalisation in mental health care? *Int Rev Psychiatry*. 2008 Dec;20(6):527-34.
19. Munkner R, Haastrup S, Joergensen T, Kramp P. The association between psychopathology of first-episode psychosis patients within the schizophrenia spectrum and previous offending. *Nord J Psychiatry*. 2009;63(2):124-31.
20. Amore M, Menchetti M, Tonti C, Scarlatti F, Lundgren E, Esposito W, et al. Predictors of violent behavior among acute psychiatric patients: clinical study. *Psychiatry Clin Neurosci*. 2008 Jun;62(3):247-55.
21. Bennett DJ, Ogloff JR, Mullen PE, Thomas SD, Wallace C, Short T. Schizophrenia disorders, substance abuse and prior offending in a sequential series of 435 homicides. *Acta Psychiatr Scand*. 2011 Sep;124(3):226-33.
22. Short TB, Thomas S, Luebbers S, Mullen P, Ogloff JR. A case-linkage study of crime victimisation in schizophrenia-spectrum disorders over a period of deinstitutionalisation. *BMC psychiatry*. 2013 Feb 20;13:66.
23. Nielssen OB, Westmore BD, Large MM, Hayes RA. Homicide during psychotic illness in New South Wales between 1993 and 2002. *Med J Aust*. 2007 Mar 19;186(6):301-4.
24. Jones RM, Lichtenstein P, Grann M, Langstrom N, Fazel S. Alcohol use disorders in schizophrenia: a national cohort study of 12,653 patients. *J Clin Psychiatry*. 2011 Jun;72(6):775-9; quiz 878-9.
25. Dietz PE. Mentally disordered offenders. Patterns in the relationship between mental disorder and crime. *Psychiatr Clin North Am*. 1992 Sep;15(3):539-51.
26. Miettunen J, Jaaskelainen E. Sex differences in Wisconsin Schizotypy Scales--a meta-analysis. *Schizophr Bull*. 2010 Mar;36(2):347-58.
27. Salem JE, Kring AM. The role of gender differences in the reduction of etiologic heterogeneity in schizophrenia. *Clin Psychol Rev*. 1998 Nov;18(7):795-819.
28. Hambrecht M, Maurer K, Hafner H. Gender differences in schizophrenia in three cultures. Results of the WHO collaborative study on psychiatric disability. *Soc Psychiatry Psychiatr Epidemiol*. 1992 May;27(3):117-21.
29. Leung A, Chue P. Sex differences in schizophrenia, a review of the literature. *Acta Psychiatr Scand Suppl*. 2000;401:3-38.
30. Sturup J, Monahan J, Kristiansson M. Violent behavior and gender of Swedish psychiatric patients: a prospective clinical study. *Psychiatr Serv*. 2013 Jul 1;64(7):688-93.
31. Fazel S, Gulati G, Linsell L, Geddes JR, Grann M. Schizophrenia and violence: systematic review and meta-analysis. *PLoS Med*. 2009 Aug;6(8):e1000120.
32. van Dongen J, Buck N, Van Marle H. Unravelling offending in schizophrenia: Factors characterising subgroups of offenders. *Crim Behav Ment Health*. 2014 Mar 27.
33. Ongur D, Lin L, Cohen BM. Clinical characteristics influencing age at onset in psychotic disorders. *Compr Psychiatry*. 2009 Jan-Feb;50(1):13-9.
34. Vinokur D, Levine SZ, Roe D, Krivoy A, Fischel T. Age of onset group characteristics in forensic patients with schizophrenia. *Eur Psychiatry*. 2014 Mar;29(3):149-52.
35. Tsighebrhan R, Shibre T, Medhin G, Fekadu A, Hanlon C. Violence and violent victimization in people with severe mental illness in a rural low-income country setting: a comparative cross-sectional community study. *Schizophr Res*. 2014 Jan;152(1):275-82.
36. Singh JP, Grann M, Lichtenstein P, Langstrom N, Fazel S. A novel approach to determining violence risk in schizophrenia: developing a stepped strategy in 13,806 discharged patients. *PLoS One*. 2012;7(2):e31727.
37. Outram S, Harris G, Kelly B, Cohen M, Sandhu H, Vamos M, et al. Communicating a schizophrenia diagnosis to patients and families: a qualitative study of mental health clinicians. *Psychiatr Serv*. 2014 Apr 1;65(4):551-4.