Schizophrenia and Homicidal Behavior

by Markku Eronen, Jarl Tilhonen, and Panu Hakola

Abstract

It is generally thought that schizophrenia does not predispose subjects to homicidal behavior. However, many previous studies have suffered from notable methodological weaknesses. In particular, obtaining comprehensive study groups of violent offenders has been difficult. Finnish police have been able to solve about 97 percent of homicides during the last few decades. Because most homicide offenders are subjected to intensive forensic psychiatric examination, we were able to obtain data for 93 homicide offenders with schizophrenia among 1,423 arrested during a 12-year period. Calculations of the odds ratios revealed that the risk of committing a homicide was about 10 times greater for schizophrenia patients of both genders than it was for the general population. Schizophrenia without alcoholism increased the odds ratio more than 7 times; schizophrenia with coexisting alcoholism more than 17 times in males.


The media have always been interested in the relationship between violent behavior and major mental disorders. Stories of insane homicide offenders, both real and fictitious, are among the most popular in the entertainment business. Despite the threat to public health, assessing the risk of violent behavior has been difficult. One of the main problems in research on violence is that mild offenses are not detected by the police, and a significant proportion of even the most serious violence remains unsolved. In the United States, for example, more than 30 percent of all homicide offenders have remained undetected (International Criminal Police Organisation; Statistics Centre 1991).

Some recent studies have contradicted the earlier view that major mental disorders do not expose subjects to violent behavior (Link et al. 1992; Monahan 1992; Hodgins 1993). Data obtained from a Swedish birth cohort indicates that men with major mental disorders are four times more likely than men with no disorder or handicap to commit a violent offense. The corresponding risk for females is 27 times greater (Hodgins 1992). The relative risk of criminal offense among people with schizophrenia compared with the general Swedish population has been reported to be 1.2 times greater for men and 2.2 times greater for women (Lindqvist and Allebeck 1990). Another study by Lindqvist has revealed that in 20 out of 64 homicide cases (31%) the offender was considered to be mentally ill or suffering from a brain lesion (Lindqvist 1986). Côté and Hodgins have reported that 11 out of 87 (12.6%) male homicide offenders in Quebec's penitentiaries suffered from schizophrenia (Côté and Hodgins 1992). In Denmark, a study with a followup period of more than 25 years demonstrated that 20 percent of male and 44 percent of female homicide offenders had a diagnosis of psychosis (Gottlieb et al. 1987).

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Recent data from a study of incident cases of schizophrenia in the London Borough of Camberwell between 1964 and 1984 (Wessely et al. 1994) revealed that the disease is associated with an increased hazard of acquiring a criminal record. In this study, men with schizophrenia were found to be 3.8 times more likely to commit violent offenses. Our own preliminary data from a 1-year period showed a significant association between some specific mental disorders and homicidal behavior (Tiihonen et al. 1993). In this article, we present data from a comprehensive 12-year study that reveals a significant association between schizophrenia and homicide risk.

Methods

In Finland, 1,476 murders and manslaughters were committed between January 1, 1980, and December 31, 1991. (As of December 31, 1990, the Finnish population was 4,988,478, of which 1,933,000 men and 2,101,000 women were over age 15 [Statistical Yearbook of Finland; Statistics Centre 1992].) The Finnish police were able to identify 1,428 offenders (criminality known to the police, 1980–1991; Statistics Centre 1991). We estimated that the male/female ratio was the same in the 48 (1,476–1,428 = 48) unsolved homicides as in the solved cases. Using this assumption and excluding the 53 offenses committed by the same person (50 males and 3 females), we arrived at totals of 1,302 male and 121 female homicide offenders.

Methods

In Finland, almost all homicide offenders are examined by at least one psychiatrist to determine if a thorough forensic psychiatric examination is required. These examinations include an exhaustive psychiatric evaluation, standardized psychological tests such as the Wechsler Adult Intelligence Scale–Revised (Wechsler 1981) the Rorschach (Erdberg and Exner 1984), and the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway and McKinley 1943), evaluation of physical condition with laboratory tests (blood tests, electroencephalography, and, in some cases, computed tomography of the head), and 4 to 8 weeks of observation by hospital staff. All these reports are filed by the National Board of Medico-Legal Affairs of Finland. During our 12-year sample period, 3,292 forensic psychiatric examinations were made, 93 of homicide offenders with schizophrenia. DSM-III-R (American Psychiatric Association 1987) classification has been used in Finland since 1987. Before that, diagnoses in forensic psychiatric reports were based on DSM-III (American Psychiatric Association 1980) or ICD-8 (World Health Organization 1967) classifications. The reports were systematically checked for DSM-III-R schizophrenia criteria. In six cases, the forensic psychiatrist had described the mental disorder and estimated the criminal responsibility of the offender, but had not presented the diagnosis. Since these six cases fulfilled the diagnostic criteria of schizophrenia, they were included in our index group. One case, in which there were too few facts in the forensic psychiatric report for a definite schizophrenia diagnosis, was omitted. Checking the reports also revealed that when psychiatrists had diagnosed major mental disorders such as schizophrenia, secondary diagnoses had not always been presented. If the DSM-III-R criteria for alcoholism were clearly described in the forensic psychiatric reports, the diagnosis of alcoholism was included (13 cases), even though forensic psychiatrists had not presented this secondary diagnosis.

Odds ratios were calculated using estimates based on the 1-month point prevalence estimates for DSM-III disorders obtained from a large U.S. epidemiologic catchment area study (Regier et al. 1984).
1988), a study of the prevalence of psychiatric disorders in patients with alcohol and other drug problems in Canada (Ross et al. 1988), and a study of substance abuse among schizophrenia patients in New York (Dixon et al. 1991). The Finnish prevalence figures do not differ notably from the figures from these studies (Lehtinen et al. 1993).

**Results**

Of 1,423 homicide offenders during a 12-year period, we found 86 men and 7 women with schizophrenia. Odds ratios, 95 percent confidence limits, and p values are presented in table 1. Schizophrenia increased the odds ratio of committing homicides by about tenfold among both genders. Schizophrenia without alcoholism increased the odds ratios by about sevenfold among men, and schizophrenia with alcoholism by about seventeenfold. The corresponding ratios for women were about fivefold for schizophrenia without alcoholism and more than eightyfold for schizophrenia with alcoholism. The prevalence of subforms of schizophrenia and the secondary diagnoses of alcoholism are presented in table 2. About 50 percent of the homicide offenders with schizophrenia suffered from the paranoid form. The undifferentiated form of schizophrenia was diagnosed in 22.6 percent of the offenders, the schizoaffective form in 11.8 percent, and hebephrenic form in 10.8 percent. Forty-one of our 93 offenders were also alcoholics.

**Discussion**

In this article we used a new quantitative method in the risk as-

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### Table 1. Significance of risk increase for homicide offenders with schizophrenia in Finland from 1980 to 1991

<table>
<thead>
<tr>
<th>Diagnosis (DSM-III-R)</th>
<th>Subjects among general population, n</th>
<th>Subjects in Finnish population, n</th>
<th>Odds ratio</th>
<th>95% Confidence Interval</th>
<th>χ²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia (DSM-III-R)</td>
<td>13,530</td>
<td>86</td>
<td>0.7</td>
<td>8.6</td>
<td>0.1−1.7</td>
<td>650</td>
</tr>
<tr>
<td>Males</td>
<td>14,710</td>
<td>7</td>
<td>0.7</td>
<td>10.0</td>
<td>4.1−18.7</td>
<td>45</td>
</tr>
<tr>
<td>Females</td>
<td>14,090</td>
<td>48</td>
<td>0.595</td>
<td>7.25</td>
<td>5.4−5.9</td>
<td>248</td>
</tr>
<tr>
<td>Schizophrenia without alcoholism (estimate)</td>
<td>10,150</td>
<td>4</td>
<td>0.67</td>
<td>5.1</td>
<td>1.9−13.7</td>
<td>12.6</td>
</tr>
<tr>
<td>Males</td>
<td>14,090</td>
<td>48</td>
<td>0.595</td>
<td>7.25</td>
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<td>Schizophrenia with alcoholism (estimate)</td>
<td>3,380</td>
<td>38</td>
<td>0.175</td>
<td>17.2</td>
<td>25.7−22.7</td>
<td>555</td>
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Note—Population = 1,332,000 men and 2,170,000 women, over 15 (Statistical Yearbook of Finland—1992). Point prevalence based on 4, short point prevalences obtained from a large urban, epidemiological catchment area (Reiger et al. 1986). Diagnosis of schizophrenia based on criteria of International Classification of Diseases and Related Health Problems (World Health Organization, 1980).
assessment of homicidal behavior with a comprehensive sample to reveal the association of schizophrenia and homicidal behavior, which has been denied in some previous studies (Kaplan and Sadock 1989). In this 12-year sample we were able to confirm our earlier results about the statistical risk increase obtained from a 1-year sample (Tiihonen et al. 1993). Calculations were based on the assumption that offenders with insufficient data did not have schizophrenia. The fact that almost all homicide offenders in Finland are examined by at least one psychiatrist guaranteed that a forensic psychiatric evaluation would be performed on almost all those with schizophrenia. Nonetheless, we may have missed a few cases in which the offender committed his homicide in a mental hospital while being treated for well-documented schizophrenia. In some rare cases, Finnish courts of law may not ask for thorough forensic psychiatric evaluation if it is evident that the offender will be found not guilty by reason of insanity. Also, we did not have access to offenders who committed suicide immediately after their violent act. Figures were calculated as if none of the unsolved homicides committed during our sample period (48 of 1,476) could be attributed to people with schizophrenia. Because of the above assumptions, the odds ratios presented must be regarded as minimum numbers.

All diagnoses were based on exhaustive clinical examinations supported by standardized psychological tests, detailed data on the offender’s anamnesis, and observation by hospital staff. Finland’s legal system also requires that forensic psychiatric reports follow

| Subforms of all schizophrenia subtypes and the secondary diagnoses of alcoholism among homicide offenders with schizophrenia in Finland, 1980–1991 |

<table>
<thead>
<tr>
<th>Diagnosis (DSM–III–R)</th>
<th>Paraphrenic</th>
<th>Undifferentiated</th>
<th>Disorganized (hebephrenic)</th>
<th>Residual</th>
<th>Catatonic</th>
<th>Schizophreniform psychosis</th>
<th>Total number/percentage of offenders with schizophrenia</th>
<th>Total number/percentage of comorbid alcoholism among offenders with schizophrenia</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>47 (50.5)</td>
<td>21 (22.6)</td>
<td>10 (11.8)</td>
<td>3 (3.2)</td>
<td>1 (1.1)</td>
<td>93 (100.0)</td>
<td>1 (0.0)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>


Data obtained from a Finnish study (Salokangas et al. 1987).
The relationship between psychiatric disorders and alcoholism is a complex issue. Evidence suggests that substance abuse is more common among schizophrenia patients than in the general population (Regier et al. 1990). The role of possible comorbid personality disorders makes this relationship even more complex. The figures presented here have been calculated under the assumption that schizophrenia is the main disorder and substance abuse is secondary. In any case, the odds ratios for homicidal behavior remain significantly higher even among schizophrenia subjects without alcoholism than in the general population. In fact, if one wishes to examine the issue in this way, a relevant control would be a general population without alcoholism, which would again raise the odds ratios of homicidal behavior among the examination group of nonalcoholic schizophrenia subjects.

Our results indicate a clear increase in the odds ratios for homicidal behavior among people with schizophrenia. Because of the retrospective nature of this study, the risk increase detected cannot be regarded as a causal factor. Further longitudinal followup studies are needed to examine the possible causal association between schizophrenia and homicide. Our data also suggest that alcoholism is an important comorbid disorder with schizophrenia in Finnish homicides. The highest odds ratios of the present study were observed among female schizophrenia subjects with comorbid alcoholism.

Our results also indicate that paranoid and schizoaffective forms of schizophrenia are overrepresented among homicide offenders, compared with previous data on the prevalence of the subforms of schizophrenia (Salokangas et al. 1987). The small number of offenders with schizophreniform psychosis is also notable. This could be due at least in part to the timing of forensic psychiatric examinations. Because of bureaucratic delay, these examinations are usually made about 6 months after offenders have committed their acts. This delay can in some cases confirm the schizophrenia diagnosis instead of less severe diagnoses such as schizophreniform psychosis.

We have had an advantage in studying the relationship of mental illness and homicide under conditions that are much more simple than those in, for example, the United States. Our study group covered the entire country; the overall clearance rate of homicide in Finland has been extremely high; Finland is a racially and socially homogeneous country; and the role of drug or gang violence in homicides has remained insignificant. Our results cannot be directly applied to the United States, where crime rates, because of the extent of illegal drug use and the prevalence of organized crime, are higher than in Finland. Our results do indicate that schizophrenia perse is statistically associated with homicidal behavior, however. Still, we wish to point out that most people with schizophrenia cannot be considered dangerous, though the risk of homicidal violence is remarkably high among some minor subgroups of schizophrenia patients. We think that it is essential for psychiatrists to learn to identify these potentially violent subjects better, so society can focus limited violence prevention resources on these high-risk offenders. At the moment, a notable amount of evidence supports the...
idea that psychotic symptoms, such as persecutory themes, may lead to violence (Link et al. 1992; Krakowski and Czobor 1994).

References


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Announcement

Nominations are being sought for the 1996 American Psychological Foundation Alexander Gralnick Award for schizophrenia research. Candidates for this award of $2,000 must demonstrate an exceptional contribution to schizophrenia research with a focus on the discovery and/or treatment of the earliest signs of schizophrenia, emphasizing the psychosocial aspects as opposed to the biological aspects of the disease process.

Preference will be given to persons working in a psychiatric facility. Applications must be submitted to the American Psychological Foundation by March 1, 1996. To request an application or additional information, please contact:

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