Article

Risk of Repeat Offending Among Violent Female Offenders With Psychotic and Personality Disorders

Hanna Putkonen, M.D.

Erkki J. Komulainen, Ph.D.

Matti Virkkunen, M.D., Ph.D.

Markku Eronen, M.D., Ph.D.

Jouko Lönnqvist, M.D., Ph.D.

Objective: The aim of this study was to examine the rate of criminal recidivism among female homicide offenders evaluated by forensic psychiatrists, to compare this rate with that of other violent female offenders, and to analyze the explanatory variables of recidivism.

Method: This was a retrospective study of all women (N=132) sent for forensic psychiatric examination after being convicted of homicide or attempted homicide in Finland during 1982–1992; subjects were followed up until mid-1999. Data were collected from the national crime register, the prisoner record, and Statistics Finland. The authors compared the rate of violent repeat offending in this group with that of other violent women and analyzed the explanatory variables of recidivism.

Results: During the follow-up period, 23% of the study group committed a repeat offense, 15% of which were violent and 3% of which were homicides. Almost half of all repeat offenses occurred within the first 2 years after the index offense. There was no statistically significant difference in violent recidivism between the study group and other violent female offenders. Of those who committed repeat offenses, 81% were diagnosed with a personality disorder, and 10% were diagnosed with psychosis. Criminality prior to the index event, alcohol or drug dependency, and young age significantly raised the risk and rapidity of further offenses.

Conclusions: The risk of recidivism was high in this study group yet was similar to that of other violent female offenders. The risk was high very early after release. It seems that women and men who are violent and have personality disorders are comparable in their risk of recidivism.

(Am J Psychiatry 2003; 160:947–951)

Although violent offenders and their future threat are the topic of ongoing debate (1, 2), there is scarce information on recidivism among women offenders. A study found female criminal offenders in the Winnipeg Remand Centre to be repeat offenders in 73% of cases, and alcohol or drug problems to be associated with recidivism (3). The association between mental disorders and homicide and recidivism has also been studied and discussed quite extensively (4–7). This study focuses on questions of criminal recidivism for all women (N=132) referred for forensic psychiatric evaluation prior to sentencing for homicide or attempted homicide in Finland during 1982–1992. Our aims were to investigate the rate of all criminality both before and after the index offense, to compare this with violent offenders without mental illness via odds ratios, and to analyze the statistical associations of recidivism with explanatory variables.

Method

During the study collection period (1982–1992), more than 90% of homicides in Finland were solved every year. Women committed about 10% of the total (8). Established practice in Finland is for homicide offenders to undergo a detailed forensic psychiatric examination prior to sentencing or at least to be evaluated by a psychiatrist to help the court decide whether such an examination is needed (9). This study focused on the 132 women who received a forensic psychiatric evaluation after being convicted of homicide or attempted homicide during 1982–1992; 22 had committed murder, six were charged with attempted murder, 55 had committed manslaughter, 42 were charged with attempted manslaughter, and seven had committed neonaticide. We previously reported the circumstances of these crimes in detail (10). All subjects were Finnish, white Caucasian; their ages at the index offense were almost normally distributed with a slight positive skew, and the mean age was 33 years (SD=13).

The target variables were repeat offending and how soon it occurred after the index offense. The explanatory variables were age at index offense, psychiatric diagnosis from the forensic psychiatric examination, and history of criminal activity before the index offense.

Criminal Activity

Information on criminal activity before the index offense was collected from the forensic psychiatric examination reports, and information on criminal activity both before and after the index offense was obtained from the National Crime Register, examined in May 1999. We supplemented the data with the prisoner record. The information was analyzed as a lifetime variable to produce an overview of the subjects' offense history and the survival statistics. We included all offenses and coded them according to severity. Violent offenses included homicide, attempted homicide, or any assault. Homicide included murder, voluntary manslaughter, and neonaticide, all of which Finnish law defines as intentional and life threatening. In practice, the Finnish definition of murder

TABLE 1. DSM-III-R Disorders[a] Among 132 Female Criminals Convicted of Homicide or Attempted Homicide in Finland During 1982–1992

Diagnosis	N	%
Schizophrenia	15	11
Psychotic mood disorders	5	4
Other psychosis[b]	17	13
Alcohol abuse/dependence	58	44
Psychoactive substance abuse/dependence	10	8
Personality disorders	94	71
Other diagnosis[c]	9	7
No diagnosis	8	6

[a] Diagnoses obtained from forensic psychiatric examinations. All diagnoses are reported, so the total number of diagnoses exceeds 132 because of comorbidity.
[b] Paranoid, unspecified, puerperal, or organic psychosis.
[c] Reactive disorder, organic syndrome, or identity disorder.

approximates first-degree murder and manslaughter second-degree murder.

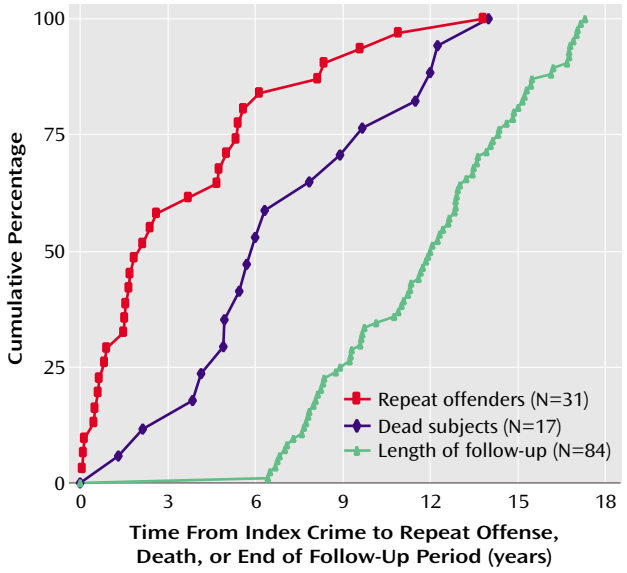
Statistics Finland collects data on the rate of criminal activity in the general population. For the calculation of odds ratios, we received a specially formulated statistic. Identification other than grouping was not provided. The target population was the group of women recorded as committing a violent offense from Jan. 1, 1982, through May 31, 1999. We analyzed the prevalence of violent recidivism after this index offense for our study population and for all other violent female offenders. The figures vary slightly between sources, mainly because of different registering policies (11).

Psychiatric Diagnoses

In Finland, the court decides whether or not a forensic psychiatric examination is required to assess the criminal responsibility of a homicide perpetrator. The examination is an extensive, hospital-based psychiatric study of the offender that lasts a maximum of 2 months. It is performed by a forensic psychiatrist, who is always a civil servant of the state (i.e., the psychiatrist gets paid by the state and is expected to be as objective as possible). The examination is very thorough and includes exhaustive psychiatric evaluation; standardized psychological tests (e.g., the WAIS, Rorschach, and MMPI); evaluation of physical condition, including laboratory testing (basic blood tests, EEG, and computed tomography scan of the head; and constant observation of the offender by the hospital staff lasting normally from 4–8 weeks. The forensic psychiatrist is advised to estimate what were the most severe mental disorders (psychoses > personality disorders > anxiety disorders or dysthymia), if any, from which the offender suffered during the offense. After the examination, the forensic psychiatrist presents a detailed report with the DSM-III-R diagnosis (before 1987, DSM-III criteria were used) to the Finnish National Authority of Medico-Legal affairs (FNAMLA). The report is then scrutinized in the FNAMLA by at least two independent psychiatrists and by at least one lawyer. If they disagree with the report, they send it back to the forensic psychiatrist for modification. These investigative reports are then filed in the FNAMLA (9, 12, 13). To further improve the reliability of the diagnoses, we also let another independent forensic psychiatrist reevaluate the diagnostic data. In 127 of 132 cases (96.2%), the psychiatrists agreed; thus, the interrater agreement was 0.96. All the diagnoses are shown in Table 1.

For our study purposes we classified the diagnoses as follows: psychotic disorders (28%), personality disorders (61%) (mostly cluster B illnesses [N=43]), and neither (11%). Of the 37 women with psychotic disorders, 14 also had a comorbid personality disorder diagnosis but were only classified under psychotic disorders according to convention. We also included the diagnosis of alcohol or drug dependency (45%) as a background variable. We have reported the detailed diagnoses earlier (14).

FIGURE 1. Cumulative Recidivism and Death Rates Over an 18-Year Follow-Up Period for 132 Female Criminals Convicted of Homicide or Attempted Homicide in Finland During 1982–1992



Follow-up time was recorded with 1 month's accuracy from the time of the index offense (1982–1992) until the repeat offense, death, or the end of follow-up in May 1999. When we repeated the survival analysis using the time after release from prison or hospital as follow-up time, the results were unchanged. By the end of follow-up period, 22 women had died; we previously reported on their higher mortality rate in detail (15). Five of the dead subjects had committed a new offense and were therefore included in the repeat offender group. The mean follow-up time for repeat offenders was 4 years (SD=4, range=1 month–14 years), and for the rest, excluding the dead subjects, 12 years (SD=3, range=6–17).

After the index offense, 31 of 132 were committed to obligatory hospital care, and one was committed to voluntary hospital care. The mean time of initial hospitalization was 4.4 years (SD=3, range=9 months–12 years). The mean time of imprisonment was 3 years (SD=2, range=3 months–10.4 years).

Statistical Analysis

Odds ratios (16, 17) available directly from binary logistic regression were used to compare the recidivism of the study group with the general population values.

We used Cox regression (18) in the final analysis to examine the association of explanatory variables with the rate of recidivism. After initial screening, the following variables were used: age at index offense (continuous scale), psychiatric diagnosis (nominal scale), alcohol or drug dependency (binary), and criminal activity before the index offense (binary). A retrospective follow-up study with archive data produces problems known as censoring, i.e., working with cases where the event has not happened yet, and simultaneously possessing different follow-up times. All the analyses were carried out with several parallel methods to avoid possible artifacts due to the statistical method. We also divided the living subjects with no repeat offenses into three groups according to the time of follow-up: <10 years, 10–13 years, and 13–17 years. We used SPSS 8.0 and 10.0 statistical software in all the analyses. All tests were two-tailed with alpha set at 0.05.

TABLE 2. Likelihood of Violent Recidivism for 132 Female Criminals Convicted of Homicide or Attempted Homicide in Finland During 1982–1992 Relative to Violent Female Criminals in the General Population, by Age Group[a]

Subject	Study Group (N=132)		Violent Offenders in General Population (N=1,736)		Likelihood		Analysis	
Age (years)	Repeat Offenders	No Recidivism	Repeat Offenders	No Recidivism	Odds Ratio	95% CI	Wald χ^2 (df=1)	p
<25	14	23	194	515	1.62	0.82–3.20	1.89	0.17
25–39[b]	14	53	141	612	1.15	0.62–2.12	0.19	0.67
≥40	0	28	22	252				
Total[c]	28	104	357	1,379	1.04	0.67–1.60	0.03	0.86

[a] The figures for violent offenses (homicides, attempted homicides, assaults) for both the index crime and the repeat offense were obtained from Statistics Finland. Statistics were available until the end of 1997.
[b] In analyses in which all subjects were examined simultaneously, the likelihood of violent recidivism was significantly lower among subjects 25–39 years of age than among those under 25 (odds ratio=0.60, 95% CI=0.47–0.76; Wald χ^2=18.10, df=1, p<0.0001).
[c] In the analyses, the study group was not included among the violent offenders in the general population. When subjects in the study group were included, the likelihood of violent recidivism increased but still did not significantly differ (odds ratio=1.33, 95% CI=0.84–2.10; Wald χ^2=1.52, df=1, p<0.22).

Results

After the index offense, 31 (23%) of 132 had committed repeat offenses, 15% of which were violent. Of these repeat offenders, 25 (81%) of 31 had a personality disorder, 10% had a psychotic disorder, and 90% had committed criminal offenses before the index offense. Of all the 132 women, 74 (56%) had committed some offense before the index offense, 33% of which were violent. Of these, 58 (78%) of 74 were diagnosed with a personality disorder, and 18% were diagnosed with a psychotic disorder.

Two women committed homicide after their index homicide, and two had committed homicide before the index homicide. All had personality disorders. Five other women were convicted of attempted homicide after their index offense, and four had been convicted of attempted homicide before their index offense. Thirteen women committed violent offenses after and 35 before their index offense.

Repeat offending happened early during the follow-up period; 48% committed another offense within the first 2 years of the index event (Figure 1). There were two clusters of recidivism: one soon after the offense and the other soon after release from prison. Of the repeat offenders, 80% committed their offense within the first 2 years after release from prison or the hospital. Eleven women committed their follow-up offense before they were released: three in prison, one in the hospital, four only a few days after their index offense but before arrest, two while free and awaiting sentence, and one after escape from prison.

The odds ratio for violent repeat offending was not significantly higher among the study population than among other violent female offenders (Table 2).

In the Cox regression, criminal activity before the index offense best predicted repeat offending. Having a psychiatric diagnosis did not reach statistical significance. However, our analyses suggested that personality disorders increased and psychotic disorders decreased the risk of recidivism (Table 3).

Discussion

To our knowledge, this is the first published nationwide study on recidivism in homicidal women. Our findings reveal that homicidal women referred for forensic psychiatric evaluation are prone to commit new offenses, even violent ones, especially if they are young and diagnosed with substance dependency or, probably, personality disorders. Previous offenses best predicted future offenses, which usually occurred very soon after the index offense. It seemed that the violent recidivism rate of the studied homicide offenders did not differ from that of other violent female offenders.

After their index offense, 3% of the women in this study committed another homicide. In a similar study involving male subjects, 2% were homicide recidivists (19). Twenty-three percent of our women committed some repeat offense, which is comparable to the finding that 26% of violent male offenders engage in criminal repeat offenses (20). It thus seems that when a woman is violent, her recidivism might be similar to that of a violent man.

Our subjects tended to either repeat offend soon after the index offense or not at all. This early recidivism has also been reported in male subjects (19). The average sentence for homicides in Finland is about 80 months for female offenders, but they are usually released within two-thirds of their time (19).

Previous criminality of our subjects increased their future risk of offending nine-fold. Finnish male homicide offenders were found to have a 10-fold risk of homicidal behavior if they had committed an earlier homicide (19). Other authors, too, have found a history of violence a good predictor of future violence (1, 21, 22).

Young age and alcohol or drug dependency increased our subjects' risk of repeat offending. One study found no differences in criminal history between younger and older female homicide offenders (23), although the number of subjects was quite small. Examining the variables together, alcohol or drug dependency lost its predictive power because it correlated with other explanatory variables, mainly previous offenses and personality disorders.

TABLE 3. Explanatory Variables Predicting Recidivism in 132 Female Criminals Convicted of Homicide or Attempted Homicide in Finland During 1982–1992

Predictor[a]	Odds Ratio	95% CI	Wald χ^2	df	p
Variables entered separately					
1. Age at index offense	0.94	0.90–0.98	7.69	1	0.006
2. Alcohol/drug dependency	2.92	1.37–6.21	7.74	1	0.005
3. Psychiatric diagnosis[b]			6.40	2	0.05
Psychotic disorder	0.42	0.08–2.06	1.16	1	0.29
Personality disorder	1.83	0.55–6.07	0.96	1	0.33
4. Criminal activity before index offense	9.36	2.84–30.84	13.53	1	<0.0001
Items entered jointly					
1. Age at index offense	0.96	0.92–1.00	3.87	1	0.05
2. Criminal activity before index offense	7.73	2.32–25.76	11.08	1	0.001

[a] The explanatory power of the variables was first examined by entering them into the Cox regression analysis separately, with significant variables then entered jointly. Only statistically significant ($p<0.05$) variables are presented.
[b] Reference category was no psychiatric diagnosis.

Of the women with personality disorders, 31% were repeat offenders, and all the homicide recidivists had personality disorders. However, in the Cox analysis, personality disorders did not achieve statistical significance. This was partly caused by the choice of the reference group. Violent recidivism, homicide included, has been found to be associated with antisocial personality disorder (20).

Only three (8%) of our psychotic subjects committed repeat offenses. Previous studies have generated a variety of findings on the effect of psychosis on criminality (24, 25).

The rate of violent recidivism in our study group was very similar to that of other violent offenders (N=1,736). This implies that conclusions drawn from research on homicidal women in forensic psychiatric examinations, at least the nonpsychotic group, may also be valid for other criminally violent women.

Limitations

As female homicide is a comparatively rare phenomenon, a sufficiently large representative sample is difficult to obtain. This explains why we could not divide the data into subgroups of different repeat offenses in our statistical analysis. However, a definite strength is that our data were nationwide. Only a few homicidal women were not sent for forensic psychiatric examination, and offenders who promptly committed suicide explain the rest of the loss. There would have been 133 women in our data, but one took her life before the evaluation. It was not possible for us to discover how many women committed suicide before the court demanded a forensic psychiatric examination. In Finland, the suicide rate soon after homicide has been estimated at 8% among male subjects (26). The percentage for women may be even higher; a review of murder-suicide studies found depressed mothers to be heavily involved (27). Finally, it can be assumed that our data captured most of the perpetrators with severe personality disorders and almost all with psychotic disorders.

The reliability and validity of the diagnoses might have imposed limitations on our study. All the diagnoses from the forensic psychiatric examinations were based on exhaustive clinical examinations, and if diagnostic criteria were not fulfilled, the examining forensic psychiatrist would not have made a psychiatric diagnosis. For the purposes of a reliability check, an independent forensic psychiatrist reevaluated the diagnoses, and the interrater agreement was 0.96. The figures can be considered accurate for the most severe mental disorders, such as schizophrenia, whereas those for some personality disorders may actually be underestimates. The diagnoses in Finnish forensic psychiatric examinations, and therefore also in our study, were based on DSM-III criteria and ICD-8 codes during 1982–1986 and DSM-III-R criteria thereafter. This change should not have affected our basic categorization of disorders, which can be considered adequate for the presented analysis. Finally, the results concern associations and do not allow conclusions of direct causality.

Finland has exceptionally reliable and complete registers for such studies and is moreover a homogeneous country both racially and socially. Illicit drug use, gang violence, and organized crime are less common in Finland than in many other countries. Our findings may therefore not be directly applicable elsewhere—the United States included.

Definite conclusions on criminal recidivism are mildly limited by the fact that our study was not a lifetime follow-up. However, the mean follow-up time for those who were not repeat offenders was as high as 12 years. Furthermore, the greatest risk of recidivism was early. The ideal would be to follow all subjects until death, but a longer period would escalate the problems related to registers.

The national crime register is reliable for serious crimes, and our follow-up time revealed at least all offenses with a maximum of 2 years unconditional sentence. According to Finnish law, offenses are deleted from the crime register after 5, 10, or 20 years unless another offense is committed first. In addition, dead subjects are extracted completely. However, we completed the missing data with the prisoner record, which revealed eight subjects with missing data. Two of these had been in hospital care, leaving six with missing information. However, the lack of current records implies no further offenses took place. All told, the presented figures on recidivism should be considered underestimations and suggestive. Furthermore, mortality

was a competing factor to offending; high mortality obviously lessens the risk of recidivism.

Future Implications

This study covers a comprehensive nationwide sample of homicidal women from the time period 1982–1992. Even with its limitations, we believe it offers very valuable information. Because the rate and rapidity of recidivism of the violent women emerged as comparable to that of similar men, women should receive similar attention. Contrary to the common view of women's minimal "dangerousness," there seems to be a definite group of criminally dangerous women: young women with alcohol or drug dependency and personality disorders. This should be considered in both the medical health care and prison systems. Some treatment needs have been discussed (28), but more resources should be applied to treatment while in prison and to discharge planning, maybe even involving a strict monitoring period, to counter the risk of repeat offenses. Future research should focus on sufficiently large prospective samples.

Received March 19, 2001; revisions received Aug. 31, 2001, and Aug. 16, 2002; accepted Oct. 14, 2002. From the Vanha Vaasa Hospital; the Department of Mental Health and Alcohol Research, National Public Health Institute, Helsinki; the University of Helsinki Departments of Education and Forensic Psychiatry, Helsinki. Address reprint requests to Dr. Putkonen, Vanha Vaasa Hospital, P.O. Box 13, FIN–65381 Vaasa, Finland; hanna.putkonen@vvs.fi (e-mail).

The authors thank the Statistics Finland Department of Crime Statistics and the Legal Register Office and Prison Department of the Ministry of Justice for their assistance with this study.

References

1. Bonta J, Law M, Hanson K: The prediction of criminal and violent recidivism among mentally disordered offenders: a meta-analysis. Psychol Bull 1998; 123:123–142
2. Dolan M, Doyle M: Violence risk prediction: clinical and actuarial measures and the role of the Psychopathy Checklist. Br J Psychiatry 2000; 177:303–311
3. Robertson RG, Bankier RG, Schwartz L: The female offender: a Canadian study. Can J Psychiatry 1987; 32:749–755
4. Eronen M, Angermeyer MC, Schulze B: The psychiatric epidemiology of violent behaviour. Soc Psychiatry Psychiatr Epidemiol 1998; 33:S13–S23
5. Tiihonen J, Hakola P: Psychiatric disorders and homicide recidivism. Am J Psychiatry 1994; 151:436–438
6. Tehrani JA, Brennan PA, Hodgins S, Mednick SA: Mental illness and criminal violence. Soc Psychiatry Psychiatr Epidemiol 1998; 33:S81–S85
7. Hodgins S: Mental disorder, intellectual deficiency, and crime: evidence from a birth cohort. Arch Gen Psychiatry 1992; 49: 476–483
8. Criminality in Finland 1992. Helsinki, National Research Institute of Legal Policy, 1993
9. Eronen M, Hakola P, Tiihonen J: Mental disorders and homicidal behavior in Finland. Arch Gen Psychiatry 1996; 53:497–501
10. Putkonen H, Collander J, Honkasalo M-L, Lönnqvist J: Personality disorders and psychoses form two distinct subgroups of homicide among female offenders. J Forensic Psychiatry 2001; 12:304–316
11. Niskanen T: Criminal Statistics Database. Helsinki, Statistics Finland, 1982–1997
12. Eronen M, Repo E, Vartiainen H, Tiihonen J: Forensic psychiatric organization in Finland. Int J Law Psychiatry 2000; 23:541–546
13. Eronen M: Mental disorders and homicidal behavior in female subjects. Am J Psychiatry 1995; 152:1216–1218
14. Putkonen H, Collander J, Honkasalo M-L, Lönnqvist J: Finnish female homicide offenders 1982–1992. J Forensic Psychiatry 1998; 9:672–684
15. Putkonen H, Komulainen E, Virkkunen M, Lönnqvist J: Female homicide offenders have greatly increased mortality from unnatural deaths. Forensic Sci Int 2001; 119:221–224
16. Rudas T: Odds Ratios in the Analysis of Contingency Tables: Sage University Papers Series on Quantitative Applications in the Social Sciences, 07-119. Thousand Oaks, Calif, Sage Publications, 1998
17. Hosmer DW, Lemeshow S: Applied Logistic Regression. New York, John Wiley & Sons, 1989
18. Norusis MJ: Cox Regression: SPSS for Windows: Advanced Statistics, release 10.0. Chicago, SPSS, 1999
19. Eronen M, Hakola P, Tiihonen J: Factors associated with homicide recidivism in a 13-year sample of homicide offenders in Finland. Psychiatr Serv 1996; 47:403–406
20. Dejong J, Virkkunen M, Linnoila M: Factors associated with recidivism in a criminal population. J Nerv Ment Dis 1992; 180: 543–550
21. Monahan J: Risk assessment of violence among the mentally disordered: generating useful knowledge. Int J Law Psychiatry 1988; 11:249–257
22. Widom CS: The cycle of violence. Science 1989; 244:160–166
23. Husain A, Anasseril DE, Harris PW: A study of young-age and mid-life homicidal women admitted to a psychiatric hospital for pre-trial evaluation. Can J Psychiatry 1983; 28:109–113
24. Yesavage JA, Benezech M, Larrieu-Arguille R, Bourgeois M, Tanke E, Rager P, Mills M: Recidivism of the criminally insane in France: a 22-year follow-up. J Clin Psychiatry 1986; 47:465–466
25. Appelbaum PS, Robbins PC, Monahan J: Violence and delusions: data from the MacArthur Violence Risk Assessment Study. Am J Psychiatry 2000; 157:566–572
26. Mattila J: On Proneness to Repeat a Violent Offence. Helsinki, Foundation for Psychiatric Research in Finland, 1988
27. Marzuk PM, Tardiff K, Hirsch CS: The epidemiology of murder-suicide. JAMA 1992; 267:3179–3183
28. Bland J, Mezey G, Dolan B: Special women, special needs: a descriptive study of female special hospital patients. J Forensic Psychiatry 1999; 10:34–45