# Mental illness in people who kill strangers: longitudinal study and national clinical survey

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## Abstract

**Objectives** To establish changes over time in the frequency of homicides committed by strangers, and to describe the personal and clinical characteristics of perpetrators of stranger homicides.

**Design** Longitudinal study and national clinical survey.

**Participants** People convicted of homicide in England and Wales between 1996 and 1999 and whether the victim was known to the perpetrator.

**Setting** England and Wales.

**Main outcome measure** Characteristics of perpetrators of homicides according to whether victims were strangers or not.

**Results** Stranger homicides increased between 1967 and 1997, both in number and as a proportion of all homicides. No increase was found, however, in the number of perpetrators placed under a hospital order after homicide, whether all homicides or stranger homicides only. 358 of 1594 (22%) homicides were stranger homicides. In these cases the perpetrator was more likely to be male and young. The method of killing was more likely to be by hitting, kicking, or pushing (36% (130 of 358) for victims who were strangers to the perpetrator compared with 14% (145 of 1074) for victims who were known). Perpetrators were less likely to have a history of mental disorder (34%, n = 80 *v* 50%, n = 142), a history of contact with mental health services (16%, 37 of 234 *v* 24%, 200 of 824), and psychiatric symptoms at the time of the offence (6%, n = 14 *v* 18%, n = 143). They were more likely to have a history of drug misuse (47%, n = 93 *v* 37%, n = 272); alcohol (56%, n = 94 *v* 41%, n = 285) or drugs (24% n = 44 *v* 12%, n = 86) were more likely to have contributed to the offence.

**Conclusions** Stranger homicides have increased, but the increase is not the result of homicides by mentally ill people and therefore the "care in the community" policy. Stranger homicides are more likely to be related to alcohol or drug misuse by young men.

## Introduction

In the past 30 years the annual number of convictions for homicide in England and Wales has risen substantially.[1] In the same period the number of mental hospital beds has more than halved, and several cases of homicide by mentally ill people have been reported as failures of community care.[2–4] As a result, public fear of being a random victim of violence by people with mental illness living in the community seems to have increased.[5 6] We examined changes over time in the proportion of homicides in England and Wales that are committed by people unknown to the victims (stranger homicides) and the personal and clinical characteristics of recent stranger homicides, including mental illness and contact with mental health services.

## Methods

The Home Office receives information on homicides (murder, manslaughter, infanticide) from all police forces in England and Wales and produces the homicide index from which annual figures are published.[1] The index includes information on the relationship between perpetrators and victims and whether perpetrators were placed under a hospital order after conviction, indicating the presence of mental disorder.

Stranger homicides are those in which perpetrators and victims are unknown to each other. A broader definition, however, is used in the analysis of figures before 1977; this includes those in which the relationship between perpetrator and victim was not established, the assumption being that they did not know each other. In most stranger homicides, both perpetrator and victim are members of the public, but the figures also include cases in which individuals are killed in the course of employment (for example, police officers) and contract or terrorist killings.

### Study design

*Longitudinal study*

Data were obtained from the homicide index for 1967-97. This includes number of convictions for homicide, number of stranger homicides (by the broader definition), and number of hospital orders.

*Cross sectional study*

The National Confidential Inquiry into Suicide and Homicide by People with Mental Illness has received information from the homicide index since 1996. A full account of the inquiry's methods is given elsewhere.[7]

We recorded the details of all individuals convicted of homicide in England and Wales during the three years from April 1996. These included personal characteristics of perpetrators and victims and details of the offence, prior convictions, and sentencing. Psychiatric reports were requested from the courts of trial, the Prison Service, the Crown Prosecution Service, and other sources. From these we extracted personal characteristics; clinical history; mental state at the time of the offence; history of alcohol or drug dependence and misuse, and the role these substances played in the offence; and contact with mental health services.

Using $\chi^2$ tests we compared stranger homicides (excluding being killed in the course of employment) with those in which perpetrators were known to

**Table 1** Homicides leading to conviction in England and Wales 1967-97. Values are numbers (percentages) unless stated otherwise

| Year | No of homicides | Stranger homicides | Non-stranger homicides | Hospital order | Stranger homicides and hospital order |
|---|---|---|---|---|---|
| 1967 | 354 | 33 (9) | 321 (91) | — | — |
| 1968 | 360 | 48 (13) | 312 (87) | — | — |
| 1969 | 332 | 36 (11) | 296 (89) | 37 (11) | — |
| 1970 | 339 | 46 (14) | 293 (86) | 41 (12) | — |
| 1971 | 407 | 60 (15) | 347 (85) | 44 (11) | — |
| 1972 | 409 | 73 (18) | 336 (82) | 47 (12) | — |
| 1973 | 391 | 66 (17) | 325 (83) | 40 (10) | — |
| 1974 | 526 | 62 (12) | 464 (88) | 35 (7) | — |
| 1975 | 443 | 84 (19) | 359 (81) | 34 (8) | — |
| 1976 | 488 | 88 (18) | 400 (82) | 32 (7) | — |
| 1977 | 418 | 78 (19) | 340 (81) | 36 (9) | 6 (8) |
| 1978 | 471 | 86 (18) | 385 (82) | 27 (6) | 1 (1) |
| 1979 | 546 | 103 (19) | 443 (81) | 28 (5) | 1 (1) |
| 1980 | 549 | 153 (28) | 396 (72) | 41 (8) | 11 (7) |
| 1981 | 499 | 81 (16) | 418 (84) | 42 (8) | 1 (1) |
| 1982 | 557 | 78 (14) | 479 (86) | 37 (7) | 4 (5) |
| 1983 | 482 | 73 (15) | 409 (85) | 37 (8) | 4 (5) |
| 1984 | 537 | 63 (12) | 474 (88) | 41 (8) | 3 (5) |
| 1985 | 536 | 88 (16) | 448 (84) | 36 (7) | 9 (10) |
| 1986 | 563 | 131 (23) | 432 (77) | 35 (6) | 2 (2) |
| 1987 | 599 | 146 (24) | 453 (76) | 46 (8) | 13 (9) |
| 1988 | 547 | 127 (23) | 420 (77) | 42 (8) | 8 (6) |
| 1989 | 521 | 102 (20) | 419 (80) | 34 (7) | 6 (6) |
| 1990 | 555 | 92 (17) | 463 (83) | 40 (7) | 7 (8) |
| 1991 | 623 | 121 (19) | 502 (81) | 36 (6) | 3 (2) |
| 1992 | 581 | 101 (17) | 480 (83) | 39 (7) | 5 (5) |
| 1993 | 566 | 126 (22) | 440 (78) | 38 (7) | 7 (6) |
| 1994 | 623 | 132 (21) | 491 (79) | 40 (6) | 5 (4) |
| 1995 | 663 | 147 (22) | 516 (78) | 34 (5) | 8 (5) |
| 1996 | 585 | 144 (25) | 441 (75) | 32 (6) | 5 (3) |
| 1997 | 618 | 125 (20) | 493 (80) | 31 (5) | 5 (4) |

victims. We compared criminological, personal, and clinical variables. If information on a variable was not known for an individual case we omitted this case from the analysis of that variable.

## Results

The number of homicides in England and Wales almost doubled between 1967 and 1997 (table 1). The number of stranger homicides increased threefold to fourfold. As a proportion of all homicides, stranger homicides increased around twofold ($\chi^2=43.8$, df 1, $P<0.001$). The number of hospital orders increased neither in total nor in stranger homicides alone. The proportion of homicides leading to a hospital order decreased.

In the three year study period, 1594 homicides in the general population were reported to the inquiry. In 358 (22%) cases the victim was a stranger to the perpetrator. The relationship between perpetrator and victim was unknown in 202 cases. Forty people were killed in the course of their employment.

Perpetrators were predominately young men, particularly in stranger homicides (table 2). Such homicides were more likely to be the result of hitting, kicking, or pushing, indicating physical fights. The perpetrators were less likely to receive a verdict of manslaughter on the grounds of diminished responsibility or to be placed on a hospital order.

Psychiatric reports were obtained in 1168 (73%) cases, including 234 (65% of 358) stranger homicides. In stranger homicides, perpetrators were more likely to

**Table 2** Offence characteristics of perpetrators of homicides in England and Wales, 1996-9, and relationship to victim. Values are numbers (percentages) unless stated otherwise

| Characteristic | Stranger (n=358) | Known (n=1074) | P value |
|---|---|---|---|
| **Perpetrator** | | | |
| Male | 353 (99) | 925 (86) | <0.001 |
| Age 18-30 | 245 (68) | 505 (47) | <0.001 |
| >1 victim | 8 (2) | 37 (3) | 0.26 |
| **Victim** | | | |
| Male | 312 (87) | 683 (64) | <0.001 |
| Age <30 | 140 (39) | 461 (43) | 0.021 |
| **Method of killing** | | | |
| Blunt instrument | 46 (13) | 147 (14) | 0.66 |
| Sharp instrument | 116 (32) | 425 (40) | 0.01 |
| Hitting, kicking, or pushing | 130 (36) | 145 (14) | <0.001 |
| Strangulation or suffocation | 19 (5) | 130 (12) | <0.001 |
| Shooting | 22 (6) | 46 (4) | 0.15 |
| Other | 24 (7) | 165 (15) | <0.001 |
| **Outcome** | | | |
| Murder | 207 (58) | 485 (45) | <0.001 |
| Manslaughter: | | | |
| Diminished responsibility | 13 (4) | 131 (12) | <0.001 |
| Other* | 136 (38) | 435 (41) | 0.400 |
| Infanticide | 0 (0) | 12 (1) | <0.05 |
| Unfit to plead | 2 (1) | 5 (0.5) | 0.56 |
| Insane | 0 (0) | 6 (1) | 0.18 |
| **Disposal** | | | |
| Prison | 346 (97) | 922 (86) | <0.001 |
| Hospital | 10 (3) | 88 (8) | 0.001 |
| Other† | 2 (1) | 59 (5) | 0.001 |

Denominators may vary owing to missing data.
*Includes provocation and self defence.
†Mainly probation.

have a history of drug misuse, and alcohol and drugs were more likely to have contributed to the offence (table 3). They were less likely to have a lifetime history of mental disorder, symptoms of mental illness at the time of the offence, or previous contact with mental health services.

Of the 37 perpetrators of stranger homicides who had ever been in contact with mental health services, 10 had received a diagnosis of schizophrenia. Of these, eight had been in contact with services in the year before the homicide, two in the previous week.

## Discussion

Homicides by strangers have increased more than homicides by people known to their victims, although they remain a minority of all homicides. Being placed under a hospital order has not, however, increased, suggesting that the increase in stranger homicides is not the result of homicides by people with mental illness and therefore the policy of "care in the community." Almost all are committed by young men, and the victims are usually male. Most seem to occur as a result of physical fights or attacks. In stranger homicides, perpetrators are less likely to have a mental illness or to have been under mental health care, contrary to popular fears.

Out findings can be criticised on the basis that both the longitudinal and the cross sectional studies omit homicides that do not lead to conviction, in which homicides by strangers may be over-represented. The cross sectional study was based in part on psychiatric reports prepared for the courts, and these were not available in one third of cases. The loss of these reports is likely to have inflated the proportion of perpetrators with mental illness because reports identifying mental illness are more likely to have been used in court proceedings and retained in court files. A similar proportion of reports was, however, obtained for both stranger and non-stranger homicides, so the values relating to mental illness may be inflated in both groups.

The results of the longitudinal study are consistent with previous studies on the rate of probable mental illness in people convicted of homicide.[5] Our findings suggest that stranger homicide is more often associated with alcohol and drug misuse than with severe mental illness. This is also true of non-stranger homicides. In our sample there were 85 perpetrators of homicide with schizophrenia over three years; 12 killed a stranger and eight of these people had been in contact with mental health services in the 12 months before the homicide. In contrast, of 560 perpetrators with a history of alcohol or drug misuse, 124 killed a stranger.

Failings in mental health care have contributed to individual cases, and steps should be taken to prevent this. For example, mental health services should work to prevent the loss of contact and non-compliance with treatment that frequently precede homicide by people with severe mental illness.[7 8] Stranger homicides are, however, more often committed by young men under the influence of alcohol or drugs, and a public health approach to homicide prevention should place greater emphasis on reducing alcohol and drug misuse in this group.

**Table 3** Characteristics of perpetrators of homicides in England and Wales, 1996-9, and relationship to victim. Values are numbers (percentages) unless stated otherwise

| Characteristics | Stranger (n=234) | Known (n=824) | P value |
|---|---|---|---|
| **Social and personal** | | | |
| Male | 231 (99) | 695 (84) | <0.001 |
| Median age (range) | 23 (12-55) | 30 (13-77) | <0.001 |
| Ethnic minority | 31 (14) | 104 (13) | 0.821 |
| Not currently married | 153 (75) | 431 (56) | <0.001 |
| Unemployed | 128 (62) | 402 (54) | 0.023 |
| Living alone | 23 (14) | 112 (16) | 0.46 |
| Homeless or no fixed abode | 7 (4) | 18 (2) | 0.33 |
| **Clinical** | | | |
| History of alcohol misuse | 77 (40) | 301 (42) | 0.75 |
| Alcohol thought to have contributed to offence | 94 (56) | 285 (41) | 0.001 |
| History of drug misuse | 93 (47) | 272 (37) | 0.008 |
| Drugs thought to have contributed to offence | 44 (24) | 86 (12) | <0.001 |
| History of alcohol or drug misuse | 124 (53) | 436 (53) | 0.98 |
| Alcohol or drugs thought to have contributed to offence | 104 (54) | 311 (42) | 0.003 |
| **Mental disorder** | 80 (34) | 412 (50) | <0.001 |
| Primary diagnosis (lifetime): | | | |
| Schizophrenia | 10 (5) | 64 (8) | 0.09 |
| Affective disorders | 9 (4) | 107 (13) | <0.001 |
| Alcohol dependence | 6 (3) | 64 (8) | 0.007 |
| Drug dependence | 18 (9) | 41 (5) | 0.08 |
| Personality disorder | 23 (11) | 77 (10) | 0.66 |
| Other | 8 (4) | 39 (5) | 0.46 |
| Symptoms of mental illness at time of homicide | 14 (6) | 143 (18) | <0.001 |
| **Service contact** | | | |
| Contact with psychiatric services | | | |
| Any (lifetime) | 37 (16) | 200 (24) | 0.006 |
| In past year | 20 (8) | 106 (13) | 0.63 |

Denominators may vary owing to missing data.

## What is already known on this topic

The number of convictions for homicide has increased in the past 30 years

In that time the number of mental hospital beds has been reduced by more than half, as part of "care in the community"

## What this study adds

Perpetrators of stranger homicide are less likely to have a mental illness or to have been under mental health care than perpetrators of homicides in general

Stranger homicides are most commonly committed by young men and the victims are usually men

Stranger homicides are more likely to occur as a result of physical fights or attacks

Perpetrators of stranger homicides are most often under the influence of alcohol or drugs

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Competing interests: LA is currently seconded part time to the Department of Health as National Director for Mental Health and in this capacity provides advice on mental health policy.

Ethical approval: This study was approved by the multi-centre research ethics committee.

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# Does it matter what a hospital is "high volume" for? Specificity of hospital volume-outcome associations for surgical procedures: analysis of administrative data

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## Abstract

**Objective** To determine whether the improved outcome of a surgical procedure in high volume hospitals is specific to the volume of the same procedure.

**Design and setting** Analysis of secondary data in Ontario, Canada.

**Participants** Patients having an oesophagectomy, colorectal resection for cancer, pancreaticoduodenectomy, major lung resection for cancer, or repair of an unruptured abdominal aortic aneurysm between 1994 and 1999.

**Main outcome measures** Odds ratio for death within 30 days of surgery in relation to the hospital volume of the same surgical procedure and the hospital volume of the other four procedures. Estimates were adjusted for age, sex, and comorbidity and accounted for hospital level clustering.

**Results** With the exception of colorectal resection, 30 day mortality seemed to be inversely related not only to the hospital volume of the same procedure but also to the hospital volume of most of the other procedures. In some cases the effect of the volume of a different procedure was stronger than the effect of the volume of the same procedure. For example, the association of mortality from pancreaticoduodenectomy with hospital volume of lung resection (odds ratio for death in hospitals with a high volume of lung resection compared with low volume 0.36, 95% confidence interval 0.23 to 0.57) was much stronger than the association of mortality from pancreaticoduodenectomy with hospital volume of pancreaticoduodenectomy (0.76, 0.44 to 1.32).

**Conclusion** The inverse association between high volume of procedure and risk of operative death is not specific to the volume of the procedure being studied.

## Introduction

Evidence that the short term outcomes of complex surgical procedures are better in hospitals that do high volumes of such procedures has prompted some

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