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Centre for Adolescent Health, Murdoch Childrens Research Institute, Parkville, Victoria 3052, Australia

Carolyn Coffey
epidemiologist

Friederike Veit
paediatrician

Eileen Cini
research assistant

George C Patton
professor director

Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Victoria 3000, Australia

Rory Wolfe
statistician

Correspondence to: C Coffey
carolyn.coffey@rch.org.au

BMJ 2003;326:1064-6

Mortality in young offenders: retrospective cohort study

Carolyn Coffey, Friederike Veit, Rory Wolfe, Eileen Cini, George C Patton

Abstract

Objectives To estimate overall and cause specific standardised mortality ratios in young offenders.

Design Comparison of mortality data in cohort of young offenders.

Settings State of Victoria, Australia.

Subjects Cohort of young offenders aged 10-20 years with a first custodial sentence from 1 January 1988 to 31 December 1999.

Main outcome measures Deaths ascertained by matching with the national death index, a database containing records of all deaths in Australia since 1980. Death rates in the reference Victorian population used to calculate standardised mortality ratios.

Results The offender cohort comprised 2621 men and 228 women with 11 333 person years of observation. The median age of first detention was 17.9 years for men and 18.4 years for women. Median follow up was 3.3 years for men and 1.4 years for women. Overall standardised mortality ratio adjusted for age (expressed as a ratio) was 9.4 (95% confidence interval 7.4 to 11.9) for men and 41.3 (20.2 to 84.7) for women. Cause specific standardised mortality ratios for men were 25.7 (17.9 to 36.9) for drug related causes, 9.2 (5.8 to 15) for suicide, and 5.7 (3.6 to 9.2) for non-intentional injury. A quarter of drug related deaths in men aged 15-19 years were in offenders.

Conclusions Social policies for young offenders should address both the prevalent drug and mental health problems as well the high levels of social disadvantage.

Introduction

Studies of outcomes in young people with antisocial and offending behaviour have suggested that death rates may be increased,¹⁻³ but to date there seems to be no systematic report of mortality ratios in young offenders. We studied a 12 year cohort of young offenders sentenced to custody in Victoria, Australia, and linked data with the national death index to estimate both overall and cause specific mortality ratios.

Methods

Study population: offender cohort

We identified all adolescents known to have received their first custodial sentence in the state of Victoria, Australia, from 1 January 1988 to 31 December 1999. To ensure that the cohort consisted only of young people obtaining their first custodial sentence, we included only individuals who had been under 15 years old on 1 January 1988. Follow up started on the date of first detention and ended with either death or censoring on 31 December 1999.

The offender cohort was identified through two data sources depending on age. Young offenders aged

10-16 years were placed on statutory orders by the children's court for supervision by juvenile justice in the Victorian Department of Human Services. In Victoria, a dual track custodial sentencing option was available so that offenders aged 17-20 years could serve their custodial sentence in either a juvenile justice centre or an adult prison, managed by adult corrections in the Victorian Department of Justice.

We obtained 2401 unique records from juvenile justice and 740 from adult corrections. We excluded the two records in which the year of birth was entered incorrectly. We combined the two sets of records and identified the 290 duplicate records due to multiple sentences administered by both departments.

The cohort consisted of 2849 young people (2625 male), minimum age 11 years. The median age at first detention for males was 17.9 (interquartile range 16.6-19.0) years and for females was 18.4 (interquartile range 16.7-19.4) years. The median follow up time was 3.3 years for males but only 1.4 years for females because 46% of males had entered the cohort by the end of 1995 whereas in took until 1997 for the same proportion of females to enter the cohort.

The most serious offences recorded during follow up were violent crime (1544 males, 118 females); property crime (815, 73); drug only (possession, use, or trafficking or dealing in illicit substances, without charges for other crimes; 55, 7); and other offences (172, 29). For 39 no offence was recorded.

We obtained information on deaths by record linkage with the national death index, a database housed at the Australian Institute of Health and Welfare that contains records of all deaths in Australia since 1980. Linkage was based on identifying information (surname, other names, alias names, sex, date of birth, date of last contact, postcode and state of residence, country of birth). Death registration number, date of death, age at death, state in which death occurred, and cause of death were provided for each match. Leading cause of death was coded by ICD-9 (international classification of disease, ninth revision) for deaths occurring before 1999 and by ICD-10 (international classification of disease, tenth revision) for 1999.

The Australian Bureau of Statistics provided the estimated resident population for the state of Victoria for each year, stratified by sex and age (year), and individual records identified from the Victorian mortality data unit, including sex, date of death, age at death, and leading cause of death (ICD-9 or ICD-10) for deaths registered between 1988 and 1999.

Data analysis

Number of deaths and person years of observation were summed by year of age in the offender cohort. For the Victorian population, we calculated an average mortality for each year of age.

We calculated standardised mortality ratios⁴ with Stata 7 (StataCorp, College Station, TX, USA) and stratified by age into groups (< 15, 15-19, 20-24, and

≥25 years). We have reported all standardised mortality ratios as ratios rather than percentages.

In line with reports of increasing numbers of drug related deaths in young adults⁵ we observed that in Victoria rates for these deaths increased noticeably after 1997 in the 20-24 year age group. For the estimation of drug related standardised mortality ratios therefore we stratified the Victorian rates by calendar year (before 1998 *v* 1998-9) in the 20-24 year age group only.

Results

Crude mortality

Table 1 gives details of crude mortality in the cohort and general population. There were 96 deaths in the offender cohort. These deaths resulted in a crude mortality of 8.5 deaths per 1000 person years of observation compared with 1.1/1000 for the general population. In 15-19 year olds the crude mortality was 7.8/1000 person years of observation and 0.46/1000 in the general population. The offender cohort contributed 12% of all drug related deaths in Victoria and 23% of drug related deaths in 15-19 year old men. Most deaths in the Victorian population were due to non-intentional injury whereas in young offenders deaths from drug related causes predominated for both sexes.

Standardised mortality ratios

The risk of death was nine times higher in male offenders than in the reference Victorian male population (table 2). Although the estimate is unstable because of the small number of deaths, female offenders seemed to be about 40 times more likely to die than the reference Victorian female population.

We calculated cause specific standardised mortality ratios for men alone because the higher numbers of death permitted sensible estimation. The standardised mortality ratios were 26 (95% confidence interval 17.9 to 36.9) for drug related deaths, 9.2 (5.8 to 14.7) for suicide, and 5.7 (3.6 to 9.2) for non-intentional injury.

Discussion

We included almost 3000 young offenders in this study, of whom 96 had died by the end of follow up. The crude mortality of 8.5/1000 person years of observation in young offenders contrasts with mortality of 1.1/1000 for this age group in the reference population.

Comparison of standardised mortality ratios in the young offenders and other groups with high death rates further emphasises the importance of the findings. In people with a history of child and adolescent psychiatric treatment the standardised mortality ratio is 3.7 for all causes, 1.6 for schizophrenia, and 4.9 for anorexia nervosa.⁶ In similar age groups mortality ratios between 2 and 5 have been reported for recipients of child protection.⁷ Excess during adolescence in young people receiving treatment for substance dependence, recently estimated as 11 in men and 21 in women,⁸ seems comparable with our overall estimates of 9 and about 40, respectively, and is consistent with the important role of drug misuse both in offending⁹ and in subsequent mortality. That the standardised mortality ratio for males for drug related causes was 26 further emphasises the importance of substance misuse in our cohort.

Table 1 Person years of observation (PYO) and selected causes of death in population of Victoria, Australia, and cohort of young offenders, 1988-99

Age group (years)	PYO	No of deaths			
		All cause	Drug related	Cause specific*	
				Non-intentional injury	Suicide
Offender cohort					
Male:					
≤14	71.7	1	0	1	0
15-19	4840.7	33	16	9	6
20-24	5282.5	52	24	9	16
≥25	518.8	2	0	1	0
Female:					
≤14	7.0	0	0	0	0
15-19	311.7	7	4	1	1
20-24	275.5	1	0	1	0
≥25	25.0	0	0	0	0
Total	11 333.0	96	44 (46%)	22 (23%)	23 (24%)
Victorian population					
Male:					
≤14	670 718	146	1	48	14
15-19	1 667 791	1080	69	477	236
20-24	873 365	878	156	310	231
≥25	109 413	131	38	29	40
Female:					
≤14	274 589	51	1	15	4
15-19	1 584 927	428	33	143	70
20-24	845 754	294	50	84	57
≥25	107 117	43	8	5	10
Total	2 812 387	3051	356 (12%)	1111 (36%)	662 (22%)

*Cause specific grouping of deaths are mutually exclusive. Other causes of death in offender cohort (making up the 100% of all cause mortality) were: non-medical—homicide (one male, one female), legal intervention (one male); medical—diseases of circulatory system (one male), infectious and parasitic diseases (one male), neoplasms (one male), ill defined conditions (one male).

Limitations

Potential study limitations include a possibility of incorrect ascertainment of death due to incorrect or missed matches. The number of medium probability matches provided by the national death index was small, and we rejected them all after consideration of identifying data, making it unlikely that we over-counted deaths among offenders. One death noted in the justice data was not identified by the national death index, raising the possibility that we may have missed some offender deaths. With such large standardised mortality ratios, however, these possible minor ascertainment errors should not affect interpretation of the results.

Table 2 All cause mortality ratios by sex and age group and standardised mortality ratios by sex for cohort of young offenders, 1988-99

Age group (years)	Mortality ratio 95% CI
Men:	
≤14	71.0 (1.7 to 433.6)
15-19	9.7 (6.3 to 14.4)
20-24	9.7 (7.0 to 13.3)
≥25	3.2 (0.4 to 11.9)
Standardised	9.4 (7.4 to 11.9)
Women:	
≤14	0 (0.0 to 3398.0)
15-19	81.0 (30.8 to 181.2)
20-24	10.4 (0.3 to 60.5)
≥25	0 (0.0 to 388.5)
Standardised	41.3 (20.2 to 84.7)

Conclusions

The finding that death rates in young offenders exceed those in groups with even higher rates of psychiatric and behavioural disorders indicates that social disadvantage and marginalisation of this group may have played an additional part in many of the deaths. The findings have important implications for social policies for young offenders. On one hand the high rates of deaths due to drug overdose and suicide indicate a need for a better response to prevalent problems of drug misuse and psychiatric disorder. On the other hand, we also need to develop strategies effective in the social reintegration of young offenders. Health practitioners are likely to have an essential role in the implementation of such responses.

Contributors: See bmj.com

Funding: National Health and Medical Research Council Competing Standard Project Grant 105422. The guarantor accepts full responsibility for the conduct of the study, had access to the data, and controlled the decision to publish.

Competing interests: None declared.

Ethical approval: Ethics committees of the Royal Children's Hospital, Victorian Departments of Human Services and Justice, and the Australian Institute of Health and Welfare.

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What is already known on this topic

Socially excluded young people experience high levels of psychiatric disorder, childhood abuse, and substance dependence

Death rates in antisocial and offending young people are high

What this study adds

Young male offenders were nine times more likely and female offenders were 40 times more likely to die than young people in the general population

Drug related causes, suicide, and non-intentional injury were the leading causes of death

Mortality in young offenders was higher than in equivalent age groups with schizophrenia or eating disorders

Young offenders accounted for a quarter of drug related deaths in 15-19 year old men

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New strategies for increasing the detection of HIV: analysis of routine data

James Read, S J Wincelhaus

Guy's, King's College, and St Thomas's School of Medicine, London SE5 9RJ

James Read
final year medical student

Preston Hall Hospital, Maidstone ME17 7NJ

S J Wincelhaus
consultant in genitourinary medicine

Correspondence to: S J Wincelhaus
joseph.wincelhaus@mtw-tr.nhs.uk

BMJ 2003;326:1066-7

Despite a gradual increase in the incidence of HIV infection in the United Kingdom over the past decade,¹ many people with the infection remain undiagnosed.² To increase detection, the Department of Health released the first national strategy for sexual health and HIV in July 2001.³ The publication recommended that all people attending genitourinary medicine clinics should be offered an HIV test on their first screening for sexually transmitted infections. Many would agree that this target is impossible to achieve using the prevailing protocol for HIV testing in genitourinary medicine clinics. After consultation with client groups in the Preston Hall clinic, we changed our HIV testing protocol.

Methods and results

In May 2001 we began offering the HIV test to all clients attending the genitourinary medicine clinic instead of only those who were at high risk or who requested it.

To cope with the anticipated increase in HIV testing without greatly increasing the clinic's workload,

we changed the testing protocol. We replaced the detailed oral counselling before testing with a shorter, written explanation of the salient points. These points included a brief explanation of HIV and AIDS and of the "window period" (the first three months of infection, during which the test may not show a positive result); the advantages of the test; and the effect of positive (or negative) results on life insurance. Before testing, clients had to read and sign the information sheet, acknowledging their understanding of and consent to the test.

Using the clinic's quarterly KC60 returns (forms for recording the activity of genitourinary medicine clinics), we compared clinic attendance, number of HIV tests performed, and number of HIV positive diagnoses from 1 April 2001 (a month before the new protocol) to 31 December 2001 with the same data for the three years before 1 April 2001.

The average clinic attendance per quarter increased from 232 to 352 clients, and the average number of HIV tests performed per quarter also increased—from 33 to 130 (table). The proportion of clients who had an HIV test thus rose from 14% to