

Prison suicide in 12 countries

An ecological study of 861 suicides
during 2003 - 2007

Layout: Tina Ehsleben, Kriminalvårdens Utvecklingsenhet, 2010
Tryckning: Kriminalvårdens Reprocentral, 2010

Ytterligare exemplar kan beställas från förlaget
Fax: 011-496 35 17
Beställningsnr: 9266
ISBN 91-85187-52-6
Hemsida: [www. Kriminalvarden.se](http://www.Kriminalvarden.se)

Prison suicide in 12 countries

An ecological study of 861 suicides during 2003 - 2007

Projektnummer 2006:140

Seena Fazel, Martin Grann, Boo Kling, Keith Hawton

Author affiliations: Centre for Suicide Research, Department of Psychiatry, University of Oxford (S Fazel, K Hawton); Centre for Violence Prevention, Karolinska Institute, Stockholm, Sweden (S Fazel, M Grann); Swedish Prison and Probation Service (M Grann, B Kling).

INNEHÅLLSFÖRTECKNING

INNEHÅLLSFÖRTECKNING	3
ABSTRACT	4
BACKGROUND.....	4
METHODS	4
RESULTS	4
CONCLUSIONS.....	4
INTRODUCTION	5
METHOD	6
PRISON SUICIDE DEATHS	6
GENERAL POPULATION SUICIDE RATES	6
RATE OF INCARCERATION	6
STATISTICAL METHODS.....	6
RESULTS	7
PRISON SUICIDES - MALES	7
PRISON SUICIDES - FEMALES	7
COMPARISONS WITH THE GENERAL POPULATION	7
COMPARISONS WITH INCARCERATION RATES.....	7
DISCUSSION	8
IMPLICATIONS	8
LIMITATIONS.....	8
ACKNOWLEDGEMENTS.....	9
FUNDING.....	9
CONFLICT OF INTERESTS.....	9
REFERENCES	10

ABSTRACT

Background

Although suicide rates in prisoners are high and vary between countries, it is uncertain whether this reflects the importation of risk from the general population or is associated with incarceration rates.

Methods

We collected data on suicides and undetermined deaths in 12 countries (Australia, Belgium, Canada, Denmark, England and Wales, Finland, Ireland, Netherlands, New Zealand, Norway, Scotland, and Sweden) directly from their prison administrations for 2003-2007. These were compared with rates of suicides in the general population separately by gender using Pearson's correlations. In addition, they were compared with rates of incarceration. Linear regression was used to examine any association after adjustment for rates of incarceration.

Results

Data were collected on 861 suicides in prison, of which 810 were in men. In the men, crude relative rates of suicide were at least three times greater compared with the general population. Western European countries had similar rates of prisoner suicide which were mostly higher than those in Australia, Canada and New Zealand. There were no associations between rates of suicide in prisoners and general population rates or rates of incarceration. In the women, inmate suicide rates varied widely and were mostly raised compared with rates in the general population. In addition, these rates did not appear to be associated with general population rates of suicide.

Conclusions

Rates of prison suicide do not reflect general population suicide rates, suggesting that variations in prison suicide rates reflect differences in prison systems and/or healthcare.

Keywords: Prisons, suicide, health services, prisoners

INTRODUCTION

In the few countries where it has been studied, suicides rates in prisoners have been found to be many orders of magnitude higher than rates in the general population. In the UK over a quarter of a century, suicide rates in prisoners were reported to be approximately five times higher in men than age-standardised general population rates [1], and in women, the difference was twenty-fold [2]. In one US state, rates of suicide in jails were eight times higher than general population rates [3] and in Austria, Australia, and New Zealand the rate has been calculated to be 5-10 times higher than in the general population [4,5,6]. Beyond these countries, little is known about inmate suicide rates compared with population rates.

When explaining elevated rates of prison suicide, different theories have been proposed. Criminologists, using predominantly qualitative data, have argued for the importance of social and environmental factors. One of these is the importation of risk from the general population [7,8]. Simply put, the hypothesis is that prisoners 'import' their risk from outside custody, and hence prison suicide rates will reflect to some extent those in the general population. Another factor that might be relevant is the rate of incarceration as overcrowding was shown to be associated with suicide rates in a recent ecological study [9].

Another theoretical approach to prison suicide that is drawn from the fields of psychology and psychiatry has examined the characteristics of those that have died in custody by psychological autopsy and found high rates of psychiatric morbidity, previous suicidality, and recent stressful events [10,11,12]. A recent systematic review of the case-control comparisons has shown that both criminological and psychiatric factors are important. The strongest risk factors were environmental (being in a single cell), psychiatric (a history of attempted suicide, recent suicidal ideation, and a current psychiatric diagnosis), and criminal history (being on remand, having received a life sentence, and having a violent index offence) [10]. However, this review concluded that the research on environmental and ecological associations with prison suicide was very limited [10]. With the numbers of prisoners increasing in over 70% of the countries in the world [13], suicide in prisoners will remain an important challenge to public health and policy

In this study, we aimed to examine rates of prison suicide in different countries and compare them with general population rates of suicide and rates of incarceration in each country. We collected data from prison research departments in 12 countries.

METHOD

The study was conducted based on data collected from 12 countries: Australia, Belgium, Canada, Denmark, England and Wales, Finland, Ireland, Netherlands, New Zealand, Norway, Scotland, and Sweden.

Prison suicide deaths

Information on all self-inflicted deaths was collected from the 12 countries directly from their prison services' research departments during 2003 to 2007 inclusive. In the case of Australia, this information was publicly available in a recent government report. From this, we added self-inflicted and accidental deaths [14]. For the other countries, we requested data on deaths from suicide and undetermined causes separately for men and women. We then calculated rates per 100,000 prisoners for each year by requesting data on mid-year numbers of prisoners for each year 2003-2007, and calculating annualised averages. In Australia, Finland and the Netherlands, numbers of female suicides were unavailable, and we assumed for the analysis that all suicides in custody occurred in men.

General population suicide rates

Information on rates of suicides and undetermined deaths (ICD-10 codes X60-X64 and Y10-Y34) per 100,000 in the population was collected from government statistical offices. In Canada, data for 2003-2005 were used. In Denmark, New Zealand, Norway and Belgium, data for 2003-2006 were used. In Belgium, we relied on statistics for the Flemish part of the country as they are unavailable for the whole nation. In New Zealand, information was not available on rates of death from undetermined causes.

Rate of incarceration

Information on rates of incarceration was drawn from the World Prison Population List, seventh edition, which reported on prisoner numbers for 2005 and 2006 [15]. These rates are based on communication with the national prison administration in these countries or related government sources.

Statistical methods

We calculated Pearson correlations between rates of prison suicide and those of the general population in men, women, and both genders combined. We also calculated Pearson correlations between rates of prison suicide and incarceration rates in the men. Determining 95% CIs for the rates of prison suicide in women was not possible as base rates were mostly under five. In the men, linear regression was used to examine the association between suicide rates in prisoners and the general population when adjusting for rates of incarceration. SPSS 16 (SPSS Inc, 2008) was used for all analyses. As data were anonymised, ethics approval was not sought and the guidelines governing research from the Declaration of Helsinki were followed.

RESULTS

Data were collected on 861 suicides in 12 countries: Australia, Belgium, Canada, Denmark, England and Wales, Finland, Ireland, Netherlands, New Zealand, Norway, Scotland, and Sweden.

Prison suicides - males

There were 810 male suicides in the 12 countries. Rates of prison suicide were above 100 per 100,000 prisoners in the majority of countries (Table 1). There were a number of significant differences between countries: England and Wales (at 107 suicides per 100,000 prisoners, 95% CI: 96-118) and Denmark (147; 93-200) had rates higher than some other countries. In addition, Australia, Canada and New Zealand had lower rates than a number of countries. Crude relative rates (prison suicide rates compared to general suicide rates) were all elevated and ranged from 3 to 8.

Prison suicides - females

There were 51 female suicides in the nine countries that were able to provide gender-specific numbers. In all countries apart from England and Wales, absolute numbers of suicide were between zero and four. Rates of suicide varied widely (Table 2). Apart from Ireland, relative rates compared with the general population were above 6.

Comparisons with the general population

There were no significant associations between male prison suicide rates and rates of suicide in the general male population ($r=0.29$, $p=0.38$) (Figure 1), or between female prison suicide rates and rates in the general female population ($r=0.16$, $p=0.68$), or when both genders were combined ($r=0.11$, $p=0.64$).

Comparisons with incarceration rates

There were no significant correlations between male prison suicide rates and overall rates of incarceration ($r=0.36$, $p=0.25$). When adjusted for incarceration rates, rates of suicides in the general population were not associated with suicides in custody ($r=0.39$, $\beta=0.16$, $p=0.64$).

DISCUSSION

We have reported a study of 861 prison suicides in 12 countries. There were three main findings. First, although rates of suicide in male inmates varied between 58 and 150 per 100,000 prisoners, they were at least three times higher than estimates of general population rates of suicide. Although rates of suicide in female prisoners varied widely as the numbers were low in individual countries, a similar pattern emerged of higher rates than general suicide rates. Second, we found no correlations between suicide rates in prisoners and those in the general population, and suicide rates in prisoners and rates of incarceration. Third, there was little difference in suicide rates between the Western European countries studied. However, Australia, Canada and New Zealand appeared to have lower rates than the Western European countries.

Implications

The first implication is that the results of this study underlines the observation that prisoners are a high risk group for suicide [16] and should therefore be considered as part of national suicide prevention strategies. Rates of suicide in the men that we have reported in the present study were all at least three times higher than general population rates of suicides. In the women, they were also higher apart from in Ireland where there were no suicides in women prisoners during 2003-2007.

A second implication is that our study finds little ecological evidence to support the hypothesis that prison suicides rates partly reflect the underlying rate of suicide in the general population. Furthermore, suicide rates do not appear to be related to incarceration rates.

Limitations

There will be different caseness criteria used to categorise suicide across the 12 prison systems, and differences in suicide rates between countries may partly reflect this. However, we have tried to minimise this to some extent by requesting data on the number of suicides that included undetermined deaths. Other research has shown this approach more accurately reflects suicide numbers [17]. Also we have mostly used data from an established network on prison services that have been working towards a common set of guidelines. Furthermore, the analyses in the paper are necessarily ecological. A more accurate comparison to the prison sample than the general population would be individuals from similar socio-demographic backgrounds [8]. Age-standardised comparisons will provide more accurate risk estimates [18,19]. Other ecological associations which may be important that we have not been able to test include overcrowding, amounts of purposeful activity, and rates of severe psychiatric morbidity in the general population and in the homeless [20,21].

Finally, in view of the fact that prison suicide rates do not reflect general population suicide rates, this suggests that variations in prison suicide rates reflect differences in prison systems. Future work could examine how Australia, New Zealand and Canada manage prisoners and prisons to see if there are systemic differences compared with other countries. One possibility is that their prison health services are configured differently. Previous work has shown that changes to psychiatric services in New Zealand prisons in the 1980s led to a striking increase in suicide [6], implying that changes to the provision and delivery of psychiatric care may be important.

Acknowledgements

We are grateful to Lars Nylén, Director General of the Swedish Prison and Probation Service, for writing to colleagues in various countries requesting data, and to the following individuals in prison administrations for supplying prison suicide data: Tunde Adeniji for England and Wales, Bill Staubi for Canada, Julie Miller for New Zealand, Ragnar Kristoffersen for Norway, Yvonne Walsh for Ireland, Peter Løvgreen for Denmark, Willy Van den Bergh for Belgium, and Ed Wozniak for Scotland. We also appreciate the assistance of Jan Hoogenboezem, Kees van Heeringen, Sunny Collins, Steve Platt, Lars Mehlum, Grethe Westby, and Udo Reulbach in gathering data on national suicide rates. Sophie Anwar helped collect Australian data.

Funding

There was no specific funding for this project.

Conflict of Interests

We report no conflict of interests.

REFERENCES

1. Fazel S, Benning R, Danesh J (2005) Suicides in male prisoners in England and Wales, 1978-2003. *Lancet* 366: 1301-1302.
2. Fazel S, Benning R (2009) Suicides in female prisoners in England and Wales, 1978-2004. *Br J Psychiatry* 194: 183-184.
3. DuRand C, Burtka G, Federman E, Haycox J, J S (1995) A quarter century of suicide in the a major urban jail: implications for community psychiatry. *Am J Psychiatry* 152: 1077-1080.
4. Fruehwald S, Frottier P, Eher R (2000) Prison suicides in Austria, 1975-1997. *Suicide Life Threat Behav* 30: 360-369.
5. Kariminia A, Butler TG, Corben SP, Levy MH, Grant L, et al. (2007) Extreme cause-specific mortality in a cohort of adult prisoners--1988 to 2002: a data-linkage study. *Int J Epidemiol* 36: 310-316.
6. Skegg K, Cox B (1991) Impact of psychiatric services on prison suicide. *Lancet* 338: 1436-1438.
7. Liebling A (1995) Vulnerability and prison suicide. *Br J Criminol* 35: 173-187.
8. Gore SM (1999) Suicide in prisons: reflection of the communities served, or exacerbated risk? *Br J Psychiatry* 175: 50-55.
9. Leese M, Thomas S, Snow L (2006) An ecological study of factors associated with rates of self-inflicted death in prisons in England and Wales. *Int J Law Psychiatry* 29: 355-360.
10. Fazel S, Cartwright J, Norman-Nott A, Hawton K (2008) Suicide in prisoners: a systematic review of risk factors. *J Clin Psychiatry* 69: 1721-1731.
11. Fruehwald S, Matschnig T, Koenig F, Bauer P, Frottier P (2004) Suicide in custody: case-control study. *Br J Psychiatry* 185: 494-498.
12. Shaw J, Baker D, Hunt I, Maloney A, Appleby L (2004) Suicide by prisoners: national clinical survey. *Br J Psychiatry* 184: 263-267.

13. Walmsley R (2009) World prison population list (eighth edition). London: Kings College London International Centre for Prison Studies. 234-234.
14. Curnow J, Larsen J (2009) Deaths in custody in Australia: National deaths in custody program 2007 (<http://www.aic.gov.au/publications/current%20series/mr/1-20/03.aspx>). Canberra: Australian Institute of Criminology.
15. Walmsley R (2007) World prison population list (seventh edition). London: Kings College London, International Centre for Prison Studies.
16. Hawton K, van Heeringen K (2009) Suicide. *Lancet* 373: 1372-1381.
17. Linsley K, Schapira K, Kelly T (2001) Open verdict *v.* suicide - importance to research. *Br J Psychiatry* 178: 465-468.
18. Fazel M, Långström N, Grann M, Fazel S (2008) Psychopathology in adolescent and young adult criminal offenders (15–21 years) in Sweden. *Soc Psychiatr Psychiatr Epidemiol* 43: 319-324.
19. Elonheimo H, Niemelä S, Kai Parkkola, Multimäki P, Helenius H, et al. (2008) Police-registered offenses and psychiatric disorders among young males: The Finnish “From a boy to a man” birth cohort study. *Soc Psychiatr Psychiatr Epidemiol* 42: 477-484.
20. Langle G, Egerter B, Albrecht F, Petrasch M, Buchkremer G (2005) Prevalence of mental illness among homeless men in the community - approach to a full census in a southern German university town. *Soc Psychiatry Psychiatr Epidemiol* 40: 382-390.
21. Fazel S, Khosla V, Doll H, Geddes J (2008) The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Med* 5: e225.

Table 1 – Numbers and rates of suicide in male prisoners compared with the male general population and incarceration rates

Country	No. prison suicides	Suicide rates per 100,000 prisoners (95% CIs)	Suicide rates in the general population	Incarceration rate per 100,000 general population	Crude relative rate*
Australia	69	58 (45-72)	16	126	3.7
Belgium	50	109 (79-140)	29	91	3.8
Canada	44	70 (50-91)	21	72	3.4
Denmark	29	147 (93-200)	27	77	5.4
England and Wales	384	107 (96-118)	17	148	6.3
Finland	17	96 (47-133)	31	75	3.1
Ireland	10	64 (24-103)	20	72	3.2
The Netherlands	84	108 (79-108)	13	128	5.7
New Zealand	24	67 (40-94)	19	186	3.6
Norway	19	127 (70-183)	16	66	7.7
Scotland	40	117 (81-153)	23	139	5.1
Sweden	40	128 (88-167)	23	82	5.7

Note: *=prison suicide rates compared with general population suicide rates.

Table 2 – Numbers and rates of suicide in female prisoners compared with the female general population

Country	No. prison suicides	Suicide rates per 100,000 prisoners (95% CIs)*	Suicide rates in the general population	Crude relative rate**
Belgium	3	145	10	15
Canada	1	44	7	6
Denmark	1	97	10	9
England and Wales	37	165 (112-218)	5	35
Ireland	0	0	5	NA
New Zealand	4	174	3	56
Norway	2	256	7	37
Scotland	2	114	8	15
Sweden	1	58	10	6

Note: *CIs were not calculated if number of suicides was less than 5.

**= prison suicide rates compared with general population suicide rates.



Kriminalvården

www.kriminalvarden.se
601 80 Norrköping
Telefon 077-228 08 00
Fax 011-496 36 40