

Health inequalities and then some: estimating the mortality of those who have been in prison in Scotland

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Context

Prisoners have a high prevalence of risk factors and morbidity

- 56% positive for illicit drugs on admission [Scottish Drug Misuse Statistics 2010]
- 73% of prisoners had an Alcohol Use Disorder with 36% probably dependent [Parkes et al 2011]
- 76% smoke [Scottish Prisoner Survey 2009]
- 4.5% have a severe or enduring mental health problem [HM Chief Inspector of Prisons for Scotland 2008]
- 1 in 4 Hepatitis C positive [Gore et al 1999]
- Higher rates of chronic disease [Graham 2007]

Evidence on prisoner mortality

Prisoners experience higher mortality than the general population

- All cause mortality considerably higher [e.g. Fazel 2010]
- Mortality particularly high during first few weeks of release [e.g. Karaminia 2007, Bird 2003]
- Conflicting evidence as to whether mortality higher when in prison [e.g. Fazel 2006]
- Little evidence on effect of total duration or number of episodes in prison
- Many prisoners from deprived backgrounds but few, if any, studies have taken this into account

Aims of study

1. To estimate the mortality of people who have been in a Scottish prison compared to the general Scottish population
2. To estimate the contribution of deprivation to mortality
3. To determine whether particular causes of death are more or less frequent in the prisoner population
4. To determine the relative contribution to mortality of duration and number of episodes in prison
5. To determine whether there is a 'prison effect' on mortality (an altered mortality risk while in prison)

Methods

- Linkage (standard probabilistic matching) of Scottish Prison Service records and mortality data for individuals imprisoned in Scotland for the first time between 1996 and 2007
- Indirect Standardised Mortality Ratios (SMRs) for prison cohort calculated using a person years approach using the Scottish population as a reference
- Where postcode missing, individuals were assigned to the most deprived category

The cohort

- 76,627 people imprisoned for the first time in Scotland (1997-2007)
- Median follow up time: 6.9 years (M) and 6.1 years (F)
- 89% men, 11% women
- Median age at study entry: 26.7 years for men and 27.0 years for women
- Majority ethnic group white (92.4% M;93.8% F)
- 41.6% M and 43.5% F in most deprived quintile [Carstairs] (where postcode known) but over 40% missing
- 16.4% M and 17.5% F married; 10.9% M and 12.6% F divorced or separated; 69.9% M and 66.0% F either single or widowed

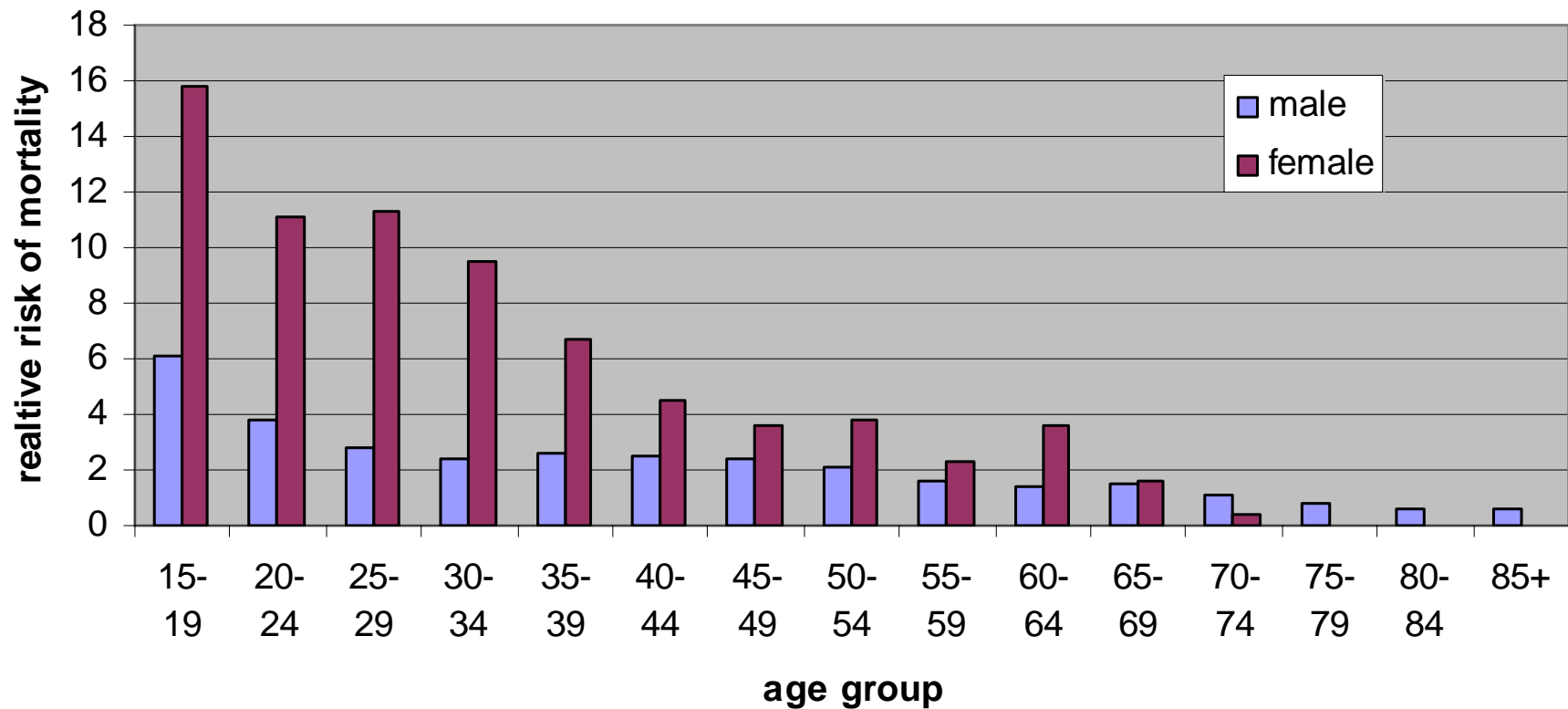
Imprisonment history

- Average number of imprisonments was 2.8 for men and 2.4 for women
- ~50% only one imprisonment

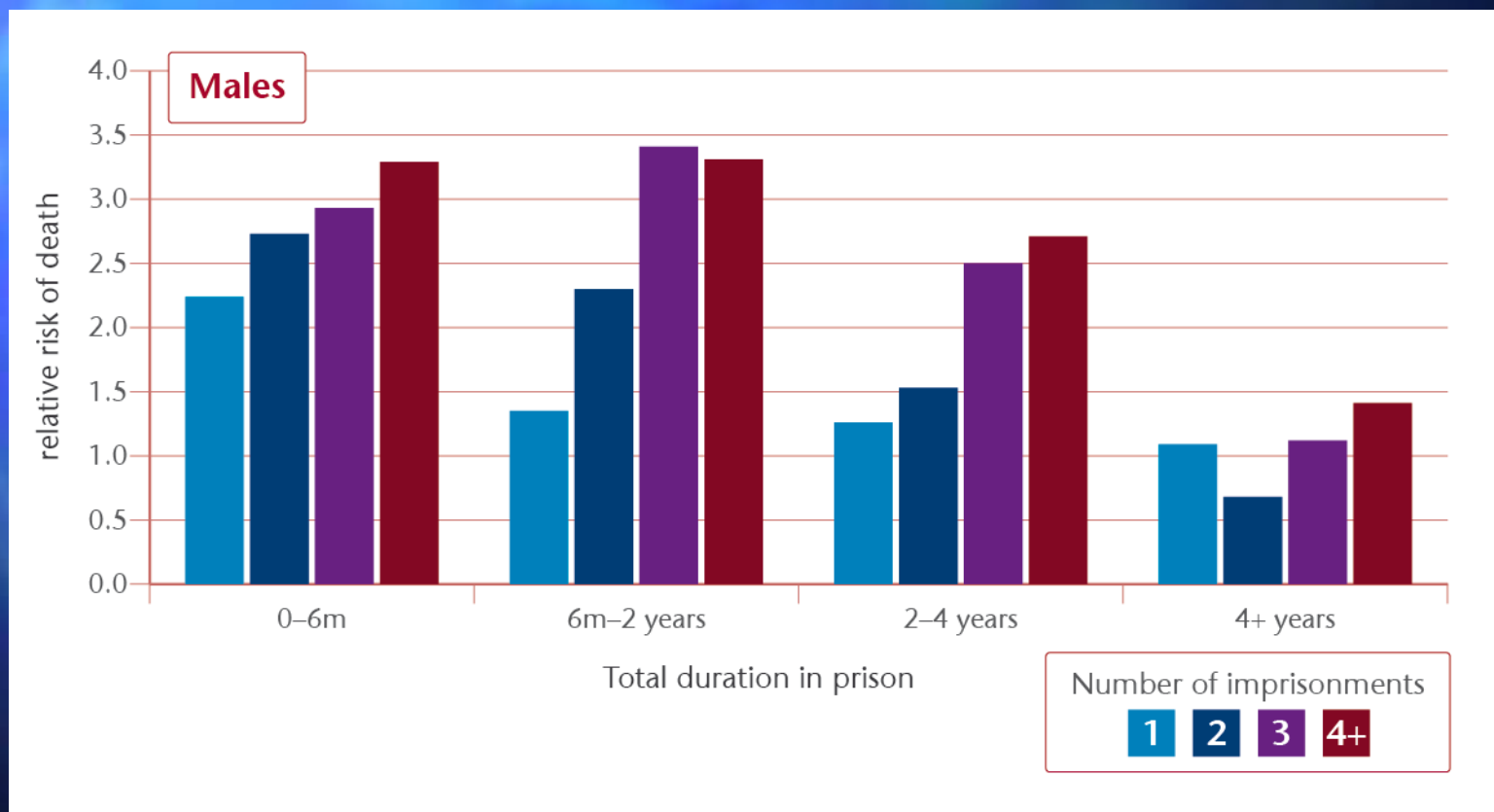
Relative risk of mortality for adults imprisoned in Scotland for the first time 1996-2007, by cause and deprivation

	Underlying cause of death	Observed deaths	Expected deaths	Adjusted rate ratio (95% CI)
Males (n=68,315)	All deaths (not deprivation adjusted)	3982	1222.6	3.3 (3.2, 3.4)
	All deaths	3982	1734.9	2.3 (2.2, 2.4)
	Suicide and Undetermined Intent	783	224.6	3.5 (3.2, 3.7)
	Homicide	225	51.2	4.4 (3.8, 5.0)
	All Drug Related	1112	252.4	4.4 (4.2, 4.7)
	All Alcohol Related	559	193.6	2.9 (2.7, 3.1)
Females (n=8,312)	All deaths (not deprivation adjusted)	432	57.8	7.5 (6.8, 8.2)
	All deaths	432	77.2	5.6 (5.1, 6.1)
	Suicide and Undetermined Intent	87	7.6	11.4 (9.1, 14.1)
	Homicide	17	0.8	22.2 (12.9, 35.7)
	All Drug Related	163	8.6	19.0 (16.2, 22.1)
	All Alcohol Related	72	7.8	9.3 (7.2, 11.7)

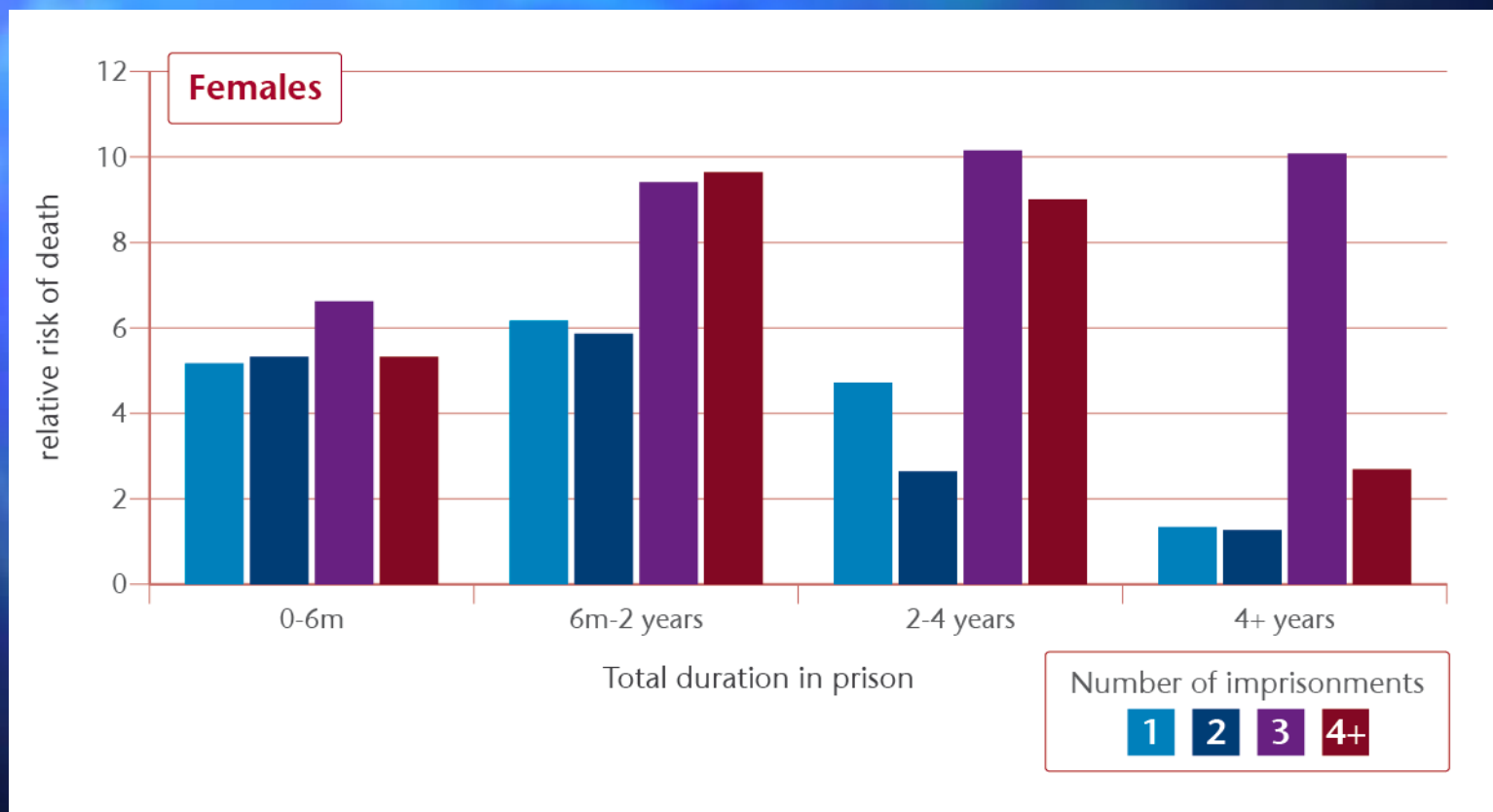
Relative risk of mortality for adults imprisoned in Scotland for the first time 1996-2007, by age



Relative risk of mortality for men imprisoned in Scotland for the first time 1996-2007, by number of imprisonments and total time spent in prison



Relative risk of mortality for women imprisoned in Scotland for the first time 1996-2007, by number of imprisonments and total time spent in prison



Relative risk of mortality of adults imprisoned in Scotland for the first time between 2003-2007 (n=25,797)

	Males (n= 23 594)			Females (n=3 203)		
	Observed deaths	Expected deaths	Adjusted rate ratio (95% CI)	Observed deaths	Expected deaths	Adjusted rate ratio (95% CI)
In prison	11	19.29	0.6 (0.3, 1.0)	2	0.61	3.3 (0.3, 12.0)
Out of prison	471	76.35	6.2 (5.6, 6.8)	61	4.48	13.6 (10.4, 17.5)

Summary and Conclusions

- The substantially increased mortality in this population is not entirely accounted for by deprivation
- Raised mortality from suicide underlines need for sustained suicide prevention strategies both with prison and on release
- High mortality from substance misuse emphasises the continuing requirement for quality enhanced services both within prison and through to the community
- High mortality from homicide points to the need for wider violence reduction measures

Summary and Conclusions

- There was a protective effect on mortality whilst in prison, more so for men
- The escalating risk of dying in conjunction with multiple episodes of imprisonment supports criminal justice policies that emphasises alternatives to custody where appropriate
- Markedly higher mortality rates for women demonstrates their particular vulnerability

Finally,

- The criminal justice setting is an opportunity for intervention for a 'hard to reach' group
- Good quality prisoner healthcare can help tackle health inequalities and potentially reduce re-offending
- The transfer of responsibility for prisoner healthcare to the NHS in November 2011 can help bring added focus to this population

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