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Mortality in children registered in the Finnish child welfare registry: population based study

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Studies have shown inverse associations between childhood social class and mortality,¹ and others have shown higher mortality in children in care.^{2,3} However, to our knowledge, only one study has investigated mortality in children in care with results specific to sex and cause of death.³ Mortality in that study was higher than expected among boys, although mortality related to age at the time of death was not reported.³

In Finland, children are cared for within the child protection system up to the age of 18. Our specific interest lies in whether mortality before age 18 in children in care is higher than expected on the basis of figures for the general population, reflecting failure in the child protection system, or whether mortality is increased from age 18, reflecting difficulties in adapting to independent living.

Methods and results

The basic data source was the Finnish child welfare registry. The data were completed by individual linkage with the Finnish cause of death registry, using the personal identification number of each child. The study covered all children in Finland who were taken into care between 1 January 1991 and 31 December 1997 (n = 13 371). One per cent (133) could not be linked to the cause of death registry owing to errors in the personal identification number. All subjects were born between 1 January 1973 and 31 December 1997 and followed up until 31 December 1999 or, if earlier, their 25th birthday or, if earlier, their death. During the study period 106 individuals (32 females and 74 males) died. Mortality ratios standardised for age were used to compare the mortality of children in the cohort (girls and boys separately) with that of the general population of the same age in Finland.

In this cohort, both sexes had higher mortality than would have been expected on the basis of general population figures (table). We also compared the mortality of the cohort with that of Finnish people aged

5-24 from the manual class.⁴ The mortality ratio for females was 282 (95% confidence interval 189 to 405), and that for males was 218 (169 to 275), indicating that mortality was higher in comparison with this socially disadvantaged group.

The higher mortality of the cohort is related to deaths caused by substance misuse, accidents, and suicide. Six females and 29 males aged 15-24 years committed suicide, with mortality ratios of 353 (130 to 768) and 242 (162 to 348) respectively. Deaths related to alcohol and drug misuse also occurred at a higher rate than expected; the mortality ratio for females was 841 (385 to 1597), and that for males was 420 (291 to 587).

Fourteen girls and 24 boys died before the age of 18, of whom seven girls and 11 boys died of illness (four girls and seven boys aged <11). This can be attributed to an increase in acute and chronic health conditions and developmental delays among children in foster care.⁵

Comment

We found that both females and males in the child welfare registry cohort had excess mortality in comparison with the general population or the manual class. Excess mortality of males was not higher than that of females (see table). The belief that girls are more resilient to environmental factors than boys was thus not

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Mortality ratios standardised for age* of Finnish people aged 1-24 in the child protection system in 1991-9, and the number of deaths and person years

Age group (years)	Females		Males	
	Mortality ratio (95% CI)	Deaths/person years	Mortality ratio (95% CI)	Deaths/person years
1-10	186 (51 to 476)	4/14 626	270 (117 to 532)	8/15 079
11-17	351 (137 to 524)	10/16 961	201 (115 to 326)	16/19 292
18-24	441 (261 to 693)	18/11 875	318 (236 to 419)	50/13 534
1-24	330 (226 to 466)	32/43 462	279 (219 to 350)	74/47 905

*The mortality of Finnish males and females aged 1-24 in 1991-6 is used as a standard.

supported. The child protection system does not cause the deaths—none of the children died as a result of abuse or violence by parents or foster parents. However, the system fails to protect adolescents from self endangering behaviour both within the system and during adaptation to independent living. The results indicate the need for continuing attention to be paid to the transition period from foster care to independence.

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did the data linkage and produced the data. JS interpreted the data, supervised the study, wrote the paper, and is the guarantor.

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Social environments and health: cross sectional national survey

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Researchers are increasingly interested in studying the effects of the social environment on health.¹ The concept of social capital has been put forward as one explanation for why some communities work better than others, with benefits for the whole of the local population.² Social capital is applied to those features of a community that promote cohesion and a sense of belonging and that enable its members to cooperate. Similarly, criminologists have argued that the level of social organisation in a neighbourhood, or the degree to which residents are able to realise common goals and exercise social control, links the social

composition of a neighbourhood and rates of deviant behaviour.³ We investigated how individual's reports of social capital and social disorganisation are associated with health outcomes among men and women aged 16 to 54 from a representative cross section of British households.

Methods and results

The British Household Panel Study is an annual survey of a representative cross section of British households.⁴ The first wave of interviews took place between

Table 1 Effect of social capital and social disorganisation on risk of poor health

	Total No	Psychiatric morbidity		Problems with arms, legs, or hands		Problems with chest or breathing		Problems with heart or blood pressure	
		No of cases	Odds ratio (95% CI)	No of cases	Odds ratio (95% CI)	No of cases	Odds ratio (95% CI)	No of cases	Odds ratio (95% CI)
Men									
Social capital:									
Low	575	137	1.96 (1.39 to 2.75)	116	1.36 (0.98 to 1.88)	60	1.05 (0.69 to 1.60)	31	1.60 (0.88 to 2.92)
Medium	505	74	1.08 (0.75 to 1.57)	80	1.02 (0.72 to 1.44)	44	0.98 (0.63 to 1.53)	31	1.86 (1.03 to 3.36)
High	481	70	1.08 (0.74 to 1.58)	86	0.94 (0.67 to 1.33)	49	1.13 (0.73 to 1.73)	31	1.36 (0.76 to 2.44)
Very high	512	68	1*	97	1	47	1	23	1
Social disorganisation:									
Low	358	59	0.85 (0.58 to 1.25)	63	0.93 (0.64 to 1.36)	27	0.59 (0.36 to 0.97)	16	0.90 (0.46 to 1.76)
Medium	680	110	0.82 (0.59 to 1.14)	117	0.86 (0.62 to 1.19)	55	0.65 (0.43 to 0.97)	46	1.28 (0.75 to 2.18)
High	563	83	0.69 (0.49 to 0.97)	96	0.82 (0.59 to 1.15)	57	0.83 (0.56 to 1.23)	26	0.85 (0.47 to 1.53)
Very high	472	97	1	103	1	61	1*	28	1
Women									
Social capital:									
Low	500	157	1.80 (1.36 to 2.38)	102	1.31 (0.96 to 1.80)	70	1.34 (0.92 to 1.94)	33	0.75 (0.47 to 1.20)
Medium	542	121	1.11 (0.84 to 1.48)	101	1.00 (0.74 to 1.36)	63	1.13 (0.78 to 1.65)	31	0.60 (0.38 to 0.96)
High	571	132	1.17 (0.89 to 1.54)	96	0.83 (0.61 to 1.13)	59	1.03 (0.71 to 1.50)	38	0.65 (0.42 to 1.00)
Very high	759	151	1*	158	1	74	1*	70	1
Social disorganisation:									
Low	396	78	0.72 (0.52 to 0.99)	75	1.03 (0.73 to 1.47)	40	0.87 (0.57 to 1.31)	20	0.53 (0.31 to 0.91)
Medium	681	147	0.78 (0.60 to 1.02)	118	1.00 (0.74 to 1.36)	65	0.81 (0.56 to 1.15)	40	0.66 (0.42 to 1.02)
High	640	146	0.78 (0.60 to 1.01)	132	1.10 (0.81 to 1.48)	75	0.97 (0.69 to 1.37)	49	0.73 (0.48 to 1.10)
Very high	655	190	1*	132	1	86	1	63	1*

*Trend test: P<0.05.

Models were additionally adjusted for age, education, social support, deprivation, low income, marital status, smoking, and economic activity.