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Mortality of young adults in relation to single-parent family background

A prospective study of the Northern Finland 1966 birth cohort

ANU SAUVOLA, PIRKKO K. RÄSÄNEN, MATTI I. JOUKAMAA, JARI JOKELAINEN, MARJO-RIITTA JÄRVELIN, MATTI K. ISOHANNI *

Background: The relationship between family background and mortality of offspring was studied by using a prospectively collected, general population, birth cohort database (n=11,017), that is the Northern Finland 1966 birth cohort which is linked with the national death register. Methods: A logistic regression analysis was performed in order to examine the association between family background and death of offspring (between ages 16 and 28 years). Results: It was revealed that 117 subjects (90 males and 27 females) from the original birth cohort had died. The majority of the deaths were due to unnatural causes in both sexes (79%). After adjusting for confounders (psychiatric diagnosis and parental social class), the results indicated that the general mortality risk for males with a single-parent family background was significantly increased compared with males from a two-parent family background (odds ratio 1.8 and 95% confidence interval: 1.1–2.9). The risk of committing suicide was significantly increased among young adult males with a single-parent family background (OR 2.5 and 95% CI: 1.1–5.8). Conclusion: Our finding calls for health care professionals to provide more preventative mental health support for children and adolescents living in broken homes.

Keywords: cohort study, family background, mortality, suicide

It is increasingly apparent that childhood family background affects a person's later life. Previous studies have shown that offspring of single-parent families suffer from mental health problems more frequently than offspring of two-parent families.[1–6] In addition, educational attainment[7–9] and self-esteem[10–12] as well as physical health[13–15] of offspring of single-parent families have been reported to be worse than those of peers with a two-parent family background.

There is also some evidence that family background may have an effect on mortality rates. Judge and Benzeval[16] found that children (aged 10–15 years) of single mothers had a fourfold mortality risk compared to other children. Similar findings of an increased mortality risk in early adulthood as well as in later life of offspring with a single-parent family background have come from studies by Lundberg[14] and Schwartz et al.[17] However, in these previous studies the samples were either restricted or the findings were not statistically significant. In suicide studies, Gould et al.[18] found that young suicide victims were approximately twice as likely to come from a non-intact family of origin [odds ratio (OR) 1.9 and 95% confidence interval (CI): 1.1–3.3]. The increased mortality risk of offspring with a single-parent family background has been found to be skewed towards males.[19,20]

In order to examine the putative higher risk of offspring dying at an early age in a single-parent family, specifically due to suicides, we approached the problem for the first time by using a large, prospectively collected, general population, birth cohort database of 11,017 individuals, that is the Northern Finland 1966 birth cohort.

MATERIAL AND METHOD

The basis of this study was provided by an unselected, general population-based birth cohort of 12,058 live births, that is the Northern Finland 1966 birth cohort, which covered 96% of all children born in Northern Finland in the year 1966.[21] Data on the cohort members' families and personal characteristics were gathered at various ages, commencing during pregnancy and birth in 1966 and then at follow-ups during the years 1980 and 1981. The data bank is complemented continuously by death and hospital discharge registers. The present study deals with the 11,017 individuals (5,636 males and 5,381 females) which were alive and living in Finland at the age of 16 years. Of the original cohort, 1,041 individuals were excluded because of emigration (n=757) or death (n=284) before the age of 16 years.

Information on all deaths and the causes of the deaths was collected from the Central Bureau of Statistics in Finland

* A. Sauvola[1], P.K. Räsänen[1], M.I. Joukamaa[1], J. Jokelainen[1], M-R. Järvelin[2,3], M.K. Isohanni[1]
1 Department of Psychiatry, University of Oulu, Finland
2 Department of Public Health Science and General Practice, University of Oulu, Finland
3 Department of Epidemiology and Public Health, Imperial College, School of Medicine, London, UK
Correspondence: Anu Sauvola, MD, Department of Psychiatry, University of Oulu, Peltolantie 5, 90210 Oulu, Finland, tel. +358 8 3157335, fax +358 8 333167, e-mail: asauvola@paju.oulu.fi

during the follow-up period right up to the end of 1994. Each death certificate contained a diagnosis of the cause of death. The deaths were categorised in the analysis as natural deaths, accidents, suicides and homicides.

In this study, we used the information of the cohort members' family backgrounds as assessed in 1980. At that time 19% (n=2,087 with 1,047 males and 1,040 females) of the cohort members lived in single-parent families. A family was coded as a single-parent family if

- the mother was unmarried at the entry to the study during pregnancy and remained so up to the time the child was 14 years old,
- the child was born to an unmarried mother who was married by the time the child was 14 years old,
- the mother, father or both had died before the child was 14 years and
- the parents became divorced or were not living together by the time the child was 14 years of age.[22]

Due to the small number of deaths, we combined all types of single-parent families into one group for the analyses. ORs with 95% CIs were calculated by logistic regression analysis in order to examine the association between family background and mortality. It is well known that the mortality risk among mentally ill persons is increased.[23–25] Therefore, detailed, validated lifetime psychiatric hospital diagnoses (yes/no dichotomised) were used as a potential confounder in logistic regression analysis. The validation process of mental disorders of cohort members has been described in detail elsewhere.[26] Since a skewed social class distribution in unnatural deaths among young people has been noted recently,[27] parental social class was chosen as a confounding factor in the multivariate analysis as follows: I, II and farmers versus III and IV. The reference population in the logistic regression analysis was formed from subjects who were alive. The statistical softwares used were the SPSS package for Windows (version 6.1)[28] and the SAS 6.12 for Windows.[29]

RESULTS

Of the total cohort, 117 individuals (90 males and 27 females) died in the follow-up time between 16 and 28 years of age. The overall mortality rate for males was threefold that of females (df=1 and p<0.0001). The vast majority of deaths in this sample (79%, n=92) occurred as a consequence of unnatural causes i.e. suicides (n=30), accidents (n=60) and homicides (n=2). Of the subjects with unnatural deaths, 82% (n=75) were males and 18% (n=17) females. Correspondingly, of natural deaths, 60% (n=15) were males and 40% (n=10) were females (df=1 and p=0.024 for gender difference).

After adjusting for confounders it became apparent that there was a significantly higher mortality risk for males with a single-parent family background (adjusted OR 1.8 and 95% CI: 1.1–2.9) when compared with males from two-parent families. The adjusted mortality risk varied from an OR of 1.4 (95% CI: 0.7–2.6) to an OR of 2.5 (95% CI: 1.1–5.8), depending on the cause of death (*table 1*). Of all the deceased males, 32% had a single-parent family background. Of those males who were alive, 18% came from single-parent families. This difference was statistically significant (df=1 and p=0.001). Furthermore, of those males who committed suicide, 40% had a single-parent family background.

No significantly higher mortality risk was observed among females in subjects with a single-parent family background (*table 2*). Only four of the deceased females had a single-parent family background.

DISCUSSION

Our major finding was that a single-parent family background increased the mortality risk among young adult males. The highest risk increase was seen in relation to suicides. Thus, earlier reports of a higher mortality risk in single-parent families,[16,17,19] particularly the higher risk of committing suicide,[18] have now, for the first time, been confirmed by using a large, unselected, general population birth cohort. Generally, a birth cohort study is well suited for examining mortality because it excludes selection bias. Our finding revealed an excess of mortality similar to that reported in studies by Romelsjö et al.[19] and other researchers.[14,17] However, we have now established that the high mortality is focused on suicides. After adjusting for validated psychiatric diagnoses, the finding remained statistically significant with regard to suicides but not in relation to natural deaths or accidents. This may be due to the fact that generally accidents happen unexpectedly, whereas adverse psychosocial family conditions are

Table 1 The mortality risk of males a with single-parent family background in the Northern Finland 1966 birth cohort

Cause of death	Number of individuals	Single-parent family background n	%	OR[a] (95% CI)
Natural	15	6	40	2.4 (0.9–7.1)
Accident	50	13	26	1.4 (0.7–2.6)
Suicide	25	10	40	2.5 (1.1–5.8)
Homicide	0	0	0	–
All causes	90	29	32	1.8 (1.1–2.9)
Alive	5,546	1,018	18	1.0

a: Adjusted for hospital-treated psychiatric disorder and parental social class.

Table 2 The mortality risk of females with a single-parent family background in the Northern Finland 1966 birth cohort

Cause of death	Number of individuals	Single-parent family background n	%	OR[a] (95% CI)
Natural	10	3	30	1.6 (0.4–6.6)
Accident	10	1	10	0.5 (0.1–3.6)
Suicide	5	0	0	–
Homicide	2	0	0	–
All causes	27	4	15	0.6 (0.2–1.8)
Alive	5,354	1,036	19	1.0

a: Adjusted for hospital-treated psychiatric disorder and parental social class.

contributing factors to suicides. One possible explanation for our major finding might be the increased risk of major depression among people who have experienced parental loss in childhood.[6,30] Furthermore, it is well known, that suicide risk in affective disorders is increased.[31]

The major limitation of our study was that the total number of deaths to date was rather small due to the young cohort population. This fact prevented us from carrying out some crucial subgroup analyses, i.e. comparing the mortality rates in different types of single-parent families. Nor were we able to find any association between family background and mortality among young adult females. In any case, the total mortality rate of females was low, being the same level as that of all Scandinavian countries.[32] It is possible that the category of single-parent families may include some cohabiting partners, but we were not able to assess the proportion of those families due to methodological limitations.

Further studies are needed concerning detailed social, psychological and biological risk-increasing factors which are specific for a single-parent family which may explain the elevated mortality rate of the offspring. In future, it would be interesting to study whether the increased mortality risk is associated with the timing of parental separation. Health care professionals at all levels should pay increased attention to the needs of appropriate preventative mental health care of children, particularly boys, in single-parent families, particularly if they express suicidal behaviour patterns.

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