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MORTALITY IN A CHILD WELFARE POPULATION: IMPLICATIONS FOR POLICY

The mortality rate in a one-year cohort of children with child welfare status in Alberta, Canada, was found to be significantly elevated. Specifically, neglected and abused children were apt to have died violently, while handicapped children were more likely to have died because of disease or infirmity. The proportion of children dying while in care did not differ from the proportion who died after leaving care. Death rates were elevated only for age-categories surrounding the point (18 years) at which child welfare support was withdrawn.

The majority of children who are taken into care by the state are there because of neglect or abuse. Thus, as Nunno and Rindfleisch [1991] have reminded us, reports of children who experience further maltreatment while in care are especially disturbing. Such incidents are often widely discussed in the public media, replete with criticisms directed toward child welfare officials, politicians, and others charged with the responsibility of the care and protection of the children in question. Often, major investigations are held, heads roll, and policy changes ensue. Such activities imply that children in care may be at high risk for damaging outcomes because of the care system itself. This begs the question of whether some children may be better off left with their families than being placed in the care of the state, as has been recently reflected in the move toward family preservation [see Pine 1986; Stehno 1986].

Although there is some evidence of faulty process in many child welfare programs [e.g., Blatt & Brown 1986; Nunno & Rindfleisch 1991; Rindfleisch & Rabb 1984; Thomlison 1984], evaluations have not included an examination of the safety of state-operated care systems in comparison to a return to the family for those at risk. Investigations following a tragic event ordinarily involve a review of policies and procedures, with information on the state of the children in question being exemplified by illustrative case histories. In most cases, suspicions and/or allegations are confirmed, and the policies and procedures of the system are found to be sadly wanting. Such approaches, however, focus primarily on the child protection process in the absence of good information on the actual state of the children in care. Using data from individual cases without consideration of the level of care for all children presents the dangerous possibility of making generalizations based on "worst-case" situations that are not representative of the overall system.

The present study examined death rates in a one-year cohort to ascertain whether children in care show greater risk for these consequences of abuse and neglect than children not in care. Furthermore, data were collected to determine whether each child was in care at the time of death, because neglected and/or abused children may show elevated mortality rates as a consequence of their personal characteristics, irrespective of type of care or placement. For example, violent deaths are known to be predicted by conduct disorder [Robins 1974] and delinquency [Yeager & Lewis 1991], conditions that are highly prevalent among those with previous child welfare involvement [Robins 1974; Thompson 1988; Thompson & Fuhr 1992; Wolkind & Rutter 1973]. Furthermore, abuse and/or neglect during childhood has been found to be highly predictive of suicide attempts during adolescence [Deykin et al. 1985]. Thus, if the hypothesis that child welfare systems are idiopathic is true, we would expect to find that, of those who have moved in and out of care, more would have been in care at the time of death than not in care. The hypothesis that care systems are, in fact, safer than a neglectful, abusive home would result in a prediction of a lower mortality rate during time in care. A finding of no difference between the two would suggest that the mortality rate of the cohort (whether high or low) is dependent on the characteristics of the children, irrespective of living arrangements.

Method

The study cohort consisted of those individuals who had been assigned child welfare status in the province of Alberta during the period January 1, 1980, through December 31 of the same year. As child welfare services are available to children from birth to 17 years of age, those included in the study were restricted to this age range, plus those who had turned 18 during 1980. Follow-up continued until December 31, 1987, or until the death of the individual, whichever came first. Thus, the maximum length of follow-up was eight years and the recorded age at death could range from less than one year of age to 25 years of age.

The vital status of each individual was determined by a computerized record linkage with Alberta Vital Statistics, the agency responsible for recording all deaths in the province. The identifiers used for this purpose were name, birth date, and sex. A flexible linkage criterion was adopted to accommodate the inevitable errors in spelling and coding that might have been present in the cohort and mortality data files. Since Alberta Vital Statistics records only those deaths taking place in the province of Alberta, relying solely on this method of ascertaining deaths could lead to undercounting. Fortunately, this was tempered to a degree by the fact that the child welfare data file contained some information regarding vital status, which was used to supplement the Vital Statistics data. Nonetheless, it is assumed that the final figures will be somewhat conservative.

Person-years of follow-up were calculated by age group, sex, and calendar year. For this study, the age groups employed were as follows: under one year of age, one to five years, six to nine years, 10 to 13 years, 14 to 17 years, 18 to 21 years, and 22 to 25 years. The selection of age groupings was driven by (a) the need to have a category split between ages 17 and 18 years (at age 18 an individual is legally an adult in Alberta, and thus is no longer eligible for child welfare services), and (b) the need to view those under one year of age separately due to the likelihood that neglect, abuse, and/or illness may well occur before intervention of the authorities. Such an eventuality would wrongfully place those otherwise "fated" to have child welfare involvement in the category that is indicative of nonabuse/nonneglect. As the remaining years could not be evenly distributed across age-categories, one grouping (one to five years) carried a five-year span, and the remaining groupings covered four years. Death rates in the province of Alberta were calculated for a range of specific causes. These were classified according to the rubric of the International Classification of Diseases Ninth Revision (ICD-9) [International Classification of Diseases 1977].

The product of death rate and person-years gives an expected number of deaths (EXP). In the present case, this was the number of deaths that would have been expected had the mortality risk in the cohort been the same as that in the general Alberta population. The actual number of deaths in the cohort is called the observed number of deaths (OBS), and the quotient OBS/EXP is referred to as the standardized mortality ratio (SMR) [e.g., see Milham 1975]. If there are more deaths in the cohort than expected (i.e., the SMR > 1), then the cohort has an elevated mortality rate compared to the general population. For example, an SMR of two indicates a mortality rate that is double that of the general population. A test of the hypothesis that the SMR > 1 can be made with the use of the statistic $\text{chi}^2 = (\text{OBS-EXP})^2/\text{EXP}$, which approximates a chi-square distribution with one degree of freedom, provided EXP is about five or more [Rosner 1990].

Additional data were collected from the records of each individual who died during the study period. The information taken from these files included demographics, status with child welfare, and time spent in care.

Results

The cohort data tape consisted of the records of 20,471 individuals who had carried child welfare status. The matching process with the Vital Statistics mortality file resulted in the identification of 161 individuals who had died during the eight years of the follow-up. An additional 21 individuals were identified whose deaths were not found during the matching process, but whose deaths were recorded on the child welfare files.

Based on the general population figures, the expected number of deaths for the cohort was calculated to be 105.8. In comparison to the observed figure of 182, this produced an SMR of 1.72, which was statistically significant ($chi^2 = 54.88$, $p < .001$). This indicates that the death rate for those in care was 72% higher than that found in the general population. This figure, however, is somewhat misleading. The child welfare population in Alberta includes a significant number of children who were provided services because they had a handicapping condition (primarily severe mental retardation and/or physical disability), not because they were abused or neglected. This group of often fragile individuals would be expected to have a relatively high mortality risk, hence producing an upward bias in the SMR. Thus, SMRs were calculated separately for such children.

Unfortunately, due to limitations of the electronic records system, the appropriate information required for a handicapped vs. nonhandicapped classification within the original cohort was not available. Manually collected statistics for that period [Child Welfare Branch 1980, 1981], however, indicated that about 19.6% of the children with active status during 1980 were referred because of a handicapping condition, with the remainder referred because of abuse, neglect, and to a lesser extent, delinquency. These figures allow a calculation of expected deaths for each of these two groups that can be compared with observed figures to produce an estimated SMR. That is, the overall expected number of deaths (105.8) can be partitioned into an expectation of 20.7 deaths for the handicapped children (i.e., 19.6% of 105.8) and 85.1 deaths for the neglected/abused group. The latter group can be thought to be at risk because of their home environment and/or their behavior, and the former because of their medical condition. Using this differentiation, coupled with a grouping of all causes of death into the two categories of illness (ICD-9 codes 1-799) and violence (all accidents, poisonings, murder, and suicide; codes E800-999), indicated that deaths due to physical illness occurred at a higher than expected rate among the handicapped, and that violent deaths occurred at a higher than expected rate among the abused and neglected (see table 1). Furthermore, children who were handicapped showed a rate of death due to violent causes that was about one-half of that of the general population, but this difference fell short of statistical significance ($chi^2 = 2.23$, $p < .10$). Those who were neglected and/or abused showed a significantly lower than expected rate of physical illness.

The foregoing is presented in a more detailed fashion in table 2, where SMRs for some of the major and/or frequent causes of death are shown. On the one hand, physical illnesses (cancer, respiratory disorders, and congenital abnormalities) account for the majority of deaths in the relatively flail handicapped children, while violent deaths do not appear to have been a factor. On the other hand, those children in care who fell in the neglected and/or abused group showed higher than expected levels of death by suicide and homicide, with no difference in regard to motor vehicle accidents. It is important to note that, in contrast to their generally low rate of deaths due to illness, those in the abused and/or neglected group showed a greater number of deaths due to respiratory disorders than expected. This apparent discrepancy likely indicates that respiratory disorders are often associated with neglect and the other illnesses are not.

In regard to the question of whether children who have been brought to the attention of child welfare authorities are "safer" while in care, one has to consider, of course, whether the child was in care at the time of death. This has to be tempered, however, by data on the proportion of the child's life that has been spent in care. That is, if a significant proportion of mortalities occurred while in care, and such children had spent only a small proportion of their lives in care, we would consider this to be much more meaningful than a case where most of the children's lives were spent within the child welfare system. With this in mind, and taking the case of the abused and neglected group only, we found that data were available from the paper files on the amount of time spent in care (i.e., with child welfare status) on all but five of these children. Considering only those under age 18 at the time of death (as noted earlier, those over 18 would no longer have been eligible for child welfare services, and thus could not have been in care at death), 29 had spent all of their lives in care, and 38 had moved in and out of care--some, several times. Of these, 12 died while in care, and 26 died while not in care.

In the case of the in-care vs. out-of-care analysis, those who spent all of their time in care are not of interest. This is because examination of such files cannot, of course, produce any comparison with time not in care. Looking only at the 38 who had moved in and out of care, the proportion of time spent in care for this group was 44.2% (taken from the time of first contact with child welfare services until the date of death). Consequently, 55.8% of time, on average, was spent out of care. For example, if deaths were distributed across categories in accord with these percentages, then about 17 deaths would have been expected during time in care (i.e., 44.2% of 38 = 16.8) in contrast to the 12 actually found. The results of this form of analysis for deaths due to illness and violence are shown in table 3. None of the comparisons show statistical significance, and if anything, the direction suggests fewer than expected deaths while in care. Clearly, the results do not support the hypothesis that children who had been assigned status because of abuse and neglect are at greater risk for death while in care than while not in care.

Although age of death is not directly relevant to the major thesis of this paper, examination of this factor revealed some interesting, and possibly important findings. As in the case of causes of death, above, SMRs were calculated on the basis of the assignment of population-derived expected deaths to the neglected/abused group in proportion to their representation in the cohort (80.4%). The results of this analysis are shown in table 4. Elevated risk for death appears to be restricted to the two categories covering the ages 14 to 21 years. All other age-groupings show rates that do not differ from general population values.

Discussion

As an aside from the primary issues of this study, it is of considerable interest that, except for the high rate of respiratory disorder deaths, those who were in the neglected and/or abused group showed a lower than expected rate for death due to illness. Could it be that many or most actually display personality characteristics that protect them from physical illness? Though this might appear to be unlikely, Grossarth-Maticek and Eysenck [described in Eysenck 1991] have hypothesized that a "healthy" personality (i.e., not prone to disease) includes an antisocial component; the latter characteristic showing high prevalence among child welfare populations [Robins 1974; Thompson 1988; Thompson & Fuhr 1992; Wolkind & Rutter 1973]. Although this possibility may not seem entirely plausible at this point, it may well be worth considering in future research of this nature.

Returning to the main focus of this study, the results lend support to the conclusion that while neglected and abused children may be at higher than average risk for violent death, it would appear that the child welfare system has not exacerbated this risk. On the other side of the coin, however, there is no evidence here that the protection offered by the child welfare system results in any greater safety than release from care.

In this regard, the obvious should be noted--that ethically one cannot randomly assign children to groups and place some in care and some not! As a consequence, investigations like this one must rely on data that are observational and correlational. In the case of the present study, it may well be that those released from care are deemed to be at lower risk than those retained in care. Thus, the "no-difference" finding may be due to the higher-risk cohort actually being kept in the system, and having the risk reduced due to the receipt of better care. This interpretation, however, is also in support of the relative efficacy of the system. The only explanation of the "no-difference" finding that would suggest that the system was dangerous is that those released from care were actually at higher risk than those retained. This, of course, is not impossible, but it is, one hopes, unlikely.

The above notwithstanding, the finding that increased violent death surrounds the age (18 years) at which children lose their eligibility for care suggests that a response from the child welfare system at this juncture may be highly beneficial, if not crucial. One could speculate that, for those in care, the advent of one's eighteenth birthday brings with it particular stresses and uncertainties that children who are not in care do not have to face. Put another way by Liederman, "These young persons are often expected to accomplish at age 18 what many other youths rarely do at such an age: establish themselves independently as adults" [Liederman 1993: vii].

Most children who have not been in care leave the family nest gradually and when more or less ready. Furthermore, family ties are not ordinarily broken when the parent-child relationship changes. Even though many foster parent-foster child relationships persist, for most in out-of-home care the loss of support and foster family ties is abrupt, final, and taken without regard for the "readiness" of the youngster to deal independently with the adult world.

The speculation could be made that deaths prior to age 18 reflect stresses associated with the feared separation, and those after are a consequence of difficulties in dealing with the world without support. This line of thinking, if it were true, would suggest that children in care are not inherently at risk. That is, if high risk was due solely to a personality characteristic, we would expect high mortality rates throughout the life span, not at particular ages as found in the present study. Even if we assumed a late onset as an explanation, the subsequent drop at age 22 would not be predicted. Thus, it may be that it is neither an essential personal characteristic nor the quality of care that elevates risk, but rather a particular consequence of care--the reality of having to face the rigors of independent life without preparation and without support.

This is, of course, not the first call for increased attention to the transition period from out-of-home care to independence. The provincial system under study here has already instituted a program to ease such transitions, with the data from the present investigation serving to strengthen preexisting resolve in this direction. In Canada, generally, most jurisdictions provide some form of supported room and board, with independent living skills programs (e.g., regarding counseling, employment, school achievement, interpersonal relations, and budgeting) being less frequent [Meston 1988] but under development. In the United States, the move toward independent living services is, after some rocky going, relatively well entrenched. The federal Independent Living Program legislation (passed by

Congress in 1986) has driven the extension of eligibility for services to age 21 years in most jurisdictions, and has resulted in the provision of basic skills training for youths in all states [DeWoody et al. 1993]. Importantly, standards for service development are in place to support the expected growth of new programs supporting independent living for those leaving out-of-home care [Child Welfare League of America 1989].

Though many might argue that more is needed, it appears that the current situation is dramatically better than it was just one decade ago, and it is still growing.

As a closing note, the term independent living may be somewhat limiting in regard to the needs of those leaving out-of-home care. It is unlikely that we would be able to find many adults, regardless of the nature of their upbringing, who actually live totally independent lives. Most of us live within the context of a social network of family, friends, coworkers, and acquaintances that provides support guidance, and meaning. Mech [1988] has suggested that many would prefer to replace the term "independent living" with the more suitable phrase "interdependent living" in order to emphasize the importance of our social network. Nonetheless, most programs concentrate on the matters of resource supports (e.g., housing, income) and/or the development of personal living skills [see for example DeWoody et al. 1993; Kroner 1988]. While these are extremely important, a comprehensive approach would include the difficult task of ensuring that each adolescent will practice his or her newly found independence in a supporting and enriching social environment.

TABLE 1

Overall SMRs for Deaths Due to Physical Illness and Violence for Handicapped Versus Neglected/Abused Children.

	Handicapped			Neglected/Abused		
Cause	OBS	EXP	SMR	OBS	EXP	SMR
Illness	77	12.4	6.21[b]	32	51.0	0.64[a]
Violence	4	8.3	0.48	69	34.1	2.02[b]
All Causes	81	20.7	3.91[b]	101	85.1	1.19

a $chi^2 > 6.64, p < .01$

b $chi^2 > 10.83, p < .001$

TABLE 2

SMRs by Selected Causes of Death for Both Handicapped and Neglected/Abused Children with Child Welfare Status

Cause	Handicapped			Neglected/Abused		
(ICD-9 code)	OBS	EXP	SMR	OBS	EXP	SMR
Neoplasms (140-239)	12	1.57	7.64[a]	2	6.43	0.31
Respiratory (460-519)	34	0.71	47.89[a]	10	2.89	3.46[a]
Congenital (740-759)	16	2.04	7.84[a]	6	8.36	0.72
Motor Vehicle (E810-819)	1	5.21	0.19	21	21.39	0.98
Suicide (E950-959)	1	1.88	0.53	23	7.72	2.98[a]
Homicide (E960-969)	0	0.45	0.00	8	1.85	4.32[a]

a $chi^2 > 10.83, p < .001$

TABLE 3

Observed and Expected Deaths According to Care Status at Death and Cause of Death for Neglected/Abused Children

	In Care			Not In Care			
Cause	OBS	EXP	SMR	OBS	EXP	SMR	chi^2
Illness (59.6%)[a]	5	6.0	0.83	5	4.0	1.25	0.42
Violence(38.7%)[a]	7	10.8	0.65	21	17.2	1.22	2.18
Total (44.2%)[a]	12	16.8	0.71	26	21.2	1.23	2.46

a Bracketed percentages represent the estimated proportion of subjects expected to die while in care due to the cause of death in question.

TABLE 4.

Observed and Expected Deaths in Neglected and Abused Children Across Age

Groupings

Age	OBS	EXP	SMR	chi^2
< 1 Year	19	20.3	0.94	0.08
1-5 Years	9	12.3	0.73	0.89
6--9 Years	7	7.2	0.97	0.01
10-13 Years	8	7.7	1.04	0.01
14-17 Years	29	18.7	1.55	5.67[a]
18-21 Years	26	16.6	1.57	5.32[a]
22-25 Years	3	2.3	1.30	0.21

a $chi^2 > 3.84$, $p < .05$

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