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Detecting and Reporting Child Abuse: A Function of the Human Service Delivery System

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Detecting and Reporting Child Abuse: A Function of the Human Service Delivery System

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This paper reports the results of a regression analysis performed on 48,499 reports of known or suspected child abuse submitted from 1974 through 1983 to the Colorado Department of Social Services Central Child Abuse Registry. Enrollments in human service programs, combined with events which precipitate enrollee use of services, and the presence of human service professionals and institutions are strongly related to the number of abuse cases reported.

In 1962, Dr. C. Henry Kempe and physician colleagues (Kempe, Silverman, Steele, Droegemueller, and Silver, 1962) at the University of Colorado School of Medicine published a paper reporting the results of a nationwide study of child abuse cases. Since that time, understanding of and interest in child abuse has improved, protection programs have been developed and implemented and professionals from a variety of disciplines have been trained to serve victims of abuse.

While abuse and neglect of children have been known for centuries, Dr. Kempe's publication galvanized states and communities to recognize the problem and do something about it. Colorado, and subsequently all other states, passed legislation in the early 1960s that established child protective services administered by departments of social services. The Colorado legislation mandated that professionals who work with children must report knowledge or suspicion of abuse or neglect to the Colorado State Registry for Child Protection. Later, penalties and civil liability suits reinforced the reporting requirement.

Rates of reported cases of abuse have been shown to differ significantly geographically (Kempe and Helfer, 1972; Cohen and Sussman, 1975). It was hypothesized that the rate of abuse reported for counties in the State of Colorado is associated with the number of residents who are enrolled in health and human

service programs and with events which bring residents into contact with mandated reporters.

Methods

Rates are frequently employed in assessing the health status of a population and the quality of services provided to that population. Rates are statements of statistical probability which are the underlying measures of the frequency of event occurrence in a specified population. Measures of morbidity used in epidemiology and public health exemplify useful applications of rates. All of these rates belong to two broad categories. Whereas incidence rates measure the occurrence of new cases of a disease condition during a time period, prevalence rates depict the number of cases in a specified population at one point in time (Mausner and Bahn, 1974). The rates described here for child abuse connote incidence. But, reportable incidence is surely a function of prevalence. That is to say, undoubtedly an adult who regularly abuses a child is more at risk to be reported than one who abuses a child rarely. Reported incidence is, therefore, a function of prevalence and a single report of abuse may represent a history of inhumane treatment during a victim's childhood.

There are three elements which comprise any rate. For a rate of incidence, they are: (a) the number of episodes of the disease/occurrences of an event in a specified population (this is the numerator: reported cases of child abuse for the purposes of this examination); (b) a period of exposure (10 years for this study); and (c) the population exposed to contracting the disease (the denominator: 100,000s of children under 18 years of age in the year 1980).

When persons capable of contracting the disease are included in the denominator, it can be appropriately designated the population-at-risk and the rate of incidence that is calculated provides valuable insight concerning the epidemiology of the disease (MacMahon, Pugh, and Ipsen, 1960). Determination of the population-at-risk poses little difficulty when the denominator consists of the residents of a geographical unit, state, county, community, etc., for which number and characteristics are known. County was the unit of analysis for this investigation.

Rates are of three fundamental types: (a) crude, (b) specified, and (c) standardized. Crude rates require less information to compute than do the other types and, therefore, in spite of their known inadequacies, still enjoy wide utilization. Due to lack of information pertaining to the traits of either the victim or the perpetrator of abuse, conventional rate standardization and computation of attribute specific rates were not done. Rates reported here are crude ones.

Registers are frequently employed in the public health field to assist in the determination of incidence and prevalence of conditions. Registered populations can constitute either the numerator or denominator of a calculated rate. When the registered population is used as the numerator, the general population or a subset of the general population (in this case the pediatric population) usually comprises the corresponding denominator. For example, by dividing the number of registered patients receiving care from end stage renal disease facilities in this country by U.S. Census estimates/projections of the American population, the prevalence rate of renal disease in the United States can be approximated. The approximation is a close one for two compelling reasons. First, the suffering and functional impairment caused by the disease dictate that the afflicted seek professional care. And, second, federally established protocols for payment for dialysis and transplant services virtually preclude any American's receipt of care on a regular basis outside this country. Thus, the number of recipients of certified dialysis services can justifiably be used as a proxy measure for planning and evaluating services and epidemiological studies.

In the preceding example, registered persons occupied the numerator of a rate which enjoys substantial public and professional confidence. But other formulations, such as that for the incidence of child abuse, are controversial. Not all cases are brought to the attention of helping professionals, and of those which are, not all are reported. But this is no different from the situation for most acute disease conditions in this country. Of those conditions which result in some limitation of activity on the part of the afflicted, about 45% are medically unattended (National Center for Health Statistics, 1983). Thus, frustration associated with efforts to measure incidence of event occurrence

are not unique to the study of child abuse. In addition, the hypothesis cited at the outset is better tested through the use of the index of reported cases of child abuse than the more emphasized one of actual abuse.

Data used in these analysis were extracted from official records of the following federal and state agencies. The U.S. Bureau of the Census is the provider of data on the population under 18 years of age from the 1980 Summary Tape File #1 and the percent of persons and families below poverty level from 1980 Summary Tape File #3A. Information obtained from the Colorado Department of Social Services included reported cases of child abuse (the Colorado State Registry for Child Protection), households enrolled in Medicaid, persons receiving food stamps, number of AFDC cases, and persons receiving adult protective services (Annual Report, 1981). From the 1980 Annual Report of the Colorado Department of Institutions-Division of Mental Health the number of juvenile commitments and mental health centers was extracted. The sources for percent illegitimate births and general acute short-stay hospitals were the 1980 Annual Report from the Office of Vital Records and the Health Facilities Directory for 1980, both produced by the Colorado Department of Health. The Colorado Board of Medical Examiners provided data for the number of physicians and primary care physicians from its 1980 Licensure Records.

Although certain reports from which data were drawn were released in 1981, all of the above information is applicable to 1980. Child abuse registry data pertain to the period 1974–1975. While the year 1980 is slightly beyond the midpoint of the ten year period under study, it coincides with the conduct of the decennial census and availability of other important information. Any other year chosen would have been dependent upon the accuracy of estimates of actual population through the process of intercensal adjustment.

Results

There were 48, 499 reports of child abuse submitted to the Colorado Department of Social Services for inclusion in the registry during the first ten years of its existence. The number of reported cases has risen in linear fashion from 866 in 1974 to

9,268 in 1983. Similar growth has been observed in other states (Nelson, Dainauski, and Kilmer, 1980). This represents about an eleven-fold increase in only one decade.

Table 1

Statistics on Reported Child Abuse in Counties in the State of Colorado: 1974–1983

Mean	769.8
Median	90
Std Dev	1840.8
Minimum	5
Maximum	10709
Sum	48499
.95 c.i.	306.2 to 1233.4
Std Er	231.9

The disparity in number of cases reported by county is apparent from consideration of the standard deviation in Table 1, which is about 2.5 times the mean. But in view of the range in county populations the corresponding pediatric populations, the population-at-risk, this observation was expected. However, the variance in rates depicted in Table 2 below are not as easily explained.

Table 2

Reported Cases of Child Abuse per 100,000 Children Under 18 Years of Age in Counties in the State of Colorado: 1974–1983

Mean	2280.7
Median	1951.4
Std Dev	1318.1
Minimum	361.4
Maximum	6440.1
.95 c.i.	1948.7 to 2612.6
Std Err	166.1

The 95 percent confidence interval is modest in relation to the measures of central tendency versus that derived for actual number of cases in relation to the mean and median; the size of the interval for the latter was larger than the associated mean and more than 9 times the median (see Table 1).

Several variables were correlated with the rate of reported cases of abuse to test the study hypothesis. Their correlation coefficients are presented in Table 3.

Table 3

Pearson R for Correlation with Rate of Reported Abuse

Variable	R	p
Medicaid program enrollees	.351	.002
Household on food stamps	.327	.004
AFDC cases	.350	.002
General acute short-stay hospitals	.377	.001
Mental health centers	.363	.002
Physicians	.293	.010
Primary care physicians	.298	.009
Adult protective service cases	.264	.018
Juvenile commitments	.332	.004
Percent illegitimate birth	.311	.007

The variables from top to bottom respectively represent (a) participation in social service programs, (b) health and mental health facilities, (c) health personnel, (d) related events attended by health/social service professionals. All reflect public exposure to professionals required to report child abuse. Most correlations were moderate in strength, but usually statistically significant.

Multiple regression was performed using all of the above variables in the equation and rate of reported abuse as the dependent variable. Just under one-quarter of the variance was explained (Multiple R = .498, Multiple R Square = .248). Although R is statistically significant, the standard error of the estimate (577.8) is large. While moderately strong relationships have been established, they do not afford the analyst general power to explain or predict rates of reported abuse for all 63 counties.

But instability of rates for the state's most sparsely populated counties is understandable. One county accounted for only 5 cases during the 10-year period examined. More than one-fourth of all counties (16 of the 63) averaged 3 or fewer reported

incidents per year, and the median was less than 10 cases annually per county. The effect of inclusion of counties, mostly rural, that are not densely populated is well illustrated by applying the previously used regression equation to Colorado's most populated regions.

Of the state's 63 counties, only 10 have county populations of 50,000 or more. Nine of these are part of standardized metropolitan statistical areas, and the other is pending designation. None of the other 53 counties is inhabited by as many as 30,000 persons nor is there a single community of at least 15,000 residents. There is a logical basis, therefore, for rural versus urban classification of Colorado counties.

Just as the population of Colorado is heavily concentrated in these ten counties, so too are public health and social service resources. Little is sacrificed by restricting our primary focus to these areas because 42, 388 of the 48, 499 cases reported from 1974 through 1983 (87.4%—about 7 of every 8 incidents in Colorado) occurred within the ten counties.

Table 4

Pearson R for Correlation with Rate of Reported Abuse Within the 10 Most Populated Colorado Counties

Variable	R	p
Medicaid program enrollees	.518	.062
Households on food stamps	.518	.062
AFDC cases	.562	.045
General acute short-stay hospitals	.530	.058
Mental health centers	.508	.067
Physicians	.474	.083
Primary care physicians	.466	.088
Adult protective service cases	.322	.182
Juvenile commitments	.437	.103
Percent illegitimate births	.585	.038

Table 4 shows that the correlation of each item with rate of reported abuse is considerably higher than that obtained when analyzing all 63 counties. The most profound increase can be observed for illegitimacy of birth. Adolescent pregnancy has become a major problem in urban Colorado. Immature, usually

indigent, adolescent mothers are unprepared for either pregnancy or parenthood. Tragic abuse often results. But several programs to address the related need have been in operation for some time under the direction of health and social service professionals. It should be noted that the statistical significance of the coefficients, although the coefficients are without exception higher than for the more general analysis, have declined. This is a function of the fact that only 10 counties were included in the examination. None of the variables incorporated into the formula explain less than 10% of the variance in rate of reported abuse.

Regression on rate of reported abuse, entering variables stepwise in descending order of strength of correlation, was performed. Virtually all of the variance was explained (Multiple R = .983, Multiple R Square = .966) using only 8 of the 10 variables (included in the earlier regression. The F-to-enter and tolerance level were insufficient for inclusion of primary care physicians and adult protective services cases. The number of primary care physicians was approximately one-third the total number of physicians for each of the counties, and there is no evidence that other medical specialists are either more or less likely to report abuse than a family physician. Adult protective service cases was found to have the weakest relationship to number of reported cases of child abuse of the ten variables listed in Table 4. The correlations attained with the B variables was significant at the .00001 level, and the standard error of the estimate was 237.3 reported cases per 100,000 children. The relationship was homoscedastic and the regression equation remarkably predictive. Even at the extremes of the range of values of rate of reported cases, predictiveness is apparent. For the county recording the highest rate of 4, 674.3 per 100,000, a rate of 4, 788.9 was estimated. A rate of 1, 359.1 was estimated for the county with the lowest rate (1, 289.5 per 100,000 children)—discrepancies of just 2.5% and 5.4% respectively.

Discussion

The School Health Nurse Program of the Colorado Department of Health offers the most graphic direct illustration of the effect of a presence of trained professionals on rates of reported

child abuse. Of 186 school districts in the state, just 9 are without nursing services. Their rate of elementary school children per 100,000 who are evaluated for abuse is 135.5 vs. 812.5 per 100,000 for districts served by licensed nurses ($t=4.20$, $p=.001$). The presence of nursing resources clearly has a tangible impact. Nurses perform screening for vision, hearing, and dental problems, scoliosis and height and weight deviation. They also do throat cultures, TB skin testing, and general physical exams. There were 786, 249 diagnostic procedures conducted during the 1987–1988 school year with elementary school children. Virtually all kindergarten and grade school children have contact with school health nurses; 84.4% (248, 114) are screened for vision problems alone. Full physical examinations were performed for 13, 622 elementary school children.

School health nursing provides a practical demonstration of the effect of contact with mandated reporters of abuse and revelations of child maltreatment. The absence of these professionals is associated with districts in which abuse is apparently not being recognized. School health nurses participate in extensive formal child abuse training sponsored by the Colorado Department of Health.

For children younger than school age, the Early Periodic Screening Diagnosis and Treatment Program (EPSDT) serves a child protection function in much the same way that the Colorado School Health Nurse Program does for elementary and secondary school students. In addition to providing preventive health care, EPSDT personnel arrange for developmental evaluations. Unlike the School Health Nurse Program, EPSDT eligibility is determined by means testing. Children in families that quality for Aid to Dependent Children (AFDC) are categorically EPSDT eligible.

There is also a meaningful physician role in this scenario. In school year 1987–1988, 41, 246 elementary school student referrals were made to physicians by school health nurses for the purpose of more complete examination for various kinds of health problems indicated by nurse testing and screening of students. Physicians are widely respected in the child protection field for their ability to objectively evaluate evidence of abuse. Their examination of a child increases the probability of

discovery of maltreatment. And the results of a doctor's examination are considered especially credible in a court of law. This explains the effort that has been made in the last decade to insure inclusion of physicians among the membership of multidisciplinary child protection teams (Krugman, 1987; Schmitt, Grosz, and Carroll, 1976).

Another aspect of participation in human service programs tends to magnify this physician role. Because Medicaid program participants receive medical service at no personal or family cost, they are more likely to follow through on referrals to physicians. A recent evaluation of the Colorado Primary Care Physician Program found that Medicaid patients, whose care was subsidized by the state and federal governments, visit a physician's office even more frequently than do affluent Americans of the same sex and similar in age (Colorado Department of Social Services, 1989).

One administrative rather than clinical aspect of the Colorado Medicaid program might further explain its strong direct relationship to child abuse reporting. For the purposes of fee collection, Medicaid physicians are required to submit claims to the Department of Social Services, the custodial agency with responsibility for maintenance of the state child abuse registry. Failure to accurately annotate the diagnosis for which treatment was rendered in accordance with the Ninth Revision of the International Code of Disease Association constitutes a violation of state law in addition to the failure to report a suspected case of abuse. Thus, personal risk accrues to the Medicaid physician who simply encloses his/her observations in a confidential medical record of the patient.

It is not the routine administrative process of certifying individuals and/or families eligible for Medicaid benefits that accounts for the relationship between the number of program enrollees and the rate of reported child maltreatment. This bureaucratic task does not present the eligibility technician with a meaningful opportunity to observe abuses. But visitation to physicians at a rate which, as earlier noted, exceeds that for the general population follows the act of certification. The professional skill of physicians in the detection of abuse was previously discussed. But neither is the mere presence of a physician in a

particular community the crucial factor. Rather, the combination of the Medicaid coverage for the health care of an individual or family that would otherwise not have sufficient financial resources to purchase needed medical services and the presence of a physician willing to accept Medicaid patients into his/her caseload influences the rate of reported cases of child maltreatment. Families in which child abuse is occurring come increasingly under the scrutiny of a professional skilled in detection, in a setting which permits thorough clinical investigation of the possibility of maltreatment.

Unlike the general population, Medicaid program participants often do not have a regular source of medical care other than the emergency room of a general hospital. Forensic experts can be consulted in these facilities and the availability there of technologically advanced equipment not typically found in the physician's office also facilitates the diagnosis of abuse just as it does the diagnosis of most disease conditions. Distance is an obstacle to access to a hospital for a relatively small proportion of Coloradoans, primarily those who reside in remote and sparsely settled rural communities.

The same general principles which apply to physical health professionals and institutions also apply to the mental health field. The expense of care provided by private practitioners prohibits their utilization by many individuals. Indeed, a major purpose of the community mental health center movement of the 1960s was to improve access to mental health services for economically disadvantaged Americans (Richman, 1985). It is not surprising that during the course of individual and group counseling, particularly that dealing with family violence, child mistreatment is discovered. Many homes in which child abuse occurs are also characterized by violence between spouses (Cazenave and Straus, 1979). Of households in which child abuse was reported during the period 1978 through 1985 in Colorado, spouse abuse was found in 14% (Colorado Department of Social Services, 1986). But of the many deviant behaviors which may surface in therapy, child abuse and/or neglect are the acts which the therapist is required by law to report. The mental health center environment which is marked by candid

communication between the clinician and patient is understandable conducive to the disclosure of child maltreatment by either the victim or perpetrator.

Unmarried adolescent mothers from impoverished households present a wider range of personal and family problems than perhaps any other category of the needy. They and their offspring typically qualify as recipients of a large number of human service programs. Adolescent mothers may be both victims of abuse, normally sexual abuse, and perpetrators who physically abuse their babies (Smith and Kunjukrishnan, 1985).

Juvenile delinquency is often commited by runaway youths who have fled a household in which family violence occurs (Janus, Burgess, and McCormack, 1987). They frequently report that they have been mistreated to law enforcement or social service authorities when apprehended. Thus, their behavior is both the "cause" of child abuse reports and the effect of that abuse.

Certain of the independent variables employed in this analysis must be seen at least in part as proxy measures of other more genuinely explanatory variables. It has been noted that the administrative task of Medicaid enrollment does not afford a valuable opportunity to ascertain the presence of abuse, but it does lead to intense, prolonged contacts with physicians skilled in the detection of child maltreatment. By the same token, certification of eligibility to receive food stamps is perfunctory. But those found eligible will frequently qualify for Medicaid and a variety of other government subsidized programs which also employ means testing. Qualification for a myriad of health and social services at no cost to the recipient is not mutually exclusive. Providers of the services of some programs have a better opportunity to detect abuse than providers in other programs. More detailed examination using individual recipients rather than counties as the unit of analysis is required to discern more fully the respective contributions of participation in different programs to rates of reported abuse.

In conjunction with testing hypotheses, it is seldom possible to rule out rival hypotheses. The social service variables used in this analysis suggest the possibility of a relationship between low socioeconomic status and the rate of reported abuse. Three

social service program enrollments have been examined: Medicaid, AFDC and food stamps. Common to all three is the eligibility criterion of disadvantaged financial status. A variety of ability-to-pay scales are used in physicians' offices, general hospitals, and mental health centers, but some relation of assets and income to federally established poverty level guidelines are considered for applicants to Medicaid, the food stamp program, and AFDC. Thus, it is important to examine the possibility that economic status is the real underlying causal variable; either because persons deprived of many of the niceties enjoyed by most members of society are more abusive of children than others in the general population, or the poor are simply more often reported for this misdeed than are others. Thus, two additional variables were correlated with rate of reported abuse. The Pearson Correlation computed from reported abuse with the percent of persons below poverty level for the county was -.03, the only variable with an inverse relationship to abuse. A more refined measure, percent of all families with children under 18 years of age and below the poverty level, was found to be almost completely without correlation to rate of reported abuse (R=.01). It has long been a frustration of helping professionals in Colorado that many individuals eligible for receipt of benefits and services through various programs (especially those of the Women, Infants, and Children's Nutrition Program of the Department of Health) do not avail themselves of the opportunity. A comprehensive study of impoverished families in the Denver Metropolitan Area recently revealed that the number of people and families receiving public assistance and participating in various social service programs was much smaller than the number eligible (Piton Foundation, 1987). It is contact with professionals rather than financial status that is associated with the rates of reported abuse.

Conclusions

High rates of reported child maltreatment are associated with families who come under prolonged or intense scrutiny by human service professionals who are skilled in the detection of abuse and mandated by law to report suspected or known cases.

Professionals in these programs serve at the pleasure of federal and state legislators. Their continued service is subject to

annual reappraisal by these governing bodies. In this time of fiscal austerity and legislative reluctance to support human service programs, there is cause to ponder a hidden cost associated with reducing the availability of helping professionals. Major reconfiguration of the human service delivery system could curtail capacity to identify victims of abuse and delay or deny them the services they require.

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