



SSDI 0145-2134(95)00147-6

WHAT CAN CHILD HOMICIDE RATES TELL US ABOUT THE EFFECTIVENESS OF CHILD WELFARE SERVICES?

NICO TROCMÉ

Centre for Applied Social Research, Faculty of Social Work, University of Toronto, Toronto, Ontario, Canada

DUNCAN LINDSEY

School of Public Policy and Social Research, University of California at Los Angeles, Los Angeles, CA, USA

Abstract—This paper examines the methodological problems involved in using child homicide rates as measures of the success or failure of child protection efforts. A comprehensive review of child homicide research identifies three major methodological issues: (1) The classification of child deaths as homicides is unreliable; (2) child homicides may not generally represent the endpoint of a continuum of violence ranging from inadequate parenting to maltreatment to death; and (3) child homicides are not frequent enough occurrences to effectively measure the impact of child welfare services and policies. We conclude that while improved reporting and classification procedures may lead to some useful avenues for research, relying on child homicide statistics to evaluate child welfare services may contribute to further narrowing the scope of child welfare by stressing procedures geared primarily to preventing child homicides. Child welfare services need to develop outcome measures that tap the broader mandate of improving the circumstances and well-being of children.

Key Words—Child homicides, Child abuse fatalities, Outcome measures, Child welfare.

INTRODUCTION

FEW EVENTS GALVANIZE public reaction more than the brutal death of a child at the hands of his or her parent. In such cases public outrage is swift and powerful. The public demands that something be done to protect children from such acts. During the last several decades the public child welfare system has been fundamentally transformed to respond to this public demand (Lindsey, 1994). Reporting laws, abuse registries, investigation procedures, and prevention programs have been developed in the hope that child homicides will be prevented through early identification and intervention. But how effective has this fundamental transformation been in reducing the risks children face? To answer this question analysts have examined child homicide rates to see if efforts at child protection have reduced these rates (Garbarino, 1986; Pritchard, 1992). Our concern in this paper is to examine the problems and limitations of using child homicide statistics to assess the effectiveness of child protection efforts.

There is a natural inclination to use homicide statistics to assess the effectiveness of child

Funding for this study was provided for the first author by a University of Toronto Connaught New Faculty Grant.

Received for publication March 22, 1995; final revision received August 7, 1995; accepted August 9, 1995.

Reprint requests should be addressed to Dr. Nico Trocmé, University of Toronto, Centre for Applied Social Research, Faculty of Social Work, 246 Bloor Street West, 5th Floor, Toronto, Ontario, Canada, M5S 1A1.

protection efforts. After all, it is child fatalities that have driven the transformation of child welfare agencies into child protection agencies (Lindsey, 1994; Parton, 1985). To gauge the effectiveness of this effort it makes sense to examine the impact of these efforts on child abuse fatalities statistics. In 1980, the United States Surgeon General's Report suggested that "By 1990, injuries and deaths to children inflicted by abusing parents should be reduced by at least 25%" (Garbarino, 1986). Was this lofty goal of reducing child abuse fatalities achieved? Further, if fatalities declined would this be the result of child protection efforts? Likewise, if child abuse fatalities increased would this indicate a failure of child protection efforts?

Despite increased reporting and continual expansion in child protection services, the "report card" for the United States in the 1990s appears to be grim in terms of child abuse fatalities. The National Committee for the Prevention of Child Abuse has recorded a 50% increase in the rate of child abuse fatalities for 1985 to 1993 (Daro & Mitchel, 1994). Homicide continues to be the second leading cause of injury mortality after motor vehicle accidents for children in the United States (Guyer & Ellers, 1990).

Improved Reporting Mechanisms May Lead to Higher Rates

The increase in official reports may be an artifact of improved reporting, rather than a true increase in the rate of child homicides. Besharov (1990) writes that "the best estimate is that over the past 20 years, deaths from child abuse and neglect have fallen from over 3,000 a year (and perhaps as many as 5,000) to about 1,100 a year" (p. 10). Although Besharov fails to support this assertion with empirical data (Pelton, 1989), his claim highlights the problem with child abuse fatality statistics. These problems are not unique to the United States. Two recent British studies of child homicides have also lead to opposing conclusions. Examining World Health Organization (WHO) child homicide data for England and Wales, Pritchard (1992) found that there has been a substantial reduction of child homicides that could be attributed in part to "a real improvement in British child protection services" (p. 680). In contrast, in their study of Home Office criminal statistics, Hargrave and Warner (1992) note the "absence of any significant trend in the incidence of child homicide." Despite such contradictions, methodological questions with respect to the calculation and interpretation of child homicide rates have not been the subject of much attention in child welfare. The assumption—more often implicit than explicit—that expanding child welfare services will translate into a reduction in rates of child homicides requires critical appraisal before targets such as the U.S. Surgeon General's 25% reduction in child homicide rates can be realistically set.

In a field plagued by measurement problems, child homicide statistics appear to offer one of the more reliable and valid measures for assessing the effectiveness of child protection efforts. Yet, as the above examples indicate, there continues to be controversy about their interpretation. This paper examines the methodological problems involved in using child homicide rates as a measure of the success or failure of child protection services. Specifically two problems with homicide statistics are considered: (1) their limited reliability, especially considering the problems inherent in analyzing such low base rate statistics; and (2) their validity as a measure of child abuse and neglect.

RELIABILITY OF HOMICIDE STATISTICS: THE PROBLEM OF LOW DETECTION RATES

Child homicide rates are considered to be an important measure of the long-term impact of child maltreatment prevention programs because, unlike rates of reported maltreatment, child homicide data are considered to be relatively reliable and stable over time. Indeed, child

homicide statistics present as the ultimate dependent variable. Disagreement about what is and what is not child abuse and child neglect abound. Definitions have been shown to vary substantially on the basis of differences in legal mandates (Rycraft, 1990), professional practices (Giovannoni & Becerra, 1979), community standards (Wolock, 1982), and social and cultural values (Ahn, 1994). The lack of standards in defining child abuse and neglect have been repeatedly identified as the major obstacle to the development of child maltreatment research and practice (Widom, 1988). In contrast, death is definitive. It is difficult to cover up. Deaths are reviewed by a physician who must determine the cause of death. Autopsies are required if there are unusual circumstances, and in many jurisdictions special interagency death review teams are used to further improve detection of homicide cases (Durfee, Gellert, & Tilton-Durfee, 1992).

Issues in Detecting and Classifying Child Homicides

The finality of child homicide makes it appear as a reliable indicator of child abuse. Yet the picture is more complicated. The definitive quality attributed to homicide statistics is a function of the absoluteness of death, not of the reliability of the process by which a death is classified as being caused by abuse or neglect. Underreporting and underdetection have been documented in many jurisdictions. In an Illinois study of deaths classified as undetermined, Christoffel, Anzinger, and Merrill (1989) found that 89% of these deaths could be attributed to maltreatment. In a second study examining child deaths attributed to natural causes, Christoffel, Zieserl, and Chiarmonte (1985) found evidence of suspected abuse in 12% of the cases reviewed. A review of 384 infant and preschooler deaths in Missouri found that 52% of the definite maltreatment fatalities identified had not been classified as homicides (Ewigman, Kivlahan, & Land, 1993). In Ontario, Canada, Greeland (1987) reviewed all deaths due to injuries in the home over a 10-year period and found that several child abuse and neglect fatalities had been improperly classified as accidents, and that subsequent to his meticulous search of the coroner files, three additional cases were later identified after parental confessions. A review of computer records on intentional injury fatalities in New Zealand found that less than a third of child abuse deaths had been properly classified as such (Kotch, Chalmers, Fanslow, Marshall, & Langley, 1993). Of particular concern in this study was the additional finding that deaths involving Maori and Samoan children were more likely to be classified as child abuse deaths than were others. Synthesizing findings from studies of misdiagnosed deaths, McCalin, Sacks, Froehlke, and Ewigman (1993) conclude that in the United States as many as 85% of child maltreatment deaths are misdiagnosed as either injuries of undetermined intentionality, accidents, sudden infant death syndrome (SIDS), or deaths from natural causes.

The detection problems in homicide cases are similar to the poor detection and reporting rates that have been documented in nonfatal child abuse and neglect cases (Sedlak, 1991; Zellman, 1990a). Findings from the Second National Incidence Survey indicate that in the United States, 49% of nonfatal child maltreatment cases known to professions are not reported to child protection agencies (Sedlak, 1990). Comparing child sexual abuse and physical abuse prevalence estimates from general population surveys to cases reported to protection services, Trocmé (1992) estimates that in Ontario at least 65% of all sexually abused children are not known to protection services, and that possibly as many as 80% of physically assaulted children are not identified. In comparison, McClain and colleagues' (1993) estimation of an 85% nondetection rate for child homicides indicates that child homicide statistics do not appear to provide a substantial advantage over reported maltreatment statistics in terms of reliability.

These poor detection rates reflect the inherent difficulty involved in determining the level of caretaker responsibility. Unlike adults, children can die in the hands of their caretakers in a multitude of ways that are almost indistinguishable from unintentional injuries or natural causes of death. The difficulties involved in distinguishing sudden infant death syndrome and homicide

have been well documented (Newlands & Emery, 1991). Even evidence from bone fractures can easily escape detection. Radiological examination of 12 cases of unexplained infant death lead to the detection of multiple fractures characteristic of abuse that had not been detected by regular autopsies (Kleinman, Blackburne, & Marks, 1989). Similar detection problems have been noted in cases of drowning (Griest & Zumwalt, 1989), falls (Hall, Herman, Horvart, Meller, & Stein, 1989), and burns (Showers & Garrison, 1988), and even in cases attributed to natural causes (Ewigman, Kivlahan, & Land 1993).

These diagnostic problems are compounded by the fact that the potential repercussions of a report of suspected child maltreatment are very serious in fatality cases. Professionals are understandably reluctant to involve a grieving family in an investigation of suspected maltreatment, especially when the evidence appears tenuous (Christoffel, Zieserl, & Chiarmonte, 1985). Many professionals are already reluctant to report nonfatal child maltreatment cases because they are concerned that such reports could end up doing more harm than good (Zellman, 1990a). While reporting rates are higher in cases of serious maltreatment (Zellman, 1990b), the negative repercussions for the grieving family are also much higher in fatality cases. Parents face lengthy and complicated social service and criminal investigations and the risk of a stiff prison sentence, or in some states even death. These investigations do not only affect the parents, but also affect all professionals involved who run the risk of an inquest where their professional judgment and actions can in turn be put on trial (Adnopo, Nordhaus, & Solnit, 1987; Greenland, 1987; Parton, 1986).

In addition to the difficulties inherent in investigating suspicious deaths, investigation standards and practices have been found to vary considerably from one jurisdiction to another. A recent study in the United States found that autopsy rates for child deaths ranged from state to state from 23% to 67%; in cities, autopsy rates ranged from 13% to 82% (Lundstrom & Sharpe, 1991). Of even greater concern was the finding that nationally one out of every 12 deaths diagnosed as SIDS was not autopsied, and in some jurisdictions up to 80% of SIDS deaths were not autopsied. Child death review teams are being developed to address some of these case identification problems (Durfee, Gellert, & Tilton-Durfee, 1992; Schloesser, Pierpont, & Poertner, 1992). However, until such practices are universally implemented, the reliability of national child homicide statistics will remain low. In the interim, any changes in national child homicide rates should be interpreted with caution, given that they could represent changes in investigation or recording practices rather than changes in the "true" rate of maltreatment fatalities (Jason, Carpenter, & Tyler, 1983; Lindsey & Trocmé, 1994; McClain, Sacks, Froehlke, & Ewigman, 1993).

Sensitivity of Low Base Rate Indices

Although some of these reliability issues could be addressed by improving child death review procedures (Durfee, Gellert, & Tilton-Durfee, 1992; McClain, Sacks, Froehlke, & Ewigman, 1993), the usefulness of child homicide statistics as measures of the effectiveness of child protection services remain limited by the relatively low incidence of child homicides compared to the high rates of reported child maltreatment. Less than one in every 2,000 children reported for abuse result in death. Discerning which of the more than 2,000 cases per fatality will become the fatality may be a futile enterprise. Regardless of how much progress is made in documenting maltreatment specific child homicides, mortality statistics are unlikely to provide a sensitive enough measure to serve as meaningful indicator of the effectiveness of child welfare interventions.

Mortality rates are considered to be an appropriate epidemiological measure of morbidity only when a disease is usually fatal and the interval between diagnosis and death is short (Sackett, Haynes, & Tugwell, 1985). In the case of child maltreatment, there is not a close association between morbidity and mortality. Child homicides are not a likely outcome in most cases of child maltreatment. Child homicides are a rare occurrence compared to child

maltreatment. While the rate of child homicides is under 2 per 100,000 in the United States, the rate of reported maltreatment is over 4,200 per 100,000 children (Daro & McCurdy, 1994). Even if there was a strong association between maltreatment rates and child homicide rates, the base rate of child homicides is so low that significant fluctuations in rates of child maltreatment would not be likely to be reflected in homicide rates (Lindsey & Trocmé, 1994).

Base Rates of Child Homicides

The base rate for child homicides is so low that annual variations in child homicides are more likely to reflect chance variations than any meaningful change in rates of child maltreatment. In most countries a single murder-suicide involving three children would mark a significant increase in the annual child homicide rate. An examination of variations in child homicide rates over a 15-year period in Europe found that while there is considerable short-term fluctuation, in most countries rates have remained relatively stable over time (Lindsey & Trocmé, 1994). The one exception was a 59% decrease in infant homicide rates in England and Wales, a decrease attributed to a single year drop from 1979 to 1980 most likely caused by a change in reporting or classification systems.

The confounding effect of reporting and classification systems appears to be a factor as well in interpreting recent child homicide trends in the United States. While Daro and McCurdy (1994) document a rising number of maltreatment related fatalities in the United States, McClain and colleagues (1993) contend that this increase is a result of improved reporting. Factoring in estimated reporting and detection errors, McClain and colleagues (1993) found that there was no evidence of an increase in homicide rates in the United States if one tracks official homicide rates combined with estimates of homicides misclassified as SIDS deaths, accidental deaths, and undetermined injuries. The relative stability of child homicide appears to hold as well over longer periods of time (Holinger, Holinger, & Sandlow, 1985).

VALIDITY OF HOMICIDE STATISTICS: THEORETICAL UNDERPINNINGS FOR THE USE OF CHILD HOMICIDE DATA TO ASSESS THE EFFECTIVENESS OF CHILD PROTECTION EFFORTS

Most of the activity of child protection is with alleged maltreating parents. Of the many thousands of cases served by the typical child protection agency, only a few will result in child homicide. The use of child homicide data to assess the effectiveness of child protection efforts points to an underlying assumption that there is a continuum of violence between child maltreatment and child homicide. However, this assumption has been the subject of considerable debate and should be viewed as problematic.

The Continuum of Violence Model

While the reliability of child homicide statistics is a function of investigatory procedures that may be improved to yield more consistent and precise figures, the validity of these data as indicators of the incidence of child maltreatment is a far more serious problem. A key assumption underlying most analyses of child homicide data is that homicides represent the extreme cases in a continuum of violence ranging from mild neglect to serious abuse to homicide (Besharov, 1990; Christoffel, Liu, & Stanler, 1981; Ewigman & Kivlahan, 1989; Fiala & LaFree, 1988; Garbarino, 1988). From this perspective, child maltreatment fatalities are seen as resulting from a situation of spiralling violence. Without some form of intervention, milder abuse may deteriorate into more serious and life threatening abuse (Lynch, 1988).

In many child homicide cases a gradual escalation of violence is observed. In fact, it was

such histories of battering and multiple fractures that first lead the medical community to identify child abuse fatalities (Caffey, 1984). The cases presented in Kempe's original formulation of the battered child syndrome also presented similar histories of escalating violence (Kempe, Silverman, Steele, Droegemueller, & Silver, 1962). In his study of child abuse and neglect deaths in Canada, the United Kingdom, and the United States, Greenland (1987) documented a large number of battered child syndrome cases. In most of these cases signs of increasingly violent abuse were observed by several different professionals, from teachers or day-care providers, to public health nurses and physicians, and to protective service workers. It was in large part in response to these observed patterns of escalating violence that child abuse reporting and investigation procedures were developed, with the hope that "with earlier recognition and intervention mortality rates (would) fall" (Lynch, 1988).

Discontinuities in the Continuum of Violence Model

The continuum of violence model implicitly assumes that the pattern of escalating violence that characterizes the battered child syndrome can be applied to other forms of maltreatment. However, battered child syndrome cases do not necessarily reflect the types of situations that child welfare services typically encounter (Trocmé, McPhee, Tam, & Hay, 1994), nor is there a history of escalating violence in all child homicide cases. While the continuum of violence model is one of the underpinnings of the child welfare intervention system, its applicability to other forms of maltreatment has not been empirically validated. In a seminal paper examining the empirical basis of the continuum of violence model, Gelles (1991) suggest that child maltreatment and child homicides should be reconceptualized "as distinct forms of behavior, each requiring a distinct explanation and theoretical formulation" (p. 69). Daly and Wilson (1991) take issue with Gelles' interpretation of some of the research used to challenge the cycle of violence model, and argue that while a "doctrinaire" interpretation of the continuum of violence model is not warranted, "homicides unquestionably manifest many commonalities of causation with sublethal assaults when both are divided into meaningful categories" (p. 420).

Although there certainly are commonalities between certain forms of child maltreatment and certain categories of child homicides, the following review of the discontinuities between child homicide data and child maltreatment data suggests that there is not sufficient overlap between the two to warrant using child homicide rates to evaluate the effectiveness of child welfare services.

Differences Between Homicidal and Maltreating Parents

One of the important differences between child homicides and child maltreatment is that parents who seriously injure or kill their children are more likely to suffer from psychiatric disorders than are maltreating parents who do not seriously injure their children. Much of the initial research on the etiology of child maltreatment focused primarily on identifying the unique psychological traits that were believed to explain such pathological behavior (Gelles, 1975). For instance, in Kempe and colleagues (1962) original battered child syndrome study of cases of severe or fatal abuse, the authors concluded that most parents had "psychopathic personalities" or at least "defects in character structure" (p. 18). Resnick's (1969) meta-analysis of child homicide case studies found that 66% of filicidal mothers were either psychotic or suicidal or both. In a British study of 60 severe or fatal maltreatment cases, Baldwin and Oliver (1975) found unusually high rates of psychiatric problems, including personality disorders for 90% of maltreating parents, and histories of psychiatric treatment for over 70% of maltreating parents. In contrast, studies of nonfatal maltreating parents have not uncovered such high rates of psychiatric disorders (Wolfe, 1985). Husain and Anasseril (1984) compared psychiatric histories of 8 filicidal mothers to 52 abusive ones, and found that 7 of the 8 filicidal mothers had histories of psychosis, 5 of whom had paranoid or hallucinatory symptoms

involving the children, while no psychoses were reported in the nonfatal abusive group. Similarly high levels of psychiatric disorders in homicidal parents have been noted in studies in Canada (Bourget & Bradford, 1990), Sweden (Sommander & Rammer, 1991), and the United States (Myers, 1970), while such high rates of psychiatric disorders have not been found in studies of nonfatal maltreating parents (Gelles, 1975; Wolfe, 1985).

There also are some indications that homicidal parents may be on average younger than nonhomicidal maltreating parents and more likely than nonhomicidal maltreating parents to be nonbiologically related. While young parents are generally at higher risk of maltreating their children, two studies of child homicides in Texas and Georgia found that homicidal parents were significantly younger than nonhomicidal maltreating parents (Anderson, Ambrosino, Valentine, & Lauderdale, 1983; Jason & Andereck, 1983). There is mixed evidence that homicidal and nonhomicidal parents may also differ with respect to the risks posed by nonbiologically related parents. Gelles (1991) notes that while nonbiologically related parents are at greater risk of killing their children, findings from the National Family Violence Survey do not indicate that nonbiological caretakers are at greater risk of using nonfatal violence against their children. However, Daly and Wilson (1991) argue that notwithstanding Gelles' findings, there is overwhelming evidence that children living with a nonbiologically related parent are at greater risk of both homicide victimization and of physical abuse, sexual abuse, and neglect.

Single Assault Fatalities, Murder-Suicides, and Neglect Related Fatalities

The range of types of homicides included in most child homicide statistics further limits the usefulness of these data as indicators of child maltreatment (Resnick, 1969; Zumwalt & Hirsch, 1987). In their review of child homicide typologies, Bourget and Bradford (1990) distinguish between seven different categories of child homicide:

1. pathological filicide with altruistic motives,
2. pathological filicides as extended murder-suicides,
3. battered child syndrome,
4. other accidental filicides,
5. retaliating filicides,
6. neonaticides (unwanted child), and
7. paternal filicides

While they found that more cases fall in the battered child syndrome category than in any other category, in 60% of the cases reviewed there was no evidence of a pattern of escalating violence typical of the battered child syndrome. Zumwalt and Hirsch (1987) argue that battered child syndrome cases should not be confused with "single assault fatalities." These infants and children usually appear to be well cared for and well nourished, and do not present any evidence of repeated injuries. These cases are much harder to detect, and are easily mistaken for accidental deaths. On the basis of their clinical experience they note that "assaults from an isolated or single beating are as common as fatalities from repeated physical assault" (p. 258).

Because they are more difficult to detect, single assault fatalities may in fact represent an even larger proportion of child homicides than indicated by official homicide statistics. In his review of child homicides in Ontario, Greenland (1987) found that while 60% of the cases fit the battered child syndrome profile, in 40% of cases there was no evidence of previous violence. The nonbattered child syndrome cases involved either a single fatal assault (12%), or serious neglect (20%). In their study of child homicides in England, Hargrave and Warner (1992) found that in most cases there was no evidence of previous abuse.

A related form of child homicide that also does not fit the continuum of violence pattern

are murder-suicides. As with single assault homicides there is no escalating pattern of violence towards children, although in cases involving estranged husbands, there may be a history of wife assault. In Canada, 13% of homicides of children under 12 are followed by suicide, and half of the multiple victim murders are combined murder-suicide cases (Wright & Leroux, 1991). In their Swedish study, Sommander and Rammer (1991) found that 58 of the 82 intrafamilial child homicides that had occurred between 1971 and 1980 involved combined murder suicides. Two of the 13 child homicide cases that Bourget and Bradford (1990) examined involved murder-suicide cases. Resnick (1969) found that 42% of child homicide cases described in the literature involved suicides.

While fatal child maltreatment is usually associated with trauma and abuse, a substantial number of child homicides involve neglect. Because infants and young children are so completely dependent on parental care and supervision, there is a constant risk of death due to neglect. A review of fatal child maltreatment deaths in Texas found neglect was implicated as often as abuse (Anderson, Ambrosino, Valentine, & Lauderdale, 1983). National data in the United States indicates neglect is implicated in 40% of maltreatment related fatalities (American Humane Association, 1984). Although fatal neglect cases do not involve a gradual escalation of violence, it is assumed that they nevertheless fit the continuum model because they represent extreme cases of chronic neglect. As with battered child syndrome cases, it is argued that without intervention, serious neglect cases are likely to lead to death. However, the validity of the fatal chronic neglect model has yet to be tested. A study of child neglect fatalities in Iowa found that these deaths were more often characterized by accidents than chronic neglect (Margolin, 1990).

Infant and Child Homicides Versus Adolescent Homicides

In distinguishing between different forms of child homicides, it is essential to separate infant and young child homicides from older child and adolescent homicides. The confounding effect of combining child and adolescent homicides is best illustrated when one considers the dramatic increase in adolescent homicide rates in the United States. Data from the Uniform Crime Reports published by the U.S. Federal Bureau of Investigation show that the number of children under 14 reported murdered each year has risen only slightly over the last three decades, whereas the number of adolescents murdered has more than quintupled (Lindsey, 1994). While infant and child homicides are generally perpetrated by caretakers, adolescent homicides are more likely to be perpetrated by strangers or acquaintances, and in particular by other adolescents (Christoffel, Anzinger, & Merrill, 1989; Jason, 1983; Lindsey, 1994). Older victims are also significantly more likely to be killed by guns, whereas younger children are more likely to be killed by the use of force (Jason, 1983; Lindsey & Trocmé, 1994). Adolescent homicides share more in common with adult homicides than they do with fatal maltreatment of infants and young children at the hands of their parents. National and international studies examining relationships between child, adolescent, and adult homicides show that while adolescent and adult homicides are correlated, infant and young child homicides are not correlated to adult homicides (Christoffel, Liu, & Stampler, 1981; Fiala & LaFree, 1988; Sommander & Rammer, 1991; Straus, 1987). Homicides involving adolescents should, therefore, generally not be treated as maltreatment related, but as distinct phenomena stemming from the growing problems of violence between youth.

Socioeconomic Correlates

Another difference between fatal and nonfatal child maltreatment stems from the lack of association between rates of fatal maltreatment and the socioeconomic correlates that have been found to be strongly correlated with rates of maltreatment. While ecological studies

comparing regional variations in rates of reported child abuse and neglect have consistently found socioeconomic factors were strong predictors of reported maltreatment, similar relationships have not been for child homicide rates. For instance, a study of homicide rates in Illinois from 1977 to 1982 found that variations by census tracts explained only 11% of the variance in infant homicide rates, and only 5% of the variance in homicide rates for children 10 to 14 (Christoffel, Anzinger, & Merrill, 1989). In contrast, similar socioeconomic variables have consistently been found to explain between 50% and 90% of the variance in reports of child abuse and neglect (Chamberland, Bouchard & Beaudry, 1986; Garbarino & Crouter, 1978; Zuravin, 1989).

Comparing state and regional differences in child homicide rates in the United States from 1960 to 1980, Straus (1987) found that there was no association between infant homicide rates and adult homicide rates. Furthermore, he found no association between infant homicide rates and 22 variables associated in the literature with risk of maltreatment or homicide, measuring different aspects of poverty, racism, sexism, social disruption, social stress, social psychological problems, violence, infant mortality, and social services. In other studies these variables have been associated with homicide rates for the adult population. Two studies comparing cross-national child homicide rates with key social indicators had more success in explaining variations in child homicide rates (Fiala & LaFree, 1988; Gartner, 1991).

In developed countries, female labor-force participation, status of women, and social security expenditures have been found to be associated with child homicide rates. In contrast, unemployment, income inequality, and social isolation are not predictive of variations in child homicide rates, although these factors have been found to be predictive of rates of child maltreatment. Gartner (1991) notes that "the weak effects of (these) variables on child homicide rates could result from greater measurement error in child homicide rates" (p. 103). The low detection rates and inconsistent reporting and classification problems identified earlier would support this view.

Discussion

The development of reliable outcome measures is one of the most pressing problems facing child welfare researchers, administrators, and policy makers (National Research Council, 1993; Wells, 1994). In response to the paucity of "hard" outcome data, it seems only logical to turn to child homicide rates: one of the only available sources of data that have been systematically collected over an extensive period of time. Unfortunately, there is little evidence that child homicide statistics have the properties required to serve such a function. Our review has identified three major limitations with child homicide statistics. First, despite the definitive nature of death, the classification of child deaths as homicides is too often unreliable. Current estimates indicate that 50% to 85% of child homicides are undetected. In addition, investigation and reporting procedures appear to vary considerably from one jurisdiction to another. Second, there does not appear to be a sufficiently strong relationship between child maltreatment and child homicides to warrant using child homicide rates as a proxy measure of child maltreatment. The profile of homicidal parents may not match the profile of nonhomicidal maltreating parents; patterns of previous violence are not present in many child homicide cases; and geographic variations in child homicide rates are not consistently associated with the socioeconomic variables that have been found to predict variations in rates of reported maltreatment. If child homicides are to serve as a measure of the effectiveness of child protection services, it is necessary to establish a stronger link between nonfatal child maltreatment and child homicides. Third, because child homicides are relatively rare occurrences, child homicide rates are unlikely to be sensitive enough to effectively measure the impact of child welfare services and policies.

Interpretation of Child Homicide Statistics

The problems identified in using child homicide statistics to measure the effectiveness of child welfare services lead to two additional questions that need to be considered: (1) how should child homicide statistics be interpreted by child welfare researchers, managers, and policy makers? and (2) what other measures should be used to assess the impact and effectiveness of child welfare services? The question of the interpretation of child homicide statistics is important because, regardless of the serious interpretation problems that have been identified, child homicide cases and child homicide statistics inevitably retain high public valance as measures of the effectiveness of the child welfare system. Public inquiries into the circumstances surrounding child homicides have played a central role in the development of child welfare legislation, policies, and practices (Greenland, 1987; Parton, 1986). In response to spiralling reports of suspected maltreatment, child protection—in particular the prevention of severe harm and homicides—has come to dominate the mandates of child welfare services in many jurisdictions (Besharov, 1990; Kammerman & Kahn, 1990; Lindsey, 1994). The development of special investigative protocols and risk assessment tools reflect a significant shift away from a broader child “well-fare” mandate to a narrow residual focus on protecting children from severe abuse and neglect.

Unfortunately, the effectiveness of these child protection efforts appears to be limited, especially if one uses child homicides as a measure of effectiveness. While child protection services have been expanding over the last two decades at a rate of between 5% and 10% per annum, it does not appear that child homicide rates have decreased as a result of these changes (Creighton, 1984; Lindsey, 1994). There is an alternative interpretation of the lack of association between child maltreatment reporting rates and child homicide rates. Given the child homicide detection and classification problems that have been identified, it is possible that there has in fact been a decrease in child homicide rates which has been masked by improved detection over the last two decades. While this is an equally plausible explanation, far more extensive comparative analysis of changes in child homicide investigation and reporting practices and the characteristics of homicide cases reported over the last two decades would need to be examined before either explanation could be supported. Until such analysis is completed, temporal variations in child homicide rates should be interpreted with caution. Similar interpretation problems limit the analytic potential of temporal variations in rates of reported child maltreatment, where the increasing number of reports can be attributed to improved detection or to increasing rates of maltreatment or to a combination of the two.

Some of these interpretation problems can be addressed through the use of more specific and detailed classification systems. For instance, use of the National Institute of Child Health and Human Development classification system for childhood injuries would allow for far more accurate analyses of changes in child homicide rates over time (Christoffel, Scheidt, Agran, Kraus, McLoughlin, & Paulson, 1992). The NICHD classification system makes important distinctions between forms of maltreatment, intentionality, age of victim, relationship to perpetrator, and means of injury. Such distinctions would allow for a clear separation between, for example, maltreatment related deaths of young children and gang violence related deaths of adolescents. While further refinements to this classification system would allow for even finer analyses (for instance, the NICHD classification system does not include a chronicity category which would distinguish between child homicides resulting from a history of escalating violence and single assault homicides), the adoption of a classification system like the one proposed by NICHD would ensure more accurate and relevant interpretation of child homicide data.

The analytic potential of child homicide statistics is most clearly illustrated in studies of geographic variations in child homicide rates. As indicated by Fiala and LaFree (1988) and Gartner's (1991) cross-national studies, it is possible to start identifying socioeconomic and cultural factors that may explain variations in national rates of child homicides, especially

when rates are averaged over several years. In a recent study of child homicide rates in the United States, McClain, Sacks, Ewigman, Smith, Mercy, and Sniezek (1994) found that after adjusting for possible detection errors, there continues to be considerable regional variation in child homicide rates. They conclude that "understanding the sizable geographic variation in child abuse and neglect death rates could lead to effective interventions." While the study of geographic variations in child homicide rates are promising, careful attention must be maintained on controlling for variations in detection rates as well as recognizing the limitations of correlational ecological studies (Zuravin, 1989), especially in interpreting such low base rate statistics.

Alternate Outcome Measures

The answer to the second question—what other measures should be used to assess the impact and effectiveness of child welfare services?—is beyond the scope of this paper. However, the measurement and interpretation issues raised in this review provide some useful guidelines in developing child welfare outcome measures. First, it is important to ensure that the selected outcome measures are not affected by the same detection problems that plague child maltreatment and child homicide statistics. The question of reliability, especially with respect to the confounding effect of detection rates, is particularly problematic in assessing child welfare services because these services are themselves sensitive to variations in detection rates.

Second, more consideration needs to be given the sensitivity of potential outcome indicators. The relatively low base rate of child homicides significantly affects the likelihood that a change in a child welfare intervention program will be reflected in short-term changes in child homicide rates. A related concern is the specificity of a potential outcome measure, as illustrated by the effect of the dramatic increase in adolescent homicides in the United States on overall child homicide rates. Given that most adolescent homicides are not directly related to parental maltreatment, the increase in adolescent homicides should not be interpreted as a failure of the child protection system.

The third measurement issue emerging from this review is that far more consideration should be given to examining the relationship between selected indicators, such as child homicide rates, and the services that are used to assess. Although at first glance there may appear to be a direct relationship between child homicides and child maltreatment, analysis of the characteristics of child maltreatment cases and child homicide cases indicates that in many instances child maltreatment and child homicides should be reconceptualized "as distinct forms of behavior, each requiring a distinct explanation and theoretical formulation" (Gelles, 1991, p. 69). The selection of an outcome measure is further complicated by the lack of consensus about the objectives of the child protection/welfare system. If the sole objective of the child welfare system is to protect children from abuse or neglect, then outcome indicators should be restricted measures of maltreatment (Besharov, 1990). If, on the other hand, the objectives of the child welfare system are defined in terms of promoting the welfare of children, then a much broader array of outcome indicators should be considered in evaluating the effectiveness of these services (Lindsey, 1994; Wharf, 1993).

CONCLUSION

The title of our paper asks what child homicide data can tell us about the effectiveness of child welfare services. There is a natural inclination to look to these data to gauge the effectiveness of child protection efforts. However, as the analysis presented here indicates, child homicide data are of limited use in evaluating these services.

In response to the numerous measurement problems that have plagued child welfare research and evaluation, child homicide rates have the appearance of providing the definitive outcome. However, under closer scrutiny child homicide data should be interpreted with caution because: (1) the classification of child deaths as homicides is unreliable; (2) child homicides do not generally represent the endpoint of a continuum of violence ranging from inadequate parenting to maltreatment to death; and (3) child homicides are not frequent enough occurrences to effectively measure the impact of child welfare services and policies. Improved reporting and classification procedures may lead to some useful avenues for research, but even with such improvements, child homicide statistics should only be considered as one of the many dimensions used in evaluating the effectiveness of child welfare services. The tragedy of child homicides has played a key role in helping the public and government understand the importance of preventive interventions. However, over reliance on homicide statistics could contribute to further narrowing the scope of child welfare by stressing procedures geared primarily to preventing child homicides. Child welfare services need to develop outcome measures that tap the broader mandate of improving the circumstances and well-being of children.

Acknowledgement—The authors would like to thank the reviewers and Dr. David Finkelhor for their constructive feedback.

REFERENCES

- Adnopoz, J., Nordhaus, B., & Solnit, A., (1987). The reactions of child protection workers to the violent death of a child. In J. E. Schowalter, P. Buschman, & P. R. Patterson (Eds.), *Children and death: Perspectives from birth to adolescence* (pp. 155–160). New York: Praeger.
- Ahn, H. N. (1994). Cultural diversity and the definition of child abuse. In R. Barth, J. D. Berrick, & N. Gilbert (Eds.), *Child welfare research review: Volume 1* (pp. 29–59). New York: Columbia University Press.
- American Humane Association. (1984). *Trends in child abuse and neglect: A national perspective*. Denver, CO: Author.
- Anderson, R., Ambrosino, R., Valentine, D., & Lauderdale, M. (1983). Child deaths attributed to abuse and neglect: An empirical study. *Children and Youth Services Review*, 5, 75–89.
- Baldwin, J. A., & Oliver, J. E. (1975). Epidemiology and family characteristics of severely-abused children. *British Journal of Preventive and Social Medicine*, 29, 205–221.
- Besahrov, D. (1990). Gaining control over child abuse reports. *Public Welfare*, 48(2), 34–40.
- Bourget, D., & Bradford, J. (1990). Homicidal parents. *Canadian Journal of Psychiatry*, 35, 233–238.
- Caffey, J. (1946). Multiple fractures in long bones of infants suffering from chronic subdural hematoma. *American Journal of Roentgenology*, 56, 163–173.
- Chamberland, C., Bouchard, C., & Beaudry, J. (1986). Conduites abusives envers les enfants: Réalités canadienne et américaine. *Canadian Journal of Behavioural Science*, 8(4), 391–412.
- Christoffel, K., Scheidt, P., Agran, P., Kraus, J., McLoughlin, E., & Paulson, J. (1991). Standard definitions for childhood injury research: Excerpts of a conference report. *Pediatrics*, 89(6), 1027–1034.
- Christoffel, K., Zieserl, E., & Chiaramonte, J. (1985). Should child abuse and neglect be considered when a child dies unexpectedly? *American Journal of Diseases of Children*, 139, 876–880.
- Christoffel, K. K., Anzinger, N. K., & Merrill, D. A. (1989). Age-related patterns of violent death, Cook County, Illinois, 1977 through 1982. *American Journal of Diseases of Children*, 143, 1403–1409.
- Christoffel, K. K., Liu, K., & Stanler, J. (1981). Epidemiology of fatal child abuse: International mortality data. *Journal of Chronic Diseases*, 34, 57–64.
- Creighton, S. J. (1984). *Trends in child abuse: 1977–1982*. London: National Society for the Prevention of Cruelty of Children.
- Daly, M., & Wilson, M. (1981). Child maltreatment from a sociobiological perspective. *New Directions in Child Development*, 11, 93–112.
- Daly, M., & Wilson, M. (1991). A reply to Gelles: Stepchildren are disproportionately abused, and diverse forms of violence can share causal factors. *Human Nature*, 24, 419–426.
- Daro, D., & McCurdy, K. (1994). *Current trends in child abuse reporting and fatalities: The results of the 1993 annual fifty state survey*. Chicago, IL: National Committee for the Prevention of Child Abuse.
- Durfee, M. J., Gellert, G. A., & Tilton-Durfee, D. (1992). Origins and clinical relevance of child death review teams. *Journal of the American Medical Association*, 267(23), 3172–3175.
- Ewigman, B., & Kivlahan, C. (1989). Child maltreatment fatalities. *Pediatric Annals*, 188, 476–481.

- Ewigman, B., Kivlahan, C., & Land, G. (1993). The Missouri child fatality study: Underreporting of child maltreatment fatalities. *Pediatrics*, **91**(2), 310–327.
- Fiala, R., & LaFree, G. (1988). Cross-national determinants of child homicide. *American Sociological Review*, **53**, 432–445.
- Garbarino, J. (1986). Can we measure success in preventing child abuse? Issues in policy, programming, and research. *Child Abuse & Neglect*, **10**, 143–156.
- Garbarino, J. (1988). Preventing childhood injury: Developmental and mental health issues. *American Journal of Orthopsychiatry*, **58**(1), 25–45.
- Garbarino, J., & Crouter, A. (1978). Defining the community context for parent-child relations: The correlates of child maltreatment. *Child Development*, **49**(3), 604–616.
- Gartner, R. (1991). Family structure, welfare spending, and child homicide in developed democracies. *Journal of Marriage and the Family*, **53**, 231–240.
- Gelles, R. (1975). The social construction of child abuse. *American Journal of Orthopsychiatry*, **45**(3), 363–370.
- Gelles, R. J. (1991). Physical violence, child abuse, and homicide: A continuum of violence, or distinct behaviors? *Human Nature*, **21**, 59–722.
- Giovannoni, J. M., & Becerra, R. M. (1979). *Defining child abuse*. New York: Free Press.
- Greenland, C. (1987). *Preventing CAN deaths: An international study of deaths due the child abuse and neglect*. London: Tavistock.
- Griest, K. J., & Zumwalt, R. E. (1989). Child abuse by drowning. *Pediatrics*, **83**(1), 41–46.
- Guyer, B., & Eilers, B. (1990). Childhood injuries in the United States: Mortality, morbidity, and cost. *American Journal of Diseases of Children*, **144**, 649–652.
- Hall, J. R., Hernan, M. R., Horvat, M., Meller, J. L., & Stein, R. (1989). The mortality of childhood falls. *The Journal of Trauma*, **29**(9), 1273–1275.
- Hargrave, D. R., & Warner, D. P. (1992). A study of child homicide over two decades. *Medicine, Science, and Law*, **32**(3), 247–250.
- Holinger, P. C., Holinger, D. C., & Sandlow, J. (1985). Violent deaths among children in the United States, 1900–1980. *Pediatrician*, **12**, 11–19.
- Husain, A., & Anasseril, D. (1984). A comparative study of filicidal and abusive mothers. *Canadian Journal of Psychiatry*, **29**, 596–598.
- Jason, J., & Andereck, N. D. (1983). Fatal child abuse in Georgia: The epidemiology of severe physical child abuse. *Child Abuse & Neglect*, **7**, 1–9.
- Jason, J., Carpenter, M. M., & Tyler, C. W. (1983). Underrecording of infant homicide in the United States. *American Journal of Public Health*, **73**(2), 195–197.
- Jason, J. (1983). Child homicide spectrum. *American Journal of Diseases of Children*, **137**, 578–581.
- Kammerman, S. B., & Kahn, A. J. (1990). Social services for children, youth, and families in the United States. *Children and Youth Services Review*, **12**(2), 1–179.
- Kempe, C. H., Silverman, F. N., Steele, B. F., Droegemueller, W., & Silver, H. K. (1962). The battered child syndrome. *Journal of the American Medical Association*, **181**(1), 17–24.
- Kleinman, P. K., Blackbourne, B. D., & Marks, S. C. (1989). Radiologic contributions to the investigation and prosecution of cases of fatal infant abuse. *The New England Journal of Medicine*, **320**(8), 7–511.
- Kotch, J. B., Chalmers, J. L., Marshall, S., & Lanley, J. D. (1993). Morbidity and death due to child abuse in New Zealand. *Child Abuse & Neglect*, **17**(2), 233–247.
- Lindsey, D. (1994). *The welfare of children*. New York: Oxford University Press.
- Lindsey, D., & Trocmé, N. (1994). Have child protection efforts reduced child homicides: An examination of data from Britain and North America. *British Journal of Social Work*, **24**, 715–732.
- Lindsey, D. (1994). *The welfare of children*. New York: Oxford University Press.
- Lundstrom, M., & Sharpe, R. (1991). Getting away with murder. *Public Welfare*, **49**(3), 18–29.
- Lynch, M. (1988). The consequences of child abuse. In K. Browne, C. Davies, & P. Stratton (Eds.), *Early prediction and prevention of child abuse* (pp. 203–212). New York: John Wiley & Sons.
- Margolin, L. (1990). Fatal child neglect. *Child Welfare*, **69**(4), 309–319.
- McClain, P. W., Sacks, J. J., Ewigman, B. G., Smith, S. M., Mercy, J. A., & Sniezek, J. E. (1994). Geographic patterns of fatal abuse or neglect in children younger than 5 years old, United States, 1979 to 1988. *Archives of Pediatrics & Adolescent Medicine*, **148**(1), 82–86.
- McClain, P. W., Sacks, J. J., Froehke, R. G., & Ewigman, B. G. (1993). Estimates of fatal child abuse and neglect, United States, 1979 through 1988. *Pediatrics*, **91**(2), 338–343.
- Myers, S. (1970). Maternal filicide. *American Journal of Diseases of Children*, **120**, 534–536.
- National Research Council (1993). *Understanding child abuse and neglect*. Washington, DC: National Academy Press.
- Newlands, M., & Emery, J. S. (1991). Child abuse and cot deaths. *Child Abuse & Neglect*, **15**, 275–278.
- Parton, N. (1985). *The politics of child abuse*. London: MacMillan.
- Parton, N. (1986). The Beckford report: A critical appraisal. *British Journal of Social Work*, **16**, 511–530.
- Pelton, L. H. (1989). *For reasons of poverty*. New York: Praeger.
- Pritchard, C. (1992). Children's homicide as an indicator of effective child protection: A comparative study of western European statistics. *British Journal of Social Work*, **22**, 663–684.
- Resnick, P. (1969). Child murder by parents: A psychiatric review of filicide. *American Journal of Psychiatry*, **126**(3), 325–333.

- Rycraft, J. R. (1990). Redefining abuse & neglect: A narrow focus could affect children at risk. *Public Welfare*, **48**, 14–21.
- Sackett, D., Haynes, B., & Tugwell, P. (1985). *Clinical epidemiology*. Toronto, Ontario, Canada: Little Brown.
- Sedlak, A. (1991). *National incidence and prevalence of child abuse and neglect: 1988—revised report*. Rockville, MD: Westat.
- Schloesser, P., Pierpont, J., & Poertner, J. (1992). Active surveillance of child abuse fatalities. *Child Abuse & Neglect*, **16**, 3–10.
- Showers, J., & Garrison, K. M. (1988). Burn abuse: A four-year study. *The Journal of Trauma*, **28**(11), 1581–1583.
- Somander, L. K., & Rammer, L. M., (1991). Intra- and extrafamilial child homicide in Sweden. *Child Abuse & Neglect*, **15**, 45–55.
- Straus, M. A. (1987). State and regional differences in U.S. infant homicide rates in relation to sociocultural characteristics of the states. *Behavioral Sciences and the Law*, **5**, 61–75.
- Trocmé, N., McPhee, D., Tam, K. K., & Hay, T. (1994). *Ontario incidence study of reported child abuse and neglect*. Toronto, Ontario, Canada: Institute for the Prevention of Child Abuse.
- Trocmé, N. (1992). Estimating the scope of child abuse and neglect in Ontario: A guide to understanding child maltreatment statistics. *Research Connection*, **September**. Toronto, Ontario, Canada: Institute for the Prevention of Child Abuse.
- Wells, S. (1994). Child protective services: Research of the future. *Child Welfare*, **73**(5), 431–450.
- Wharf, B. (1993). *Rethinking child welfare in Canada*. Toronto, Ontario, Canada: McClelland & Stewart.
- Widom, C. S. (1988). Sampling biases and implications for child abuse research. *American Journal of Orthopsychiatry*, **58**(2), 260–270.
- Wolfe, D. A. (1985). Child abusive parents: An empirical review and analysis. *Psychological Bulletin*, **97**(3), 462–482.
- Wolock, I. (1982). Community characteristics and staff judgments in child abuse and neglect cases. *Social Work Research & Abstracts*, **18**(2), 9–15.
- Wright, C., & Leroux, J. (1991). Les enfants victimes d'actes criminels violents. *Juristat*, **11**(8), 1–13.
- Zellman, G. (1990a). Child abuse reporting and failure to report among mandated reporters. *Journal of Interpersonal Violence*, **5**(1), 3–22.
- Zellman, G. (1990b). Report decision-making patterns among mandated child abuse reporters. *Child Abuse & Neglect*, **14**, 325–336.
- Zumwalt, R. E., & Hirsch, C. S. (1987). Pathology of fatal child abuse and neglect. In D. Helfer & R. Kempe (Eds.), *The battered child* (pp. 247–284). Chicago, IL: University of Chicago Press.
- Zuravin, S. (1989). The ecology of child abuse and neglect: Review of the literature and presentation of data. *Violence and Victims*, **4**(2), 101–120.

Résumé—Cet article examine les problèmes méthodologiques lorsqu'on se base sur les taux d'homicide infantile pour mesurer le succès ou l'échec des services de protection de l'enfance. Les auteurs ayant passé en revue la littérature de façon exhaustive, y ont décelé trois questions principales : (1) on ne peut se fier à la façon dont les homicides sont classifiés; (2) les homicides infantiles ne sont pas nécessairement l'aboutissement d'une progression d'actes violents allant de la pauvreté des soins parentaux jusqu'à la maltraitance fatale; (3) le nombre des homicides n'est pas suffisamment élevé pour permettre de mesurer adéquatement la qualité des services et des politiques en matière de protection des enfants. Alors qu'il serait avantageux pour les fins de la recherche d'améliorer les méthodes de signalement et de classification des décès, il ne faut pas penser que les statistiques sur les homicides infantiles pourront servir d'indicateur juste pour évaluer les services de protection. Ceci resquerait de restreindre l'apport considérable des services à l'enfance parce qu'il mettrait trop d'emphasis sur la prévention des homicides au détriment des multiples autres questions pertinentes. Les services de protection de l'enfance doivent développer des mesures pour évaluer la portée de tous leurs efforts.

Resumen—Este trabajo estudia los problemas metodológicos envueltos en el uso de las tasas de homicidio infantil como medidas del éxito o fracaso en los esfuerzos de protección infantil. Una revisión general de las investigaciones sobre homicidio infantil identifica tres aspectos metodológicos principales: (1) la clasificación de muertes infantiles como homicidios no es confiable; (2) los homicidios infantiles pueden generalmente no representar el extremo de un continuum de violencia que va desde crianza inadecuada al maltrato hasta la muerte; y (3) los homicidios infantiles no ocurren con suficiente frecuencia para que puedan servir de medida efectiva del impacto de los servicios y las políticas de bienestar infantil. Concluimos entonces que, a pesar de que el mejorar el reporte y los procedimientos de clasificación pueden conducirnos por caminos más efectivos para la investigación; confiar en las estadísticas sobre el homicidio infantil para evaluar los servicios estadísticas sobre el homicidio infantil para evaluar los servicios de bienestar infantil puede contribuir a limitar más la visión del bienestar infantil al enfatizar procedimientos dirigidos primordialmente hacia la prevención de los homicidios infantiles. Los servicios de bienestar infantil necesitan desarrollar resultados medibles que alcancen mandatos amplios para mejorar las circunstancias y el bienestar de los niños y niñas.