Child and Adolescent Health

Eber GB, Annest JL, Mercy JA, Ryan GW. Nonfatal and fatal firearm-related injuries among children aged 14 years and younger: United States, 1993–2000. *Pediatrics*. 2004; 113:1686–1692.

SUMMARY

This study provided a detailed national look at the incidence, trends, and circumstances of firearm injuries to children and younger adolescents. Data on nonfatal injuries to those aged 14 years or younger from 1993 through 2000 were obtained from the National Electronic Injury Surveillance System (NEISS), which compiles emergency department visits from a stratified probability sample of all US hospitals. Fatality data for the same period came from the National Vital Statistics System.

During that time, an estimated average of 2,833 children in this age group suffered nonfatal firearm injuries annually, and another 693 died. Rates per 100,000 were 4.9 for nonfatal injuries and 1.2 for fatalities. The older children (10–14 years) in the study group accounted for the greater proportion of injuries and deaths. Rates were also disproportionately high for boys and for black children. Case fatality rates (the ratio of fatal injuries to the combined total of fatal and nonfatal injuries) were almost 1/5 overall, but higher for younger children, girls, and whites.

Over half of the fatal injuries were homicides, about one fifth were unintentional, and another fifth were suicides. On the other hand, 43.1% of nonfatal injuries were unintentional, 41.5% were assaults, and only 2.6% were suicide attempts. Of the unintentional nonfatal injuries, almost half were caused by the victim, and most of the rest by a relative, usually male, or a friend. Handling or playing with the firearm were the activities most often associated with this kind of injury. Only 14.1% occurred while hunting, sport shooting, or target shooting. For all nonfatal injuries, the majority occurred in the home.

There were marked decreases in both fatal and nonfatal injury rates from the beginning to the end of the study period. For instance, the fatal injury rate for 10- to 14-year-olds declined by 59%, and the declines were seen across all categories of intent. Nonfatal rates fell by similar percentages.

COMMENTARY

Although diminished, the slaughter of the innocents continues. And, as might have been expected, the unintentional shootings played a major role in this carnage. In the general population, only 3.4% of firearm deaths were unintentional as reported in *Healthy People 2010* (Conference edition, US Dept of Health and Human Services; 2000:15–15), compared to the 20.7% reported for these children. Other important epidemiological differences between adults and children include much higher rates in adults for both fatal and nonfatal injuries and a preponderance of suicides in adult fatalities. As the authors pointed out, prevention strategies need to take these differences into account, and in fact, child health advocates have directed major efforts toward the prevention of unintentional injuries in the home. Particularly noteworthy have been the attempts at educating parents to store guns safely and to inquire about the presence of guns in other homes where their children visit. The data presented here reinforce the appropriateness of that approach.

The finding of significant downward trends for all types of firearm injuries in children is greatly encouraging even though there is no clear evidence to determine which among the social developments of the 1990s or the many firearm injury prevention initiatives that also blossomed then may be responsible. Although it would be preferable to have more definitive information to guide future action, in this case it seems suitable to apply to public health work the clinician's therapeutic adage, "If what you're doing works, keep it up."

Lee JY, Rozier RG, Norton EC, Kotch JB, Vann WF. Effects of WIC participation on children's use of oral health services. *Am J Public Health*. 2004;94:772–777.

SUMMARY

To examine the relationship between participation in the Special Supplemental Food Program for Women, Infants, and Children (WIC) and the receipt of dental care by children with Medicaid coverage, the 1992 North Carolina Medicaid birth cohort was studied over the 4 years from their first to their fifth birthdays. The authors used linked state administrative data for birth records, Medicaid enrollment, Medicaid dental claims, WIC files, and the area resource file and applied a two-step statistical modeling approach to control for the selection bias that results from nonrandom WIC enrollment. They then analyzed the probability of a dental visit for Medicaid children who were and were not enrolled in WIC and the likelihood of the visit being preventive, restorative, or emergency.

The cohort at age 1 year consisted of 21,277 children. Over half were enrolled in WIC at some time during the next 4 years. For the entire cohort, 12.1% had a dental visit before age 5 years, of which the majority of visits were preventive. Children enrolled in WIC for a year were almost 50% more likely to have had a dental visit than were children not enrolled. The WIC children were about twice as likely to have had a preventive visit, 1.7 times more likely to have had a restorative visit, and less likely to have had an emergency visit. These differences were highly significant. Similar, although somewhat lower, odds ratios were found for children who had WIC participation of just 6 months.

COMMENTARY

From its inception, WIC has been unique among government food assistance programs in its inclusion of requirements for educating and referring mothers and their young children for health care. Indeed, WIC sites at first were often co-located with health facilities. Screening of children for growth and anemia were, and are, routine components of WIC. When improvement of immunization levels of 2-year-olds became a national priority, public health officials called on WIC to help families comply. Given the general lack of public awareness of the importance of early dental care (the American Academy of Pediatrics recommends referral for dental care by age 3 years) and the pervasive problem poor families have in gaining access to such care, WIC should have a key role to play in promoting oral health services for its young clients. This study seems to confirm that, in North Carolina at least, WIC does take such a role.

An interesting methodology was used to address the question of whether WIC clients got more dental care for the same reasons they enrolled in WIC in the first place or because they were helped by WIC itself. The authors analyzed certain "instrumental variables": the number of WIC clinics, full-time WIC workers, and WIC hours of operation per county and found that these correlated with WIC participation, but not dental utilization. They then concluded that the increased likelihood of dental utilization by WIC clients was probably not because of selection bias.

This otherwise useful article, however, cannot tell which mechanisms in the WIC program accounted for the favorable findings. Did staff merely inform parents of the need for preschoolers to have dental care? Did they recommend a dental program? Or, did they have a full-fledged referral arrangement? Regardless of how it came about, this convincingly documented example of a beneficial WIC effect reaffirms the value of the comprehensive model created by the WIC designers and reminds us also of the desirability of using a comprehensive approach in other health and developmental programs for young children. Unfortunately, it will take more than WIC to fully solve the serious lack of access to dental services experienced by low-income families.

Messinger DS, Bauer CR, Das A, et al. The maternal lifestyle study: cognitive, motor, and behavioral outcomes of cocaine-exposed and opiate-exposed infants through 3 years of age. *Pediatrics*. 2004;113:1677–1685.

SUMMARY

This large, multisite, longitudinal study of cocaine- and opiate-exposed infants (the Maternal Lifestyle Study) examined their cognitive, motor, and behavioral outcomes at ages 1, 2, and 3 years. A matched, comparison cohort of newborns was identified at four university centers located in Rhode Island, Florida, Tennessee, and Michigan, respectively. The Mental, Psychomotor, and Behavioral Record Scales of the Bayley Scales of Infant Development II (BSID-II), administered by masked examiners, were used to assess 1,227 infants, of whom 655 had no cocaine or opiate exposure. Information on a number of characteristics of the mothers and, when relevant, caregivers other than the biological mother included demographics; prenatal alcohol, tobacco, and marijuana use; poverty and socioeconomic status; and results of the Home Observation for Measurement of the Environment (HOME), vocabulary testing, and the Global Severity Index of psychological symptoms. These data were analyzed as covariates, as were infant age, birth weight, and human immunodeficiency virus (HIV) exposure.

Cocaine-exposed infants had lower birth weight, length, and head circumference than nonexposed infants. No differences were found between opiate- versus non-opiate-exposed infants. Overall, the mental development scores were lower for cocaine-exposed than non-cocaine-exposed infants, but after controlling for covariates, the differences were no longer significant. For opiate-exposed infants, psychomotor scores were lower than for nonexposed infants. These differences also became nonsignificant once covariates were controlled. No other significant differences in mental, psychomotor, or behavioral outcomes were found among the groups of cocaine- and opiate-exposed or nonexposed infants. However, for the entire cohort, low birth weight and lower HOME and other maternal caregiving scores were associated with lower scores on the three BSID-II outcome measures.

The authors concluded that the developmental deficiencies they found in cocaine-exposed and opiate-exposed infants were attributable to associated risks for which these exposures are a marker, and that the deficiencies were not a result of direct effects of prenatal cocaine or opiate exposure.

COMMENTARY

Numerous studies until now have been unable to provide definitive conclusions about the effect of prenatal cocaine and opiate exposure on infant development. That observation alone should tell us there is not going to be a smoking gun for cocaine (or opiates) such as there is for fetal alcohol syndrome. Because the results presented here were based on careful longitudinal observations of the largest sample of infants studied to date, they should help divert the quest to discover more and more subtle effects of these exposures and redirect it toward more productive work on such known correlates of developmental delay as low birth weight.

Perhaps the time has come for everyone simply to agree that, although exposure during pregnancy to cocaine or opiates is a bad thing, it is not necessarily worse than for any other potentially toxic substance; to stop stigmatizing infants born with exposure to these two illicit substances; and to persuade policymakers that promoting healthy development requires them to address the full range of environmental factors that pose the risk of bad outcomes for these infants.

Katherine S. Lobach
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