At-Risk Children of At-Risk Parents: Assessing Common Injuries to the Children of Teenage Parents

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Objective To examine the common injuries in the children of teenage parents seen in the emergency department (ED) of a large level I trauma center.

Study design We used admission records for guarantor age to assess common injuries.

Results The majority of the patients were white, in the care of the mother, and suffered accidental injuries, with bruising and skin marks the most common. Although children born to teenage parents are at an increased risk for child abuse, the rate of abuse in this study sample remained low. Falls and ingested objects were the leading mechanisms of injury in these patients, who were generally evaluated and discharged from the ED.

Conclusion This study highlights the common injuries and mechanisms to better understand how injuries are sustained in this unique population. The results of this study can be used for educational purposes both in the ED and in classroom-based parenting classes. Prevention efforts for teenage parents should be geared toward teaching better supervision and improving home safety. *(J Pediatr 2014;164:347-51)*.

The number of births to teenage parents in the US has decreased since the 1990s, when approximately one-quarter of all children were born to adolescent mothers.[1-3] These children generally are born to parents who are poor, uneducated, and low wage earners, putting these children at further risk for injury.[4] Studies focusing on infant mortality have shown a negative correlation between maternal age and the relative risk of infant mortality.[5] Common injuries in the children of teenage mothers include falls, burns, and poisonings.[6,7] The percentages of injuries are higher in children of teenage mothers compared with other age group cohorts for poisoning, burns, lacerations, head injuries, dislocations, and various other injuries.[7] Children of adolescent mothers are also at an increased risk for nonaccidental trauma,[3,8,9] with reports of almost 50% of all abused children being raised by adolescent mothers.[3]

In a focus group study using responses from teenage mothers, 60% of the participants identified household dangers as the main source of injury to their children, and another 25% cited injuries from other children.[10] Falls, the leading cause of traumatic injury in children, were cited as the most common injury in 10% of the teenage mothers' responses. For preventing injuries, almost one-half of the participants reported using common sense or their own experience as the primary source of knowledge of injury prevention in their children. Approximately 33% reported learning about preventing injuries from their own mothers, and 28% cited other significant caregivers. No teenage mother in this focus group reported receiving injury prevention information from her primary care physician.[10]

The present study assessed the general injuries sustained and the intention of injuries in the children of teenage parents seen in the emergency department (ED) of Children's Medical Center, a 500-bed level I trauma center in Dallas, Texas.

Methods

After receiving approval from the Institutional Review Board at University of Texas Southwestern Medical Center, electronic medical records were used to identify all patients aged ≤7 years who presented to the hospital with a guarantor under the age of 20 years, and were seen in the ED of Children's Medical Center between January 1, 2009, and December 31, 2011. These patients were then filtered for injury-related diagnoses or potential injury-related complications. Next, cases were broken down by year of admission and individually reviewed for inclusion criteria and study data. Each case included in this study was assigned an "injury type" and "injury intent" score. Each medical record was reviewed and the scores were collaboratively coded by 2 physicians specifically trained in treating and identifying physical abuse injuries in children. Length of stay was calculated as the number of days spent in the hospital based on the times and dates of admission and discharge.

Patient charts were reviewed to determine the types of injuries sustained in the visit encounters. These injuries were classified as burns, bruises/skin marks, fractures, head injury/trauma, abdominal injuries, multiple injuries, or neglect.

The intent of injury was identified on a 7-point Likert scale ranging from definitely accidental/unintentional to definitely abuse/intentional. The scores were as

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follows: 1, definite accident/unintentional injury: known motor vehicle collision or other traumatic event witnessed by a third party, no finding of injury; 2, highly likely accident: single injury with history of trauma that explains the injury and is consistent with developmental abilities of the child, but not witnessed by a third party; 3, likely accidental: single injury with major trauma history not witnessed by a third party (eg, fall from more than 6 feet, fall from full set of stairs); 4, undetermined: single injury with minor trauma history that is developmentally appropriate but not witnessed by a third party (eg, chronic subdural with rebleed without history of trauma and no additional signs of trauma); 5, likely inflicted: single injury with minor or no trauma history and signs of global brain injury (eg, seizures, vomiting), possibly with other injuries but limited to simple skull fracture or bruising; 6, highly likely inflicted: multiple injuries that may be of different ages with history that either changes or is inconsistent with developmental abilities of the child; and 7, definite intentional injury/abuse: witnessed inflicted trauma or confessed inflicted trauma, head trauma with other injuries not explained by the trauma history provided (eg, abdominal organ injury, fractures of long bones or ribs, old intracranial injury/bleed, retinal hemorrhage); no trauma history provided.

To broadly categorize the intent of injury, type of injury was classified as accidental/unintentional (Likert score of 1-3), nonaccidental/intentional (score of 5-7), or undefined (score of 4).

Data on mechanism of injury also were collected and coded to determine the most common means of injury in this population. The mechanisms of injury used in this study are defined in **Table I** (available at www.jpeds.com).

Statistical analysis was limited to simple descriptive statistics, *t* tests, and ANOVA for means comparisons between groups, χ^2 analysis for group comparisons with categorical variables, and the Mann-Whitney *U* test for median comparisons with skewed means. A *P* value $\leq .05$ was considered to indicate statistical significance.

Results

A total of 16 177 patients were identified as children of teenage mothers or fathers at the time of admission. We excluded patients with nonparent guarantors, patients in the custody of Child Protective Services, and patients with a non–injury-related diagnosis at the time of admission. This left 1663 patients living with a teenage parent guarantor and identified as having injuries or injury-related admissions based on *International Statistical Classification of Diseases and Related Health Problems, Ninth Revision* diagnosis codes. An additional 899 patients were excluded for leaving the ED without being seen by a physician, or having no visible injuries based on medical charts. Individual case review yielded 220 patients in 2009, 261 patients in 2010, and 283 patients in 2011, for a total of 764 patients included in the final analysis.

Time Comparisons

No significant differences across years were found for patient sex, type of patient (admitted/discharged), patient age, guarantor age, patient–guarantor relationship, mechanism of injury, type of injury, or injury intent. Significant differences were found for the types of injuries sustained across the 3-year period ($P < .01$) and for racial demographics ($P < .01$), with steady increases seen in the Hispanic population. The proportion of Hispanic patients in the sample increased from 7.7% in 2009 to 28.9% in 2011.

The number of dislocations increased significantly between 2009 and 2010, and the number of head injuries increased steadily across the 3-year period. Dislocations increased from 4.09% of the total injuries in 2009 to 7.7% in 2011, and head injuries increased from 0.45% to 5.6% in this period. The number of fractures remained relatively stable across the years, but was reduced in 2010. Cases identified with multiple injuries decreased in each of the 3 years (data not shown).

Demographic Data

Males accounted for 56% of the final study sample (n = 424). White/Caucasian children composed the largest racial group (57%; n = 435). African Americans (21%, n = 159), Hispanics (17%, n = 128), and other (4%, n = 27) were the next largest demographic groups represented in the sample. Unknown racial demographics, Asian, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander each accounted for approximately 1% or less of the study sample. The vast majority (87%; n = 663) of the patients in this sample were seen as ED-only patients.

Age and Sex. The average age of the study sample was 1.5 years (median, 1.47 years), and the average length of stay was 0.38 days (median, 0.12 days). Significant associations were found between age and type of injury. On average, the patients sustaining nonaccidental/intentional injuries were significantly younger compared with those sustaining accidental/unintentional injuries ($P < .01$; effect size, −1.01). The average age of patients sustaining nonaccidental/intentional injuries was 0.63 years, compared with 1.57 years in the patients sustaining accidental/unintentional injuries.

In this sample, the average age of the males was significantly older than the females (1.61 years vs 1.45 years, $P < .05$; effect size, 0.16). There were no significant differences between sex and patient type, type of injury, injury intent, mechanism of injury, ED disposition, or length of stay. However, differences for injuries sustained by sex were marginally significant ($P = .098$), with higher percentages of bruising and skin marks found in males compared with females. Almost 60% of the patients seen with bruising were male.

Guarantor. The mother was the listed guarantor in 97% of the study sample (n = 741). Nine cases listed an unknown guarantor (1.2%), and the child was the listed guarantor in 2 cases (0.3%). No significant differences were found for guarantor sex and patient age, injury sustained, type of injury, intent of injury, or mechanism.