Siblings of children who had unintentional injuries were at increased risk of injury for 90 days after the event

Johnston BD, Grossman DC, Connell FA, et al. *High-risk periods for childhood injury among siblings. Pediatrics* 2000 Mar;105:562-8.

QUESTION: Are siblings of children admitted to hospital or treated for unintentional injury in the emergency department (ED) at increased risk of injury in the short term?

Design

Cohort study.

Setting

King County, Washington, USA.

Participants

41 242 children aged 0-15 years (50% boys, 49% white) who were continuously enrolled in Medicaid between October 1992 and September 1993.

Assessment of risk factors

Children were considered to be exposed for 90 days after ≥ 1 of their siblings were admitted to hospital or treated in the ED for an injury. Children were considered to be unexposed if there were no recorded injuries for siblings or if > 90 days had elapsed since an injury.

Main outcome measures

ED treatment or admission for an unintentional injury were identified from Medicaid claims records.

Main results

5003 incident injury events occurred in 4162 children; 4921 events required treatment in the ED (4084 children) and 82 events required admission to hospital (78 children). Children who had a sibling who had been injured in the previous 90 days had an increased risk of injury treated in the ED (hazard ratio 1.53, 95% CI 1.34 to 1.74, adjusted for age, sex, race, sibling group size, and sibling group ED use for non-injury diagnoses), but not for injury requiring hospital admission (adjusted hazard ratio 0.46, CI 0.13 to 1.64). The risk of injury after a medically treated injury in a sibling was highest in the second week after the event (adjusted hazard ratio 2.24, [CI 1.66 to 3.01]*); risk was raised $> 50\%$ above baseline for 30 days after the event and declined toward the baseline risk by 90 days. Data analysed separately by age group showed that exposure to an injury in a sibling was protective in children < 12 months of age; for all other age groups, exposure was associated with an increased risk, and the magnitude of this risk increased with age.

Conclusions

Siblings of children treated at the emergency department for an unintentional injury had an increased risk of injury for 90 days after the event. Risk of injury was highest 4-10 days after the event, and risk was higher among older children.

*Data provided by author.

COMMENTARY

Unintentional injury is a leading cause of death and disability in children.¹ The study by Johnston *et al* is based on the premise that prevention of childhood injuries might be more effective if interventions were targeted at children known to be at high risk. In fact, the authors cite various studies that have shown that the risk of childhood injuries is associated with sociodemographic traits, family characteristics, behavioural problems, temperament, stressful life events, and previous injury experience. In their study, Johnston *et al* found that among urban children enrolled in Medicaid, an injury treated in the ED was a significant risk marker for subsequent sibling injury during the 90 days after the initial event. In particular, the risk peaked in the second week, indicating that families may experience transient high risk periods rather than being permanently at risk.

The study has various strengths and limitations. The investigators studied a large sample of children and tried to avoid "double counting" an injury by excluding non-ED clinic settings where the children might have attended for follow up. The reliance on Medicaid claims posed some problems: siblings were linked even if they did not reside in the same household; accuracy of claims coding could not be verified; and in many cases, the mechanism of injury was not assigned, making it difficult to confirm that the injuries were unintentional. Results of this study may not be generalisable to non-Medicaid or non-urban populations.

Based on the work of Johnston *et al*, we know that siblings are at increased risk of childhood injury, but because we are not given descriptive information about the families, we are no further ahead in knowing *which* families are at risk of having more than 1 child experience an injury. Further research is needed to build on their work. In the meantime, the findings are of relevance to ED, paediatric, and public health nurses. A clinical encounter for injury care could be used as a marker to identify sibling groups at risk of injury. Health education about prevention strategies could be provided at the time of the initial clinical contact and possibly in a carefully timed follow up home visit, bearing in mind that injury risk for a sibling was highest 4-10 days after the initial event. To ensure, however, that these nursing interventions are warranted, they must be evaluated to determine their effectiveness in reducing childhood injuries.

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- 1 Childhood injuries in the United States. Division of Injury Control, Center for Environmental Health and Injury Control, Centers for Disease Control. *Am J Dis Child* 1990; 144:627-46.