Preliminary Cart-Related Injuries Treated in US Emergency Departments, 1990-2011

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Abstract

Background: The subject of shopping cart-related injuries has received increasing attention.

Purpose: The objective of this study was to investigate the epidemiology of shopping cart-related injuries among children < 15 years.

Methods: A retrospective cohort analysis of shopping cart-related injuries treated in U.S. emergency departments (EDs) from 1990 to 2011 was conducted using the National Electronic Injury Surveillance System (NEISS) database.

Results: An estimated 50,500 children < 15 years were treated for shopping cart-related injuries from 1990-2011. The most commonly injured body region was the head (78.1%). Children aged 0-4 years sustained 84.5% of all shopping cart-related injuries, 90.7% of injuries to the head region and fall-out-from-rates of more than 25 times that of older children. Children < 15 years, the annual fall-from-cart rate per 10,000 children increased by 39.4% from 2.67 in 1990 to 3.17 in 2011, (p = 0.017, p = 0.020) and the annual concussion/closed head injury rate per 10,000 children increased by 213.3% from 0.64 in 1990 to 2.02 in 2011 (p = 0.003, p = 0.001).

Conclusions: Shopping cart-related injuries are an important source of injury to children, particularly those aged < 4 years.

Background

• Shopping carts are an important cause of injury among children, especially those younger than 5 years. 3.4
• This is the first study to investigate the epidemiology of shopping cart-related injuries among US children during a 22-year study period, 1990-2011.
• Specifically, this study looks at whether these have been changes in these injuries since the development of voluntary standards for shopping carts by the American Society for Testing and Materials (ASTM) International in 2004.
• The goal of this research is to provide information to educate care-givers and health professionals about shopping cart-related injuries, improve shopping cart design, and ultimately prevent injuries associated with these products among children.

Methods

• NEISS data for shopping cart-related injuries (product code 1679) were obtained from the US Consumer Product Safety Commission (CPSC). The NEISS represents a stratified probability sample of ≥ 5,000 hospitals with ≥ 24-hour ED with at least 6 beds in the United States. 4
• Data for 17,052 actual cases of shopping cart-related injury between Jan. 1, 1990 and Dec. 31, 2011 were obtained from the NEISS database. The NEISS database includes variables for patient demographics, injury mechanism, and diagnosis. A narrative of the circumstances of the incident.
• The mechanism of injury variable included the categories: falls out of the shopping cart, cart tipovers, entrapment, being struck/knocked over by a cart, running into/falling over a cart and other. Other NEISS variables were regrouped prior to data analysis (see Table 1).
• Data were analyzed using SPSS version 19.0 and national injury estimates were calculated based on statistical weights provided by the CPSC. 5 Data are reported in this study as national estimates.
• Rates were calculated using US population data from the US Census Bureau.

Discussion

• Shopping cart-related injuries are an important source of injury to children < 15 years.
• Because children aged 0-4 years sustain 84.5% of shopping cart-related injuries, 90.7% of injuries to the head region, and experience fall-out rates of more than 25 times that of older children, this age group is a major priority for design and safety standards changes for shopping carts.
• The predominance of head injuries among children < 5 years is a result of young children’s higher center of gravity, which causes them to land on their head during a fall.
• Falling out of a shopping cart places children at higher risk for traumatic brain injury, which may cause long-term effects.6
• These findings make a strong argument for the necessity of avoiding these injuries in children 0-4 years by implementing changes in cart design and safety standards.
• Prevention efforts should include education of child caregivers, shopping cart design changes, site-based interventions, and a revision of the national shopping cart safety standard to more adequately address the mechanisms of injury among young children.

References


Figure 1: Estimated number and rate of injuries to children younger than 15 years of age treated in US EDs for injuries associated with shopping carts according to year and gender, 1990–2011.

Figure 2: Estimated number and rate of falls of children younger than 15 years of age treated in US EDs for injuries associated with shopping carts according to year, 1990–2011.

Figure 3: Estimated number and rate of concussions/CIDs to children younger than 15 years of age treated in US EDs for injuries associated with shopping carts according to year, 1990–2011.