

Helmet use and injuries in children's bicycle crashes in the Gothenburg region

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ABSTRACT

Aim: To investigate the use and protective effect of helmets in children injured in bicycle crashes and changes in injury patterns during a period of increased helmet use.

Method: Injuries in 4246 children below 16 years of age, who attended an A&E ward after a bicycle crash in the Gothenburg region during 1993-2006, were analysed. The injury severity was classified according to the Abbreviated Injury Scale. The occurrence of skull/brain injuries and facial injuries was analysed for 3711 children with respect to injury severity, helmet use and demographic and crash-related factors. Changes in injury patterns during the period were analysed for 4246 children with no regard to helmet use. The ratio of the number of subjects with head injuries to the number of subjects with extremity injuries was used to estimate the protective effect of helmet at a population level.

Results: Helmets were used by 40% of the injured children at the beginning of the period and by 80% at the end; much less frequently by teenagers, especially girls. The odds of serious or more severe skull/brain injuries and moderate or more severe facial injuries with a helmet were about one fourth of those without a helmet. The proportion of children with skull/brain injuries did not change significantly during the period. The proportion of children with facial injuries decreased, and the proportion with injuries to the upper extremities increased. The ratio between the number of children with head injuries and the number with extremity injuries decreased. *Conclusions:* Bicycle helmets have an obvious protective effect against head injuries in children, regardless of the crash circumstances. Teenagers must be informed about the high risk of skull/brain injuries in bicycle crashes without a helmet. The increasing occurrence of injuries to the upper extremities needs attention.

Keywords: bicycle accident, children, helmet, injury, head, extremity