

## Head injury risk and car seat use for children in collisions

**Background:** Motor vehicle collisions (MVCs) are the leading cause of death for people under the age of 17 years. Almost 80% of rear seat motor vehicle passengers are children. Previous studies have shown that a large fraction of injuries to children in MVCs involved the head and chest. In this study, the hypothesis that children under the age of eight using a forward-facing child restraint system (FFCRS) will have more severe head injuries than children using any other type of restraints in an MVC was tested.

**Methods:** Several datasets obtained from Transport Canada and Level 1 Pediatric Trauma Centre emergency and admission reports containing collision, occupant, and injury information were combined and trends were analyzed.

**Results:** Investigations for 42 cases were analyzed (6 fatal / 36 non-fatal injury). Fourteen children had severe head injuries and five of those were fatal. All of those with severe head injuries were using FFCRSs. However, more than half were incorrectly used or installed, or not used at all (8/14).

**Discussion & Conclusion:** Restraint misuse for child passengers leads to more severe head injuries in MVCs. FFCRSs that are properly used decrease risk of injury and death.

**Interdisciplinary Reflection:** The findings from this study help to determine why younger children are injured more severely in crashes and whether these injuries are related to the type of restraint system used. This information can be used to create new CRS designs to prevent further injury as well as create treatment plans for the most common youth head injuries.