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ALL-TERRAIN VEHICLES AND HEALTH AND SAFETY



Association of
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All-Terrain Vehicles and Health and Safety

In June 2004, the Canadian Pediatric Society (CPS) released a position statement calling for enhanced legislation to control off-road vehicle use, particularly by children.¹ This follows recommendations for stricter regulations made throughout the last two decades by a variety of organizations such as the American Academy of Pediatrics, the American Academy of Orthopedic Surgeons, and Consumer and Safe Kids organizations.^{2, 3, 4}

All-terrain vehicles (ATVs) were developed in Japan as farm vehicles for use in mountainous areas, impassable to conventional vehicles. Its commercial value as a recreation vehicle was realized, resulting in international exportation. In some countries it is still primarily a work vehicle, where it is a major contributor to injury and death in the workplace. ATVs are the number one cause of death on Australian farms.⁵ "All-terrain vehicles are useful on the farm and in other rural applications...ATVs make rural tasks faster and easier. All these characteristics make them attractive for recreational use as well, a use for which they were not designed." (Health Canada)⁶

ATV Use

The size and age of the operator are critical factors in determining accident and injury risk for ATVs. "Safe ATV operation is dependant on rider activity. Whole body movement is critical to influence the center of gravity. The high center of gravity, combined with the narrow track width and short wheelbase, make these vehicles unstable. The rider's ability to shift weight quickly and confidently is a key factor in preventing overturns. Controlled and safe riding requires side to side and fore and aft movement. While ATV seats appear large enough to carry a passenger, the seats are designed to accommodate this movement not passengers. Carrying passengers is unsafe."⁷

"Most youth under the age of 16 years do not possess the physical size, strength, coordination and motor skills to operate an ATV; the cognitive capacity to look for and react to potential hazards; and, the good judgment to not act impulsively or take excessive risks." (U.S. Dept of Health and Human Services, Maternal and Child Health Bureau)⁸

ATV Safety

In 1988, the sale of three-wheel ATVs was banned because they were unsafe. However, subsequent studies documented that, at least for children, four-wheeled ATVs were equally unsafe.⁹ Despite voluntary commitments on the part of the ATV industry to education and safety training, and limiting the sale of large machines, the proportional percentage of children under the age of 16 who are injured as a result of ATV accidents has remained relatively unchanged or increased in most jurisdictions (25 to 50% of ATV injuries).¹⁰ Even in jurisdictions which report a decrease in the absolute numbers of injuries or deaths, the per usage statistics remain high and the absolute numbers constitute a significant public health concern and an issue for health care expenditure. The risk of death is approximately 1/10,000 ATVs.⁴ In Australia, almost 40% of ATV injuries involve children under 15.5. Riders under the age of 16 have a one in three risk of an ATV-related injury.¹¹

ATV risk is increasing in all age groups and for both riders and passengers.^{4, 18} More than 2,500 Canadians are hospitalized every year as a result of ATV-related injuries, one-third of them with serious injuries. Twenty-five per cent of deaths related to ATVs are in children under 15 years.^{1, 12}

It is the only type of injury whose incidence has increased markedly in recent years. Between 1997 and 2002, the number of acute care trauma hospitalizations in Ontario due to ATVs increased by 45.6%; 33% of these cases were in people less than 20 years of age.¹³ In Alberta, in the five-year period between 1999 and 2004, there were 34 ATV-related deaths, 13 of those were in children younger than 16 years of age. ATV-related major trauma increased by almost 275% in that time period.¹²



In Newfoundland and Labrador, in just a two-year period between 2001 and 2002, there were 16 deaths due to ATV-related injuries. Between 1995/96 and 2001/02, there were 408 people hospitalized due to ATV-related injuries in the province. Twenty-one per cent of those hospitalized were children between the ages of five and 14 years.¹⁴

Reported voluntary safety practices such as training, the use of eye protection and helmets, and riding machines with small engines is low (7 to 50%) and these reports indicate that the prevalence of safe practices is less common in rural areas.^{15, 16, 17}

Concern over the safety of ATVs has resulted in a number of inquiries and investigations, which have resulted in consent decrees, voluntary industry standards and limited legislation.^{4, 17, 18} Studies have shown that voluntary measures have not reduced the portion of children who are injured (40 to 50% of all ATV injuries) or deaths (38%) related to ATVs. Children under 16 make up 14% of all ATV users, but suffer a disproportionate number of all fatalities.^{1, 18, 10} Where regulation has required the use of protective measures, there has been evidence of decreased risk of ATV-related injuries. However, regulations which do not restrict the use of ATVs below the age of 16 do not adequately address the injury risk in children.^{19, 20}

Supporters of ATV use by children propose the use of smaller vehicles by children less than 16 years of age, but there is no evidence to indicate that these vehicles are safer, and the development and judgment issues which affect performance in relation to larger vehicles would still be relevant.^{1, 2, 4, 8} Voluntary action to restrict the sale of larger vehicles has not been effective. In 2001, 97% of all injured children younger than 16 were driving ATVs larger than the size recommended for their age group.^{4, 11} The sale of increasingly larger vehicles has increased from 78 to 200%. In the U.S., the average size of an ATV operated by a child under 16 is approximately 240cc, while the Consumer Product Safety Commission (CPSC) recommends that no child operate a vehicle over 90cc.¹⁸ CPSC estimates that the risk of injury for a driver younger than 16 is only reduced by 18% by using a machine of less than 90cc. The risk of injury to a driver younger than 16 is estimated to be four times higher than an older individual driving a machine of the same size.^{4, 18} In a Manitoba study of Grade 6 students, more than half of the students reported using a machine larger than 90cc.¹⁶ Clearly, the voluntary approach has not addressed the issue of machine size nor is it realistic to think that most families who purchase ATVs could afford an investment in several machines of varying size to accommodate a growing family, even if industry was vigilant in upholding voluntary standards.

ATV proponents quite rightly claim that product-use related injuries are higher for bicycles and other sports than for ATVs. However, ATVs are six times more likely to result in hospitalization and 12 times more likely to result in fatality when compared to bicycles per 1,000 vehicles.⁴ ATV-related injuries are much more severe and more often require surgery and hospitalization. Studies report that 18% of children injured by ATVs are treated in intensive care.⁴ ATV-related injuries are significantly more severe than the average for sports overall, based on the Injury Severity Score (9.07 for ATVs compared to 5.8 for all sports).^{4, 21}

While more difficult to document because of the nature of reporting, others besides drivers and passengers are injured by ATVs. Given the statistics on ATV-related accidents and injuries, it is obvious that the use of ATVs on roadways and trails where there is pedestrian or non-motorized vehicle use constitutes a hazard for non-ATV users.

Health Promotion

An additional concern related to ATV use is the opportunity lost to promote health, both in children and adults. ATV use is essentially non-active recreation. Given the growing prevalence of preventable diseases and their associated costs related to obesity and physical inactivity, it is inappropriate to promote ATV use as a recreational activity, particularly for children.^{22, 23, 24} ATV use on trails, which are supposed to accommodate activities such as cycling or walking, put other users at risk and may discourage positive physical activity in the broader population. Alternatively, the substantial individual financial investment associated with ATV use could support significant health-promoting activities such as cycling or other active sports in a substantial way.



Regulation

There is evidence that regulations promoting safer practices, such as helmet legislation, reduce injury and death due to ATVs. In the U.S., states without safety legislation had death rates twice that of those with some form of legislation.^{19, 20} Most regulations tend to be self-enforcing as is evidenced by seat belt regulations, bicycle helmet laws and smoking bylaws. Regulation is an important tool in education and motivation. It sends a significant message about the risks associated with ATV use that will influence users of ATVs and, in particular, parents of young users.

Conclusions

The evidence is clear that ATVs create an increasing health and safety concern. This is particularly evident for children younger than 16 years of age. The recreational use of ATVs may in fact be a deterrent to more health-promoting physical activity. Enhanced legislation is required to support the safer use of ATVs and to promote health-promoting physical activity in the population as a whole and children in particular.

Recommendations

1. Legislate a minimum operator age of 16 years for ATVs.
2. Require mandatory training and licensing of operators.
3. Continue to ensure all ATVs are registered and licensed.
4. Legislate the compulsory use of helmets, eye protection and protective clothing.
5. Ban the use of three-wheeled ATVs.
6. Restrict the use of ATVs to off-road areas where there is not normally pedestrian or non-motorized vehicle use.
7. Educate the public about the risks associated with ATV use and the benefits of alternative, health-promoting physical activity.

Prepared and approved jointly by the

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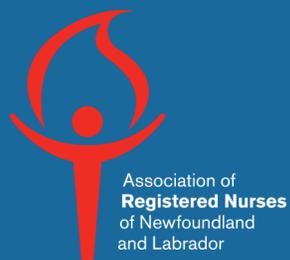
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