
Pediatric and adolescent injury in all-terrain vehicles

Denning, G. M., & Jennissen, C. A. (2018). Pediatric and adolescent injury in all-terrain vehicles. *Research in sports medicine*, 26(sup1), 38-56.

All-terrain vehicles (ATVs) remain a significant source of death and injury among youth. The purpose of this review is to provide an overview of the scope of the problem, the risk factors involved, crash-related outcomes and costs, and injury prevention strategies. There are currently more than 100 pediatric ATV-related fatalities each year and over 30,000 emergency department visits, with a potential annual cost for deaths and injuries approaching \$1 billion. Major risk factors include lack of training, operating adult-size ATVs, riding as or carrying passengers, riding on the road, and not wearing a helmet. Extremity injuries are highly common, and the leading causes of death include brain injuries and multi-organ trauma. The latter increasingly involves being crushed by or pinned under the ATV. Reducing ATV-related deaths and injuries will require multiple strategies that integrate approaches from education, engineering, and evidence-based safety laws and their enforcement.

Parental attitudes and family helmet use for all-terrain vehicles and bicycles

Wymore, C., Denning, G., Hoogerwerf, P., Wetjen, K., & Jennissen, C. (2020). Parental attitudes and family helmet use for all-terrain vehicles and bicycles. *Injury epidemiology*, 7(1), 1-9.

Helmets prevent head trauma in both all-terrain vehicle (ATV) and bicycle crashes. This pilot study's objective was to compare family helmet use and participant attitudes regarding helmets for ATVs versus bicycles. A convenience sampling of adults attending a 2017 university-sponsored health fair who had at least one child < 18 years living at home were surveyed. Demographics, frequency of helmet use, and information about factors influencing helmet use were collected. Descriptive (frequencies) and bivariate (Fisher's exact test) analyses were performed. Qualitative themes of written responses were also examined. Subjects (N = 98) were 26–57 years old (mean 40 years). Three-quarters (76%) were female. The percentage always wearing a helmet riding bicycles was 63% (subjects), 58% (spouses/partners), and 51% (children), compared to 11, 14 and 37% on ATVs, respectively. Moreover, the percentage never wearing a helmet while on an ATV was 68% for subjects, 71% for spouses, and 47% for children. Despite helmet use differences between bicycles and ATVs, the importance of children wearing a helmet on these vehicles was rated highly and equally important, 9.28 and 9.58 on a 1–10 scale, respectively. Higher proportions of subjects' oldest children wore a bike helmet 100% of the time if at least one parent always wore a helmet (81%), compared to children whose parents both wore helmets < 100% of the time or didn't ride (21%) ($p < 0.0001$). The proportion of children wearing ATV and bicycle helmets less than 100% of the time was significantly higher if parents reported barriers to effectively enforcing helmet use than if they did not ($p = 0.04$ and $p = 0.004$, respectively). Many reported a "strict no helmet, no bike/ATV riding rule" as being most effective in getting their children to always wear a helmet. This study is the first to explore family helmet use while riding bicycles vs ATVs. Although parent's belief in the importance of helmet use was high for both, helmet use was greater when riding bicycles. Further research is needed to better understand the social and environmental influences that shape parental helmet attitudes and practices in order to improve safety interventions for increasing pediatric helmet use.

'No-one else wears one:' Exploring farmer attitudes towards All-Terrain Vehicle helmets using the COM-B model

Irwin, A., Mihulkova, J., & Berkeley, S. (2022). 'No-one else wears one:' Exploring farmer attitudes towards All-Terrain Vehicle helmets using the COM-B model. *Journal of Safety Research*.

All-Terrain Vehicles (ATV) are a popular piece of farming machinery but are linked to many fatalities and injuries every year. Despite evidence that ATV helmets reduce the risk of serious or fatal injury, research suggests that few farmers wear them. The aim of this study was to explore farmer attitudes toward ATV helmets, using the COM-B model as a framework to identify key barriers and enablers of helmet use and suggest potential interventions to increase helmet use in agriculture. A mixed-methods online survey featuring quantitative and qualitative questions was used to explore key attitudinal factors relevant to farmer helmet wearing. A total of 211 UK and Irish farmers were recruited, including farm owners, managers, workers, and contractors. Personal exemption from risk, emotional benefits, cognitive barriers, and guideline prompts were all found to be significant predictors of farmer helmet wearing. Key categories within the qualitative data indicated that helmet properties, risk perception, farming culture, and the farming environment could all function as barriers to helmet wearing. Suggested enablers of helmet use included increasing helmet availability and enhancing awareness of the consequences of ATV accidents. The key barriers and enablers presented within this paper highlight the relevance of capability (helmet design, time pressure), opportunity (social norms), and motivation (perceived control of risk) when considering farmer helmet wearing behaviors. In order to encourage farmers to wear helmets it will be necessary to design specific interventions using the behavior change wheel. Key interventions to prompt helmet use include the inclusion of more cues to prompt helmet wearing (e.g., stickers on the ATV), enhanced training and education, and modelling (e.g., key farming figures shown to wear helmets in the media).