The Safety Tips for ATV Riders (STARs) programme: short-term impact of a school-based educational intervention

Charles A Jennissen,[1] Jeffrey Peck,[2] Kristel Wetjen,[3,4] Pam Hoogerwerf,[4] Karisa K Harland,[1,5] Gerene M Denning[1]

[1]Department of Emergency Medicine, University of Iowa Carver College of Medicine, Iowa City, USA
[2]U.S. Army Corps of Engineers, Iowa City, USA
[3]Division of Pediatric Surgery, Department of Surgery, University of Iowa Hospitals and Clinics, Iowa City, USA
[4]University of Iowa Children's Hospital, Iowa City, USA
[5]Iowa Injury Prevention Research Center, Iowa City, USA

Correspondence to
Dr Charles A Jennissen, Clinical Associate Professor, Emergency Medicine Department, University of Iowa Hospitals and Clinics, 200 Hawkins Drive, Iowa City, IA 52242, USA; charles-jennissen@uiowa.edu

Received 21 August 2014
Accepted 3 November 2014
Published Online First 28 November 2014

To cite: Jennissen CA, Peck J, Wetjen K, *et al. Inj Prev* 2015;**21**:166–172.

ABSTRACT

Background Since 1985, one-third of all US all-terrain vehicle (ATV)-related injuries and one-quarter of deaths involved victims <16 years of age. ATV safety education of youth could help reduce these tragedies.

Objectives To assess the efficacy of the *S*afety *T*ips for *A*TV *R*iders (STARs) school-based programme targeting adolescents.

Methods A survey was anonymously administered before and after the programme to determine demographics, knowledge and reported likelihood of using the information learned.

Results Over 4600 students in 30 Iowa schools participated from November 2010 to April 2013. Initially, 52% knew most ATVs are designed for one rider, 25% knew the recommended vehicle size for their age range and 42% knew riding on Iowa's roads was legal only for agricultural purposes. After the programme, this increased to 92%, 82% and 76%, respectively (p<0.0001 in each case), with 61% of students correct on all three. Better preintervention scores were associated with being males, higher riding frequency and being from isolated rural communities. After the programme, 48% and 32% said they were likely/very likely versus unlikely/very unlikely to use the safety information learned, respectively; younger students, females and infrequent riders reported higher likelihoods.

Conclusions STARs increased short-term ATV safety knowledge and almost half the participants reported they would use the safety information presented. Males and frequent riders seemed more resistant, but some groups that may be more vulnerable to potential ATV crash and injury appeared amenable to the training with higher increases in postprogramme scores and greater intention of improving safety behaviours.

INTRODUCTION

All-terrain vehicles (ATV) remain a significant public health and safety concern. Annually, there are over 800 ATV-related deaths, and more than 130 000 emergency department visits across the USA.[1–3] Since 2001, children <16 years of age have accounted for nearly one-third of all ATV-related injuries and one-fourth of all fatalities.[3] The economic cost of morbidity and mortality from ATV crashes is high, with an estimated lifetime economic cost of paediatric deaths in 2004 alone accounting for more than one billion US dollars.[4]

In a cross-sectional survey of Iowa students, we found that 77% had ridden on an ATV and that 38% of those exposed rode at least once a week.[5] Other studies of youth from selected rural and agricultural groups across the USA found similarly high ATV exposure rates.[6–9] Additionally, previous studies indicated that children are more likely to be in an ATV crash than adults.[10 11] Among Iowa students who had ridden on an ATV, 58% reported having been in at least one crash.[5] Similarly, about two-thirds of Illinois 4-Hers with ATV exposure reported having had a crash in the 6 months prior to the study, and nearly half of those reported having been injured.[8]

Education is considered an essential component in decreasing ATV-related deaths and injuries.[12–16] ATV users in a focus group study felt that targeted education of youth and parents would be the most likely means of successfully decreasing paediatric ATV injuries.[13 15] However, previous survey studies found that only 15%–26% of adolescent ATV operators reported receiving safety education of any kind.[6 8 9] Even fewer youth, as low as 1%–5%, have completed an ATV certification course with hands-on training.[7 17]

To address the widespread lack of ATV safety education among youth in our state, we developed an interactive, school-based educational programme highlighting 10 Safety Tips for ATV Riders (STARs) based on the major risk factors for paediatric ATV-related injuries. In this report, we provide results on the short-term efficacy of the programme with respect to knowledge gained and reported likelihood of behavioural change.

METHODS

STARs programme data collection

Schools were recruited by communicating with school nurses and administrators. Participating schools scheduled one or more class sessions, as a part of their health and safety curriculum. ATV safety educators presented the STARs programme with all students in targeted classes participating.

A preprogramme survey was administered anonymously using the audience response system Turning Point. Demographic information, ATV riding frequency, safety behaviours, crash experience and preprogramme knowledge were collected. After the presentation, a postprogramme survey was administered to assess changes in knowledge and each student's self-reported likelihood of using the ATV safety information presented.

Classification of schools by rurality

School district rurality was determined using the ZIP code-based Rural Urban Commuting Area (RUCA) codes (http://depts.washington.edu/uwruca/ruca-approx.php). Schools were then classified into four well-defined RUCA categories: urban, large rural, small rural and isolated rural. Small and large rural schools were combined for the purpose of analysis.

Data analysis

All analyses were performed using SAS software, V.9.2 of the SAS System for Microsoft (SAS Institute, Cary, North Carolina, USA). Because some students had missing or inconsistent responses for questions related to ATV exposure, only those answering 'Never' for 'How often do you drive or ride on an ATV?' were considered unexposed. Subsequent answers to safety behaviour questions other than 'Never been on an ATV' by these students were treated as missing data. Proportions were compared using the χ^2 test.

Hierarchical multivariable logistic regression analysis was used to calculate adjusted ORs and 95% CIs for dichotomous variables, after controlling for covariables and for correlation of ATV-related exposure within schools. Covariables for inclusion in the model were selected a priori based on previous research. Students with missing data for one or more of the variables in the model were not included in multivariable analysis.

RESULTS

Student demographics

From November 2010 to April 2013, 4684 students participated in the STARs programme. Students were comprised of 49% males and 51% females. Using RUCA codes, 33%, 39% and 28% of students were from isolated rural, rural and urban schools, respectively.

Preprogramme knowledge

Individual knowledge questions

Table 1 summarises preprogramme knowledge for individual questions. Just over half the students knew that traditional ATVs are for one rider only. A quarter of the students correctly identified 90 cc as the largest ATV engine size that those aged 12–15 years should drive as per manufacturer recommendations and 42% recognised that riding on Iowa's public roads is allowed for farming purposes only.

Male students provided correct answers more frequently than female students (<0.001 for each question). With respect to age, a lower proportion of students aged 14–15 years answered recommended engine size correctly relative to other ages (p=0.019), and the proportion of the youngest students who knew about Iowa's road-use law was lower than other age groups (p<0.001). Students who had ridden on an ATV were correct more often for each question than students who had not (p<0.0001 in each case). Additionally, more frequent riding was associated with a higher proportion of students answering each question correctly (p<0.0001 for each).

Determinants of higher preprogramme scores

Table 2 compares students by grouped scores, that is, 0 or 1 correct versus 2 or 3 correct. Males were 25% more likely than females to have higher scores (95% CI 1.02 to 1.51). As compared with urban students, students from isolated rural schools were 27% more likely to have higher scores (95% CI 1.03 to 1.55). Additionally, increasing exposure was associated with increasing likelihood of high scores relative to students who had never ridden on an ATV, with those riding most frequently being over five times more likely to answer two or three of the questions correctly (95% CI 4.03 to 6.47).

Safety behaviours and crash experience

When comparing safety behaviours with related knowledge questions (data not shown), riders who knew ATVs should not have multiple riders were just as likely to report having ridden

Table 1 Comparison of baseline knowledge for individual questions in the preprogramme survey*

	Most ATVs are made to carry how many people?			According to guidelines, what is the largest ATV engine size recommended for use by those aged 12–15 years?			According to Iowa law, when can someone ride an ATV on a public road?		
	Correct; n (%)	Incorrect; n (%)	p Value	Correct; n (%)	Incorrect; n (%)	p Value	Correct; n (%)	Incorrect; n (%)	p Value
All students	2304 (51)	2175 (49)		1080 (24)	3366 (76)		1854 (42)	2535 (58)	
Sex									
Male	1145 (54)	958 (46)	0.0005	571 (28)	1496 (72)	<0.0001	929 (45)	1116 (55)	0.0001
Female	1077 (49)	1116 (51)		466 (21)	1719 (79)		851 (40)	1303 (60)	
Age (years)									
11	325 (48)	347 (52)	0.21	167 (25)	500 (75)	0.019	234 (35)	436 (65)	<0.0001
12–13	1298 (53)	1158 (47)		615 (25)	1814 (75)		1001 (42)	1385 (58)	
14–15	475 (52)	435 (48)		184 (20)	720 (80)		437 (49)	455 (51)	
16	71 (50)	71 (50)		39 (27)	103 (73)		64 (44)	81 (56)	
Rurality									
Isolated rural	880 (59)	604 (41)	<0.0001	400 (27)	1069 (73)	<0.0001	651 (44)	830 (56)	0.012
Rural	825 (47)	922 (53)		343 (20)	1389 (80)		664 (39)	1020 (61)	
Urban	599 (48)	648 (52)		337 (27)	907 (73)		538 (44)	685 (56)	
ATV exposure									
Non-exposed	367 (39)	574 (61)	<0.0001	135 (14)	811 (86)	<0.0001	227 (25)	691 (75)	<0.0001
Exposed	1817 (55)	1463 (45)		875 (27)	2366 (73)		1511 (47)	1704 (53)	
Riding frequency									
Daily/weekly	803 (64)	448 (36)	<0.0001	398 (32)	837 (68)	<0.0001	699 (57)	521 (43)	<0.0001
Monthly	360 (58)	260 (42)		164 (27)	452 (73)		298 (49)	307 (51)	
Few times/year	654 (46)	755 (54)		313 (23)	1077 (77)		514 (37)	876 (63)	

*Row totals may not equal overall totals due to missing or indeterminate responses.
ATV, all-terrain vehicle.

Table 2 Comparison of baseline knowledge with number of correct answers grouped

	Number of correct answers*		Multivariable analysis†	
	0–1 Correct; n (%)	2–3 Correct; n (%)	aOR	95% CI
All students	3057 (66)	1548 (34)		
Sex				
Male	1334 (62)	809 (38)	1.25	1.02 to 1.51
Female	1555 (69)	689 (31)	1.0	(ref)
Age (years)				
11	492 (72)	196 (28)	1.0	(ref)
12–13	1636 (65)	874 (35)	0.65	0.48 to 0.88
14–15	609 (65)	327 (35)	0.94	0.81 to 1.10
16	100 (66)	51 (34)	1.03	0.82 to 1.31
Rurality				
Isolated rural	921 (60)	610 (40)	1.27	1.03 to 1.55
Rural	1297 (72)	497 (28)	0.80	0.68 to 0.93
Urban	838 (66)	441 (34)	1.0	(ref)
Riding frequency				
Daily/weekly	646 (51)	624 (49)	5.10	4.03 to 6.47
Monthly	382 (60)	253 (40)	3.31	2.74 to 4.00
Few times/year	1010 (70)	425 (30)	2.15	1.77 to 2.62
Not exposed	819 (84)	152 (16)	1.0	(ref)

*Row totals may not equal overall totals due to missing or indeterminate responses.
†Multivariable analysis determining the likelihood of answering 0 or 1 question correctly versus 2 or 3.
aOR, adjusted OR.

with passengers as those who failed to answer the question correctly (p=0.39). Additionally, exposed students who knew that Iowa road-use law did not allow riding on public roads except for agricultural purposes were actually more likely to report doing so (p<0.0001). Similarly, engaging in one or more of the possible unsafe behaviours was associated with answering more questions correctly (p=0.0012). A higher proportion of students who reported having crashed also answered more questions correctly, as compared with exposed students who had not crashed (p<0.0001).

Table 3 Comparison of preprogramme and postprogramme scores

Individual questions answered in both surveys*			
Answer	Preprogramme; n (%)	Postprogramme; n (%)	p Value
Most ATVs are made to carry how many people?			
Correct	2227 (52)	3972 (92)	<0.0001
Incorrect	2072 (48)	327 (8)	
According to guidelines, what is the largest ATV engine size recommended for use by those aged 12–15 years?			
Correct	1050 (25)	3524 (82)	<0.0001
Incorrect	3243 (75)	769 (18)	
According to Iowa law, when can someone ride an ATV on a public road?			
Correct	1815 (43)	3232 (76)	<0.0001
Incorrect	2420 (57)	1003 (24)	
All questions answered in both surveys			
Number correct	Preprogramme; n (%)	Postprogramme; n (%)	p Value
Nil	1208 (27)	194 (4.3)	<0.0001
1	1793 (39)	402 (8.9)	
2	1212 (27)	1153 (25)	
3	323 (7)	2787 (61)	

*Column totals may not equal to overall totals due to missing or indeterminate responses.
ATV, all-terrain vehicle.

Preprogramme vs postprogramme knowledge

The proportion of students who correctly answered the question 'Most ATVs are made to carry how many people?' increased from 52% to 92% (table 3). Those correctly answering the questions related to recommended engine size and Iowa road-use law increased from 25% to 82% and 43% to 76%, respectively. Among students who answered all knowledge questions both before and after the programme, those getting all three correct increased from 7% before the programme to 61% after. Comparing the scores of students, 6% had and maintained perfect scores, 77% improved their scores, 12% stayed the same and 5% of student scores decreased.

Programme-dependent changes in knowledge

Multivariable analysis

When excluding students with perfect preprogramme scores, females were almost 50% more likely to increase their scores (95% CI 1.20 to 1.80), whereas students who rode monthly or daily/weekly were 33% (95% CI 0.47 to 0.94) and 39% (95% CI 0.44 to 0.85) less likely to increase their score (table 4).

Factors affecting knowledge change

A higher proportion of students who had ridden on an ATV had perfect preprogramme and postprogramme scores, as compared with students who had never been on an ATV, p<0.0001 (table 5). Similarly, students who had been in at least one ATV crash more commonly had perfect scores both before and after the programme than exposed students who had never crashed (p<0.0001). However, exposed students and those with a previous crash history also had higher percentages of postprogramme scores that decreased or stayed the same. Additionally, students who reported having engaged in all three unsafe riding behaviours had a higher proportion whose scores failed to improve postprogramme as compared to other students (p=0.0001).

Likelihood of using safety information

Almost half the STARs programme attendees stated they were likely, or very likely, to use the ATV safety information presented (2073 students, 48%), while approximately one-third (1362 students, 32%) said they were unlikely, or very unlikely, to do so. There were 865 students (20%) who were undecided. Females were 42% more likely than males (95% CI 1.21 to 1.66) to indicate they would use the information provided (table 4). Students who rode daily/weekly and monthly were 69% (95% CI 0.23 to 0.40) and 46% (95% CI 0.43 to 0.69) less likely to report that they would use the information provided during the programme.

Among exposed students, a lower proportion of those who had crashed reported being likely to use the information provided, as compared with those who had not crashed, p<0.0001 (table 6). Similarly, students who reported engaging in all three unsafe behaviours were the least likely to say they planned to use the information provided in the programme (p<0.0001).

Table 4 Multivariable analysis of changes in knowledge postprogramme and reported likelihood of using the programme information

	Likelihood of a student's score increasing from baseline versus decreasing/staying the same*†		Likelihood of students reporting they were 'very likely/likely' versus 'unlikely/very unlikely' to use the information provided during the programme†	
	aOR	95% CI	aOR	95% CI
Sex				
Male	1.0 (ref)		1.0 (ref)	
Female	1.47	1.20 to 1.80	1.42	1.21 to 1.66
Age (years)				
11	1.0 (ref)		1.0 (ref)	
12–13	1.31	0.86 to 2.01	1.52	1.04 to 2.21
14–15	0.99	0.74 to 1.34	1.22	0.88 to 1.67
16	0.82	0.57 to 1.17	1.14	0.48 to 2.74
Rurality				
Isolated rural	1.19	0.72 to 1.97	1.46	0.91 to 2.35
Rural	0.89	0.57 to 1.17	1.25	0.69 to 2.26
Urban	1.0 (ref)		1.0 (ref)	
Riding frequency				
Daily/weekly	0.61	0.44 to 0.85	0.31	0.23 to 0.40
Monthly	0.67	0.47 to 0.94	0.54	0.43 to 0.69
Few times/year	0.92	0.70 to 1.20	0.78	0.59 to 1.03
Not exposed	1.0 (ref)		1.0 (ref)	

*Students with perfect preprogramme scores were excluded from analysis.
†Students with missing or indeterminate values for one or more variables were not included in analysis.
aOR, adjusted OR.

DISCUSSION

ATV safety training among adolescents

The majority of ATV riders report being largely self-taught or having had minimal instructions from a relative or peer.[7 10 13] When adolescents in one study were asked why they had not received training, 46% stated it was not available in their area and another 9% said they did not know about any training or did not know where the training was held.[6] Despite this, youth in ATV focus groups recognised their responsibility to be educated and were accepting of training requirements.[13 15] Among Future Farmers of America (FFA) members, formal training was associated with significantly greater likelihood of wearing a helmet, and showed positive associations with less multiple-rider ATV use and never riding on paved roads.[6] Illinois 4-Hers who had some form of education or training were significantly less likely to have been in an ATV crash.[8]

There is some controversy among healthcare providers as to whether young children should receive ATV safety training, as there are concerns it might promote early riding. However, we saw no difference in ATV exposure between 11-year-olds and youth of 12–15 years of age who participated in our programme,[5] indicating that children in our state are riding on ATVs at a very young age. Thus, focusing programme presentations to the lower end of our target age range, and perhaps even younger, may be both necessary and beneficial for preventing injuries among these riders.

Table 5 Differences in preprogramme and postprogramme scores as a function of being exposed to ATVs, ever having crashed, and number of reported unsafe behaviours

	Knowledge change*			
	Perfect score, preprogramme and postprogramme; n (%)	Increased; n (%)	Decreased or stayed same; n (%)	p Value
Exposure to ATVs				
Yes	230 (7)	2473 (75)	600 (18)	<0.0001
No	19 (2)	832 (86)	111 (12)	
Reported ever having crashed				
Yes	151 (8)	1244 (69)	399 (22)	<0.0001
No	74 (5)	1130 (82)	173 (13)	
Number of reported unsafe behaviours†				
Nil	5 (8)	48 (75)	11 (17)	0.0001
1–2	76 (6)	1054 (79)	197 (15)	
3	149 (8)	1354 (71)	391 (21)	

*Row totals may not equal overall total due to missing or indeterminate responses.
†Included riding with passengers, riding on public roads and never/almost never wearing a helmet.
ATV, all-terrain vehicle.

Previous ATV safety programmes

Most published results on the effectiveness of ATV safety education have been as smaller parts of broader injury prevention programmes.[18–22] Examples of this include an ATV education video presented during hunter safety education courses in Arkansas,[16] and ATV stations at farm safety day camps.[18–22] All have demonstrated increases in safety knowledge. Like our programme, a school presentation delivered to a smaller number of students in Illinois also demonstrated short-term knowledge gain.[23]

Safety knowledge and riding behaviours

Although safety knowledge is often necessary for practicing safe behaviours, it is not always sufficient.[24] Consistent with this observation was our finding that preprogramme knowledge showed little apparent correlation with safe riding behaviours or the likelihood of having been in a crash. Granted, students with

Table 6 Likelihood of using the safety programme information as a function of exposure, crash history and riding behaviours

	Reported likelihood of using information*			
	Likely; n (%)	Undecided; n (%)	Unlikely; n (%)	p Value
Ever crashed				
Yes	629 (36)	372 (22)	725 (42)	<0.0001
No	694 (53)	305 (23)	300 (23)	
Number of behaviours†				
Nil	37 (61)	7 (11)	17 (28)	<0.0001
1–2	666 (53)	261 (21)	333 (26)	
3	665 (37)	433 (24)	707 (39)	

*Row totals may not equal overall total due to missing or indeterminate responses.
†Included riding with passengers, riding on public roads and never/almost never wearing a helmet.

the highest knowledge scores were also the most frequent riders, which would give them more opportunities to participate in unsafe behaviours over time and to experience a crash. Still, this lack of association between ATV safety knowledge and safe behaviours is a cause for concern, and illustrates one of the major challenges of ATV injury prevention.

Groups most likely to use the information provided

More encouraging was the fact that a large proportion of students stated they were likely to use the safety information presented. Groups that seemed particularly receptive included those who had not yet had an ATV riding experience and those whose experience was limited. Both these groups significantly increased their knowledge and expressed a positive likelihood of using the information provided. This is an important group to reach, as youth with little or no riding experience may be at greatest risk for crash and injury. Additionally, females were more likely to increase their knowledge scores and to state that they would use the safety information presented. This is also an important group, as the proportion of females reporting riding an ATV was nearly equivalent to males, although their ATV riding frequency was less.[5] In studies of paediatric ATV victims, females were more likely to be passengers and not wear helmets as compared with males.[6 25 26] Thus, the success of the STARs programme with females and infrequent ATV users may lead to safer behaviours and decreased injuries.

Groups resistant to the safety information provided

ATV riders that one would most like to influence with regards to their safety behaviours appeared to be the most recalcitrant to safety messages. This included the most frequent riders, those reporting all three risky behaviours measured in the study and those who had experienced an ATV crash in the past. These groups had the highest percentages of students whose knowledge scores did not improve, or worsened, and who stated they were not likely to use the programme's safety information. Males constituted a high proportion of these riders in our study, and have been the vast majority of paediatric crash victims in the past.[11 25–29] These findings suggest that many experienced youth have developed poor riding habits, and may be least likely to recognise they are at risk.

Our study results may also reflect the fact that not all recipients are ready to embrace safety messages when they are delivered.[30] The transtheoretical model of change conceptualises behavioural change as a series of stages that include precontemplation, contemplation, preparation, action, maintenance and termination.[31] This model has been helpful in understanding the cessation of unhealthy behaviours and the adoption of healthy lifestyles. The model acknowledges that changes are incremental and that the most successful intervention may vary at different stages.[32] Since change is not necessarily an all-or-nothing process, the STARs programme may move message-resistant ATV riders from a precontemplative stage to one of contemplation.[33] Repeated messaging may be needed to help individuals continue to progress through the stages of behavioural change. Adapting methods from other health and safety interventions that have proven effective in youth resistant to behavioural change may also be needed to increase safe ATV riding habits among more recalcitrant groups.

Promoting a safety culture

Unlike many other motorised vehicles, a culture of widespread safety regarding ATV use is lacking. School-based education has the potential to disseminate information to the larger community, as all children in the age range participate and may take information back to their families. Additionally, educated adolescents can act with knowledgeable authority to better influence peers regarding ATV safety behaviours. Raising community awareness of ATV injury prevention can be accomplished through both ATV users and non-users and has the potential to cultivate a stronger ATV safety culture.

Limitations

Our study measures intermediate outcomes, not end goals such as behavioural change and reduced deaths and injuries. However, nearly all safety education programmes lack resources and study designs robust enough to determine such outcomes, and most have similarly relied on self-reported and proxy outcome measures.[19 24 34 35] Future studies determining the programme's long-term effects on knowledge and behaviours will help address this limitation to some extent.

The number of data variables we collected was limited in order to fit the presentation into the time constraints of a classroom period. Since we had just three knowledge questions, our results may not reflect the breadth of knowledge gained. Additionally, some changes have occurred related to the knowledge questions that should be noted. Manufacturers' recommendations for youth-sized ATVs have changed in recent years from engine size criteria to categories based on speed. However, virtually all youth vehicles available at the time of the study were 90 cc or less. Similarly, a few counties in our state have opened up some of their public roads for recreational use by adults, but this has been very recent and not in the areas of participating schools at the time of the study.

The validity of self-reported data, especially to behavioural questions, can be a concern. Respondents may have under-reported behaviour perceived as bad in order to appear in a better light (social desirability bias). Collecting data anonymously should have helped reduce this bias. Additionally, some immature adolescents may have deliberately answered questions wrong and this may account for some students who did worse on their post-test. The small number of students with reduced scores, however, should have little effect on overall study results.

Peer influence can impact survey responses. Limiting response time and the time between questions should have helped minimise this effect. Although questions and response options were simplified, some youth may not have fully understood some questions. Additionally, some students may have had problems managing the audience-response technology leading to improper response input. The large study numbers, however, likely reduced the effect of these limitations.

CONCLUSIONS

Most youth in this study demonstrated an initial deficiency in safety knowledge of ATVs. The STARs programme increased short-term knowledge, and a significant proportion of participants indicated they were likely to use the safety information presented. Certain groups appeared more amenable to the intervention, with significant increases in their postintervention knowledge scores and a higher reported likelihood of using the safety information presented. These included students of younger age, females and infrequent users of ATVs; all groups which may be more vulnerable to potential crash and injury when exposed to ATVs. School-based ATV education may be helpful in nurturing a community-wide safety culture among users of ATVs. Further study is needed to determine whether the STARs programme results in long-term knowledge retention and behavioural change.

What is already known on the subject?

- Younger age is an independent risk factor for all-terrain vehicle (ATV)-related deaths and injuries.
- Education is considered an essential component of preventing these deaths and injuries.
- Most youth receive little or no ATV safety education, and there are only a few published reports evaluating ATV safety programmes.

What this study adds?

- Over 4600 students participated in our school-based ATV safety programme, and there was a significant increase in short-term knowledge among the study population.
- There was no apparent association between knowledge about specific risk factors and safe behaviours.
- Those who reported the highest likelihood of using the information presented were females and students with little or no riding experience, whereas frequent riders and those who had experienced a crash were less likely to affirm future use.

Acknowledgements The STARs programme was developed and administered by the Iowa ATV Injury Prevention Task Force which is a coalition of dedicated individuals from the University of Iowa Children's Hospital, Safe Kids Johnson County, the Iowa Emergency Services for Children, the University of Iowa Departments of Emergency Medicine and Trauma Services, the Iowa Department of Natural Resources, and the US Army Corps of Engineers. Other partners are Safe Kids Iowa, the Iowa Department of Public Health, the University of Iowa Injury Prevention Research Center, the Iowa Rural Health & Safety Clinic, and the Brain Injury Alliance of Iowa. The authors would like to especially acknowledge several task force members including Michele Lilienthal, Lisa Roth, Lauren O'Donnell, Erika Billerbeck, Evelyn 'Lou' Wolfe, and Adam Collins for their help with this project.

Contributors Author contributions: CAJ and GMD designed the study with the aid of the other authors, had full access to all the data in the study, and take responsibility for the integrity of the data and the accuracy of the data analysis. CAJ and GMD were primarily responsible for manuscript completion. KKH carried out the analyses and helped in manuscript preparation. KW, PH, and JP assisted in the development of the data collection instrument and were responsible for both data collection and presentation of the programme. All authors offered input on revising the article and provided final approval.

Funding Support for this study was primarily provided by the University of Iowa Children's Hospital through a grant awarded by Kohl's Cares, a community-based programme of Kohl's which supports kids' health and education initiatives nationwide. Additional funding was provided by the Department of Emergency Medicine and the Division of Pediatric Surgery at the University of Iowa.

Competing interests None.

Ethics approval University of Iowa IRB.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Authors are willing to share data with others after establishing a mutual agreement with the other individual(s)/groups.

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Fall prevention interventions reduce injury

Wisconsin has a higher mortality rate from falls than the rest of the nation. This prompted the state to implement the *Stepping On* programme, shown to be highly effective and adaptable to a community setting. Fall rates for 2010–2011 vs 2007–2008 in 20 communities and revealed a 9% reduction in fall injuries. Source: *Am J Public Health.* (Noted by IBP)

Driving and changing clothes

Although US teens are more aware of the dangers of texting while driving, 27% admit to other distractions such as changing shoes, putting on contact lenses or make-up, and doing homework while they drive. (Noted by IBP)

A cool helmet

A truck driver who taught helmet safety for a local Harley dealer crashed his bike and had several skull fractures. He was wearing a novelty helmet. His wife reportedly stated he knew that helmet was not safe but he thought it was cool. Also 'cool' are his medical bills—$500 000 with more to come. (Noted by IBP)

National Facial Protection Month: use helmets, mouth guards

During National Facial Protection Month in the USA, various organisations are promoting the use of helmets and mouth guards. The latter are recommended for martial arts, boxing, football, volleyball, softball, bicycling and cheerleading. (Noted by IBP)

IP

The Safety Tips for ATV Riders (STARs) programme: short-term impact of a school-based educational intervention

Charles A Jennissen, Jeffrey Peck, Kristel Wetjen, Pam Hoogerwerf, Karisa K Harland and Gerene M Denning

Inj Prev 2015 21: 166-172 originally published online November 28, 2014
doi: 10.1136/injuryprev-2014-041408