WISCONSIN MEDICAL JOURNAL

Pilot Study of Adolescent Attitudes Regarding Ski or Snowboard Helmet Use

Andrew R. Peterson, MD; M. Alison Brooks, MD, MPH

ABSTRACT

Introduction: The number of head injuries from skiing and snowboarding accidents is increasing among adolescents. Ski helmets reduce the risk of head injury. This study explored adolescent attitudes regarding helmet use.

Methods: This pilot study included 11 high school students participating in a 1-hour focus group.

Results: There was agreement that head injury is unlikely compared to other injuries, and use of helmets is determined by level of difficulty of the activity. Peer use makes personal use more acceptable and likely. Helmet cost is a minor barrier. Personal experience with a head injury increases use. Mandatory helmet use was viewed positively by most of the subjects.

Conclusions: This pilot study suggests that, similar to bicycle helmet promotion programs, ski and snowboard helmet campaigns should focus on delivering a positive image of helmet use and peer acceptance.

INTRODUCTION

The incidence of head injury is increasing in skiing and snowboarding, particularly among adolescents,[1-2] and traumatic brain injury remains the leading cause of death.[3] There is evidence that helmets reduce risk of head injury in skiing and snowboarding.[4-6] One observational study found that only one-quarter of 11- to 17-year-olds wear a helmet while skiing or snowboarding.[7] This pilot study's objective was to explore adolescent attitudes about ski and snowboard helmet use.

Author Affiliations: Department of Pediatrics, University of Wisconsin–Madison, Madison, Wis (Peterson, Brooks); Department of Orthopedics and Rehabilitation, University of Wisconsin–Madison, Madison, Wis (Brooks).
Corresponding Author: M. Alison Brooks, MD, MPH, 621 Science Dr, Madison, WI 53705; phone 608.263.6477; fax 608.263.0503; e-mail brooks@ortho.wisc.edu.

METHODS

A convenience sample of adolescents was recruited from 1 private urban high school in Seattle, Washington. Informational letters were distributed, and informed consent of parents and adolescents was obtained. Eleven adolescents chose to participate and were compensated for their time. Topic questions were used to generate discussion. The 1-hour focus groups were conducted at the school after hours and moderated by the second author. The sessions were tape recorded and later transcribed. A research assistant operated the tape recorder and took notes. No props were used. The authors independently reviewed the focus group transcripts and identified a list of major discussion themes. The authors then reviewed the transcripts together to identify which themes had frequent participant agreement or consensus. Representative responses for each major theme were chosen for inclusion in this paper.

RESULTS

Participants included 7 female and 4 male high school students. Six were skiers; 5 were snowboarders. All skiers self-rated as intermediate or expert and had greater than 5 years experience. All snowboarders self-rated as beginners and had 3 years experience or less. Of the participants, 9 reported bike helmet use and 4 reported ski helmet use. Parents or grandparents purchased all of the participants' ski helmets.

When asked about likelihood of head injury, the most frequent responses were "everything except the head," "broken bones," "arms, legs, stuff like that," "knees and shins," and "it seems like you'd have to work really hard to land on your head."

When asked about reasons to wear a helmet, there was agreement that more advanced skiers and snowboarders had greater need to wear protective equipment. "Now that I'm getting better, I'm trying new things and there's more risk, so you [*sic*] would wear a helmet." "I just started doing more rails. Now that I'm

doing kind of more dangerous things, I kind of consider wearing a helmet more than I used to." A few adolescents identified particular groups with more or less risk and the need to wear a helmet. "The people who weren't wearing helmets in the Olympics I thought looked really stupid, actually. They're doing really stupid hard tricks."

Several adolescents had personal experience with a head injury or knew someone who had suffered a head injury. There was agreement that such an experience made them more likely to consider wearing a helmet. Responses included "I crashed into a guy, but I was wearing my helmet, and there was a big dent in my helmet, so I guess just seeing that dent was kind of like, wow, good thing I was wearing that," and "My friend's older brother went skiing and fell and cracked his helmet. He also broke his arm but his head was OK because of the helmet. It was actually on a rail, and he fell back and hit his head. After that I couldn't argue with my mom about it." One adolescent admitted that previous experience did not change behavior. "Well, I got injured and I still don't wear it. I know this is like [*sic*] really stupid."

There was agreement that they were more likely to wear helmets if their peers were also wearing helmets. Responses included "I am more comfortable wearing a helmet when my friends are wearing a helmet," and "I am embarrassed if I see a group of people my age that aren't wearing helmets, and I'm walking by with a big helmet."

A few adolescents stated they were more willing to wear a helmet at a resort where ski helmet use was more accepted. Responses included "I ski at [specific place]. Everyone there wears helmets, so it's not like it really bothers me at all," and "Up in Canada… everyone wears helmets." One adolescent expressed his likelihood of wearing a helmet would be influenced by ski patrol or ski instructors. "They're kind of like the image of safety on the mountain. They know what they're doing, and they're the teachers, so if they tell you to wear a helmet, I'm sure you'd wear a helmet."

There was consensus that helmets seemed expensive when purchased individually but inexpensive when compared to total cost of equipment packages. "It might be good to just have the helmet included in the package. Then the cost wouldn't seem as much 'cause you're spending like [*sic*] a thousand bucks or whatever for the ski package."

When asked about mandatory ski helmet rules, most said it would not affect their choice of ski area and would improve the acceptance of helmet use. Responses included "I wouldn't change where I'm going just because I'd have to like [*sic*] wear a helmet," and "It would eliminate the problem of people worrying if they looked weird to everyone else." A few adolescents did view mandatory use negatively. One said "If they made it a rule on the hills, I would have a problem with it. Lots of people would stop going to that particular place."

DISCUSSION

This pilot study provides insights into adolescent attitudes toward ski or snowboard helmet use. There was agreement that:

- Head injury is unlikely compared to other injuries.
- The use of helmets is determined by level of difficulty of the activity.
- Peer use makes personal use more acceptable and likely.
- Helmet cost is minimal compared to the total cost of the ski package.

Adolescent attitudes and behaviors also appeared to be influenced by exposure to a head injury (self, family, or friend) and the belief that helmets do protect against head injury. Mandatory helmet use was viewed positively by most of the adolescents.

These findings are similar to those of bike helmet focus groups.[8] The perceived likelihood of head injury and need for a helmet was related to the "level" of activity. The main concern about wearing helmets when others were not was due to feeling self-conscious, not fear of ridicule. There is minimal resistance to helmet use, even mandatory use. Adolescents were more likely to have a positive attitude about helmet use if other participants and the ski environment also displayed a positive and accepting attitude.

The primary limitation of this pilot study is small sample size and generalizability. However, the information gathered through this research may be useful to generate ideas and strategies for promoting adolescent helmet use and further study. It is not standard practice to include a helmet in packages for purchase or rental, which typically include skis/snowboard, poles, and boots. Levy argues that not including helmets may send a message that they are not important equipment for skiing and snowboarding.[9] Based on the diffusion of innovation theory, the acceptance of helmets should accelerate as more adolescents adopt helmets and feel more social pressure to use one, or rather, less social pressure not to wear one.[10] Mandatory use for specific ages or terrain may be beneficial. Over time, one would expect ski helmets to become standard safety equipment, similar to bike helmets and seat belts.

A positive culture of helmet use appears to be the strongest incentive for adolescents to use their own helmet when skiing or snowboarding. As one adolescent expressed, "I don't think you should try and scare kids into it. After a while people are like, well, that's exaggerating. Make it positive to wear helmets."

Funding/Support: The project described was supported by the National Institute of Health Award Number K12 HD055894 from the Eunice Kennedy Shriver National Institute of Child Health & Human Development. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Eunice Kennedy Shriver National Institute of Child Health & Human Development or the National Institutes of Health.
Financial Disclosures: None declared.

REFERENCES

1. Ackery A, Hagel BE, Provvidenza C, Tator CH. An international review of head and spinal cord injuries in alpine skiing and snowboarding. *Inj Prev.* 2007;13(6):368-375.
2. Hagel BE, Pless B, Platt RW. Trends in emergency department reported head and neck injuries among skiers and snowboarders. *Can J Public Health.* 2003;94(6):458-462.
3. Xiang H, Stallones L, Smith GA. Downhill skiing injury fatalities among children. *Inj Prev.* 2004;10(2):99-102.
4. Hagel BE, Pless IB, Goulet C, Platt RW, Robitaille Y. Effectiveness of helmets in skiers and snowboarders: case-control and case crossover study. *BMJ.* 2005;330(7486):281.
5. Mueller BA, Cummings P, Rivara FP, Brooks MA, Terasaki RD. Injuries of the head, face, and neck in relation to ski helmet use. *Epidemiology.* 2008;19(2):270-276.
6. Sulheim S, Holme I, Ekeland A, Bahr R. Helmet use and risk of head injuries in alpine skiers and snowboarders. *JAMA.* 2006;295(8):919-924.
7. Lawrence L, Shaha S, Lillis K. Observational study of helmet use among children skiing and snowboarding. *Pediatr Emerg Care.* 2008;24(4):219-221.
8. Howland J, Sargent J, Weitzman M, et al. Barriers to bicycle helmet use among children. Results of focus groups with fourth, fifth, and sixth graders. *Am J Dis Child.* 1989;143(6):741-744.
9. Levy AS, Hawkes AP, Rossie GV. Helmets for skiers and snowboarders: an injury prevention program. *Health Promot Pract.* 2007;8(3):257-265.
10. Andersen PA, Buller DB, Scott MD, et al. Prevalence and diffusion of helmet use at ski areas in western North America in 2001-02. *Inj Prev.* 2004;10(6):358-362.

advancing the art & science of medicine in the midwest

WMJ

WMJ (ISSN 1098-1861) is published through a collaboration between The Medical College of Wisconsin and The University of Wisconsin School of Medicine and Public Health. The mission of *WMJ* is to provide an opportunity to publish original research, case reports, review articles, and essays about current medical and public health issues.

Visit www.wmjonline.org to learn more.