

WINTER SPORTS INJURIES

Introduction

British Columbia is known throughout the world as a ski destination; and the resulting tourism serves as an economic driver in many parts of the province. Adults, children and youth, all engage in winter sports both recreationally and in team environments. Downhill skiing, snowboarding and ice hockey are three popular activities in which British Columbians of all ages enthusiastically participate throughout the winter months.

As with any sport and recreational endeavour, winter sports are not without their risks, and can result in serious and even fatal injuries if the appropriate prevention measures are not taken. This report focuses on the trends, patterns and prevention of injuries from three of the leading winter sports: skiing, snowboarding and ice hockey.

WHAT WE KNOW FROM RESEARCH...

Skiing/Snowboarding:

- There is a 35% reduction in head injury risk with helmet use while skiing or snowboarding¹
- There is no significant association between helmet use and increased risk of neck injury¹
- Head injuries account for 9-19%, while neck injuries account for 1-4% of all injuries reported by ski patrols and emergency departments¹⁻³
- Helmets reduce the risk of traumatic brain injury by as much as 60%⁴⁻⁵
- Helmet usage is lowest in Ontario (67%) and British Columbia (66%) ; but has increased in Canada from 67% in 2006 to 71% in 2010⁶
- Wrist guards significantly reduce the risk and prevent wrist injuries among snowboarders⁷

Hockey:

- In Pee Wee hockey, there was a significantly increased risk of injury and concussion in a body checking league compared with a non-body checking league⁸
- Full face shields, compared with half face shields, reduced the severity of concussion (playing time lost)^{9,12}
- Body checking experience in Pee Wee hockey is not protective of concussion in Bantam level¹⁰
- Mandatory use of mouth guards is highly recommended¹¹
- Use of fair play protocols are recommended¹³



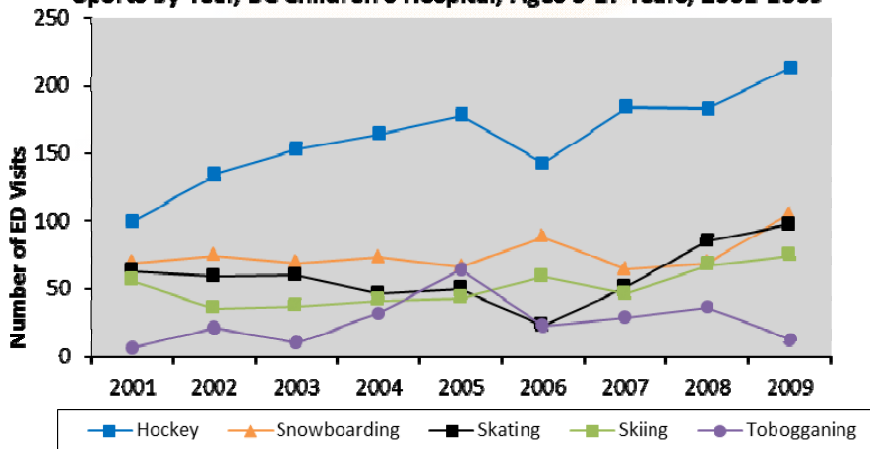
KEY HIGHLIGHTS AND PREVENTION RESOURCES...

- **Vancouver Charter on Skiing Safety** - launched by Safe Kids Canada in 2009
- **CIHR Cafe Scientifique 2011**, 'Protect Your Melon: Snow Sport Helmets - Round 2' - held in November, 2011 to continue the discussion regarding the Vancouver Charter on Skiing Safety
- **Canadian Standards Association** - published Z263.1 Recreational Alpine Skiing & Snowboard Helmets standard in 2008
- **Preventable.ca** & Insurance Bureau of Canada - 'You're probably not expecting to need a helmet today' campaign
- **ThinkFirst Canada** - 1) A Little Respect consists of a DVD, skiing/snowboard helmet card and leader's guide, 2) Smart Hockey DVD
- **Wear it Proud!** Campaign – Nova Scotia, celebrates helmet hair
- **Government of BC** - SportSafe Program
- **Ice Hockey Summit** - Mayo Clinic 2010

INJURY

Emergency Department Visits to BC Children's Hospital due to Winter Sports Injuries

Figure 1: Number of Emergency Department Visits, Leading Winter Sports by Year, BC Children's Hospital, Ages 0-17 Years, 2001-2009



Leading Causes of Injury

- The leading causes of winter sports injuries seen at BC Children's Hospital Emergency Department (ED) for the period 2001-2009 were hockey, snowboarding, skiing and skating, (Figure 1)
- Hockey injuries make up the greatest percentage of ED visits (Figure 1)

Injuries by Age and Sex

- Emergency Department visits to BC Children's Hospital for hockey injuries are higher in those aged 10-14 years (Figure 2)
- The approximate percentage of males and females seen at the ED for hockey-related injuries is equal (Figure 2)

Figure 2: Percentage of ED Visits by Age Group, Hockey, BC Children's Hospital, 2001-2009

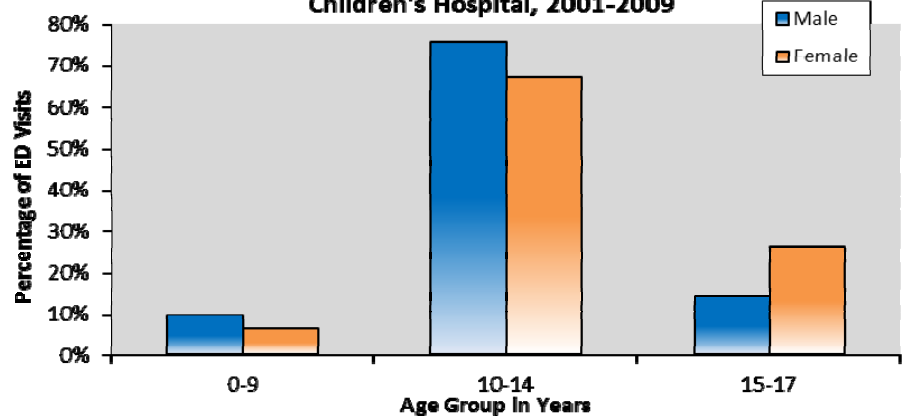
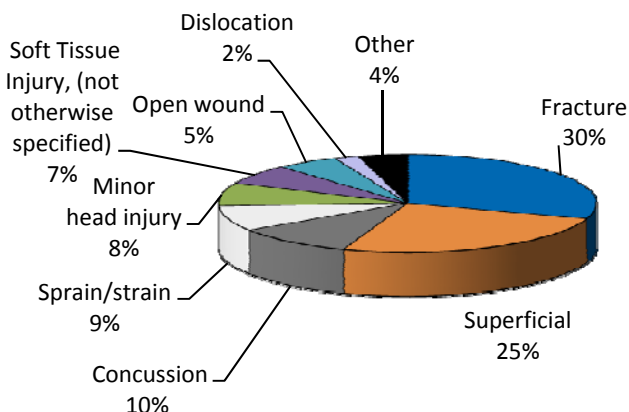


Figure 3: Emergency Department Visits by Type of Injury, Hockey, BC Children's Hospital, Ages 0-17 Years, 2001-2009



Types of Injuries

- Fractures (30%) and Superficial injuries (25%) make up the greatest percentage of hockey injuries seen at the ED (Figure 3)
- Concussions are the 3rd leading type of hockey-related injury seen at the ED (Figure 3)

Helmet Use

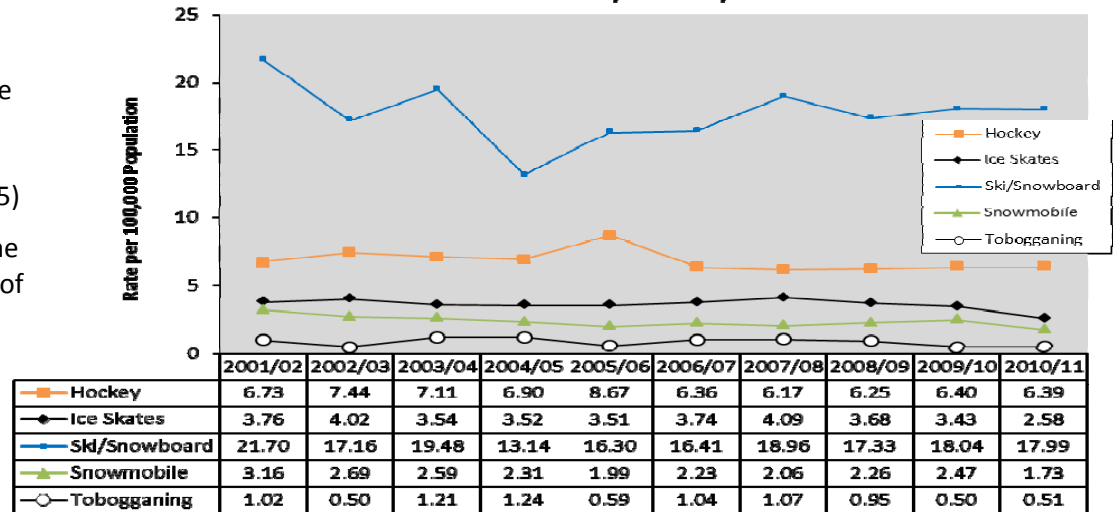
- The majority (81%) of hockey-related injuries seen at the ED involved the use of helmets

Hospitalizations due to Winter Sports Injuries

Hospitalization Trends

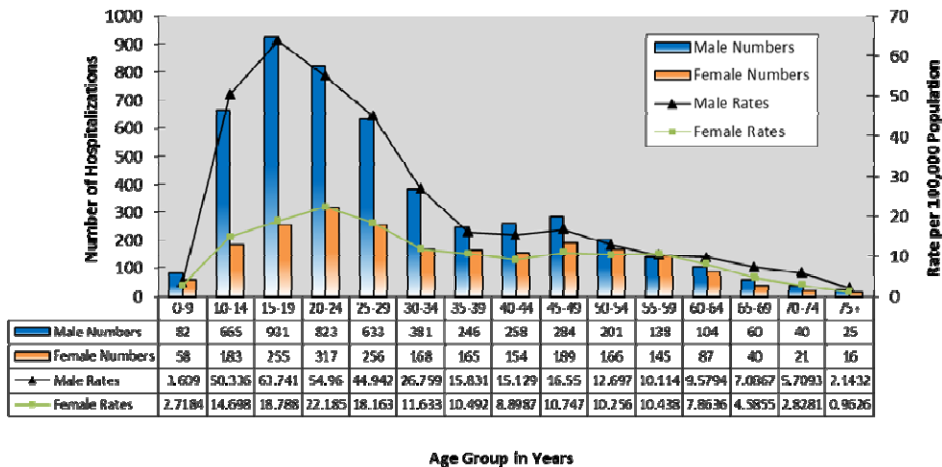
- There was a general decrease in hospitalization rates for winter sports injuries, from 2001/02 to 2010/11 (Figure 5)
- Skiing/snowboarding have the highest hospitalization rates of all winter sports injuries (Figure 5)

Figure 5: Hospitalization Rates*, Leading Winter Sports Injuries by Year, BC, 2001/02-2010/2011



*Rates standardized using 1991 Canadian Population

Figure 6: Number and Rates, Ski and Snowboard Injury Hospitalizations by Age Group, BC, 2001/02-2010/11



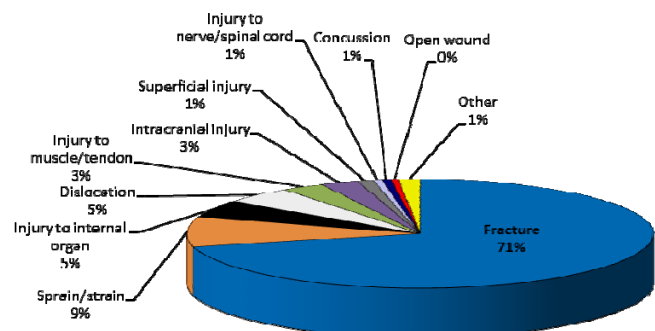
Hospitalizations by Age and Sex

- Males have significantly higher rates of ski/snowboard injury hospitalizations than females (Figure 6)
- Ages 10-29 years have the highest rates of ski/snowboard injury hospitalizations, with a peak at ages 15-19 years (Figure 6)

Figure 7: Hospitalizations by Type of Injury, Ski/Snowboard Injuries, BC, 2001/02-2010/11

Type of Injuries

- Fractures are the leading type of ski/snowboard injury hospitalization, accounting for 71% (Figure 7)
- Sprains/strains are the second leading type of injury hospitalization (9%) (Figure 7)



Methods

- Data were obtained through the Discharge Abstract Database (DAD) from the BC Ministry of Health and the emergency department data from the BC Children's Hospital (BCCH) through the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP).
- Hospitalization information on injuries in the DAD is recorded using the International Classification of Disease version 10 codes (ICD-10). Other information obtained from the DAD included demographics such as age and sex of the patient hospitalized as well as the type of injury incurred.
- Cases from CHIRPP data were extracted by conducting a search using the context codes and text search for tobogganing, snowboarding, cross country skiing, downhill skiing, ice skating, ice hockey, snowmobile and snow tubing.

Analyses

- Hospitalizations from the winter sports were investigated by year, age group and type of injury. Age standardized rates were calculated by year. Age specific rates were calculated by age group and sex.
- Emergency visits to BC Children's Hospital due to winter sport injuries for ages 1-17 years were examined by year, age group, type of injury, and helmet use.

References

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