The Social Determinants of Injury

acipcapb

The Social Determinants of Injury

COLLABORATION ATLANTIQUE POUR LA PRÉVENTION DES BLESSURES
acipcapb
ATLANTIC COLLABORATIVE ON INJURY PREVENTION

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

THE ATLANTIC COLLABORATIVE ON INJURY PREVENTION (ACIP) WOULD LIKE TO ACKNOWLEDGE HORIZONS COMMUNITY DEVELOPMENT ASSOCIATES FOR THEIR INITIAL REVIEW AND SYNTHESIS OF THE LITERATURE ON THE SOCIAL DETERMINANTS OF INJURY AND THE BEST PRACTICES FOR REDUCING INJURIES AND HEALTH DISPARITIES.

ACIP WOULD ALSO LIKE TO GRATEFULLY ACKNOWLEDGE THE CONTRIBUTIONS OF MANY INDIVIDUALS WHO REVIEWED THE SOCIAL DETERMINANTS OF INJURY AND PROVIDED FEEDBACK. THEY INCLUDE THE MEMBERS OF THE ACIP LEADERSHIP TEAM, DR. DENNIS RAPHAEL, LYNN LANGILLE, AND LISA TOBIN.

FORWARD

One of the most important public policy issues faced by those concerned with preventing injuries is taking research findings that show how the day-to-day living conditions people experience – the social determinants of health -- are important determinants of injury and applying them in the service of injury prevention. This issue is not faced only by those working in injury prevention. In the important area of chronic disease prevention, health care policymakers and workers have struggled with the task of taking the findings that social determinants of health such as income, employment and working conditions, and housing and food insecurity are important predictors of chronic diseases such as cardiovascular disease and stroke and adult-onset diabetes, and applying these findings to prevent these illnesses.

This document, *The Social Determinants of Injury*, produced by the Atlantic Collaborative on Injury Prevention not only takes on the difficult task of applying what we know about the social determinants of injury in the service of injury prevention but succeeds admirably in doing so. It carefully and critically brings together what is known about the social determinants of injury in Canada and elsewhere and draws out the implications of these findings for those working in injury prevention. As such it is one of the few documents that is able to bridge the gap between theory and action on the social determinants of injury.

One of the key concepts found in this document is the distinction between primordial prevention – "taking measures that prevent the emergence and establishment of environmental, economic, social and behavioural conditions, cultural patterns of living and so on that are known to increase the risk of disease and injury" – and traditional prevention activities such as "education, enforcement and engineering." These activities are not inconsistent with each other and the case can be made that primordial prevention activities will facilitate the uptake and success of traditional prevention activities. The importance and relevance of each approach will depend upon the particular injury prevention activity that forms the focus of one's mandate and related activities.

Injury prevention, like the broader area of health promotion, must take into account the immediate realities of individuals' day-to-day lives that include their home and work environments, their communities, and the economic, educational, and social resources each setting makes available – in conjunction with individuals' own personal resources -- to prevent injuries. The Social Determinants of Injury lays out in careful terms the complexity of this undertaking and provides a roadmap for injury prevention activity. It promises to be an important document in the efforts of promoting the well-being of Canadians.

Dennis Raphael, PhD
Professor of Health Policy and Management
York University


Stephie
'02

EXECUTIVE SUMMARY

Introduction

The purpose of this report is to provide injury prevention practitioners and policymakers with an overview of the social and economic factors that contribute to intentional and unintentional injuries. The health and safety of Atlantic Canadian communities are impacted by social, economic, and political factors. Healthy communities are strongly linked with opportunities to work, learn, play, and contribute to society, as well as the physical environment (e.g., soil, air, and water quality or safe housing and workplaces), a sense of belonging to one's community, and what types of programs are available in the community.

This report highlights the need for the injury prevention community to work in the area of primordial prevention in order to reduce rates of intentional and unintentional injuries in Atlantic Canada. Evidence shows that primordial prevention, or improving daily living conditions, will reduce the incidence and severity of injury and make individuals more receptive to injury prevention initiatives. This report identifies demographic groups and populations that are at higher risk of injury and presents supporting evidence. The purpose of identifying those at higher risk of injury is not to lay blame, but to establish a basis for prioritization of efforts and resources where they are most needed in Atlantic Canadian society. The report concludes with recommendations for improving data collection and prevention activities in the context of social and economic disparities.

Social determinants of health and injury

The social determinants of health are linked to injury through a variety of pathways including risks and hazards in community and home environments, stress caused by poverty and social exclusion, workplace pressure, hazards, and access to safety equipment, services, and education.[1] The connection between socioeconomic status (SES) and injury is mediated by conditions in workplace, housing, education, family, and neighbourhood contexts as well as type of injury.

Although injury rates have been declining in recent decades across all income levels, there is still a significant gap between the richest and poorest Canadians. Observed decreases in SES are associated with increases in fatal and serious injuries in a variety of studies.[2] As SES increases, rates of injury decline. The Canadian Institute for Health Information[3] reports that the poorest Canadians experience injury at a rate 1.3 times higher than the wealthiest. Social environments and exclusion are often influenced by SES. Poverty is commonly associated with a lack of opportunities and resources, and a sense of hopelessness and insecurity.[4] Reduced opportunity to access social and economic resources, or social exclusion, is linked to increased health risk generally.[5]

Age, population, and injury

Sub-populations and age groups may themselves be considered social determinants of injury due to various social and economic conditions that may place these populations at higher risk of injury. Children, adolescents, and seniors all experience higher rates of injury than other age groups. Numerous studies around the world have linked children and seniors of lower SES with increased risk of death or disability from injuries. The relationship between SES and injuries among adolescents varies by injury type. In the case of adolescents, social and economic determinants interact with a biological propensity for higher risk-taking behaviours. Although not applicable to all adolescents, evidence has shown that pubertal neurological changes that impact risk perception, reward-seeking, and social image can increase risk for injury.[6] Gender and sexual orientation also interact with age and other social determinants of health to affect risk for injury.

While overall injury rates have been decreasing for Aboriginal and non-Aboriginal populations, the Aboriginal people of Canada continue to experience injury rates at a significantly higher rate than non-Aboriginal people. Injury is a leading cause of death for First Nations and Inuit people, with rates 3.5 times the national average.[7] The high rates of intentional and unintentional injury in Aboriginal communities are the result of a complex interaction of social and economic determinants of health.

Best practice considerations

While there is a great deal of research evaluating the effectiveness of specific injury prevention strategies, those that target the social determinants of injury are less commonly represented in the literature. What is clear, however, is that reducing injuries is a complex process that must take into account the multilevel factors that influence behaviour, environments, and outcomes.

Injuries are the result of a complex interplay of factors on a variety of levels: individual, community, structural, and societal. The complicated, multilevel dynamic of injury means that a comprehensive, coordinated approach is required for effective injury prevention strategies. Excessive focus on either micro- or macro-level influences is likely to result in ineffective strategies.[8]

Furthermore, practitioners and policymakers must be mindful of the fact that prevention strategies can at times increase disparities if they primarily benefit those least at risk. On individual, family, and community levels, effective strategies must reduce barriers to safety, inform, create opportunities for safer behaviour, and enhance self-efficacy while influencing social norms in favour of behavioural shift.[9] Developments in education, healthy public policy, and safer environments are all essential components of successful injury prevention strategies.[10]

Recommendations

Based on the social determinants of health and injury literature review, including the identified implications for injury prevention strategies, the following recommendations for data collection, research and practice are proposed for Atlantic Canada.

Improved collaboration

Enhance collaboration with sectors outside health to facilitate better use of existing data. Examples of other sectors include:

- Transportation
- Police/RCMP
- Community services

Investigate opportunities to synthesize existing databases and data that would demonstrate linkages between socioeconomic status and injury in Atlantic Canada.

Increase partnerships outside health and injury prevention and include those working to improve quality of life.

Research

Identify social determinants of health and prevention strategies that warrant further research in the context of Atlantic Canada in order to improve policies and interventions. Possible areas of exploration include:

- Rural/urban differences
- Gender
- Aboriginal populations and injury

Knowledge translation

Build understanding among injury prevention practitioners and policymakers of the link between the social determinants of injury and the role that policies and/or interventions may play in reducing or increasing health disparities.

Encourage Atlantic Canadian injury prevention practitioners and policymakers to play an active role in primordial prevention in addition to working at other levels of injury prevention.

INTRODUCTION

About this report

The purpose of this report is to provide injury prevention practitioners and policymakers with an overview of the social and economic factors that contribute to preventable injuries. In addition to incorporating some aspects of primary prevention, this report highlights the need for the injury prevention community to work in the area of primordial prevention in order to reduce rates of intentional and unintentional injuries in Atlantic Canada. While primary prevention works to prevent injuries through individual and community efforts, *primordial prevention* involves taking measures that prevent the "emergence and establishment of environmental, economic, social and behavioural conditions, cultural patterns of living and so on that are known to increase the risk of disease" and injury.[11] This report identifies demographic groups and populations that are at higher risk of injury and presents supporting evidence. The purpose of identifying those at higher risk of injury is not to lay blame, but to establish a basis for prioritization of efforts and resources where they are most needed in Atlantic Canadian society. The report concludes with recommendations for improving data collection and prevention activities in the context of social and economic disparities.

Primordial Prevention

Primordial prevention essentially means improving daily living conditions for all citizens. The implications for injury are that:

* Incidence and severity of injury will decrease
* People will be more receptive to injury prevention messaging and strategies.

Methodology

This report provides a review of literature focusing on the links between injuries and the social determinants of health. In addition to reviewing resources from the Atlantic Collaborative on Injury Prevention (ACIP) and members of the ACIP Leadership Team, Internet searches and listserv queries were conducted on the following:

- Alberta Centre for Injury Control & Research
- *American Journal of Public Health*
- *Annual Reviews*
- *BioMed Central Public Health*
- *Injury Prevention* (BMJ)
- *Canadian Medical Association Journal*
- Canadian Nurses Association
- Centers for Disease Control and Prevention
- Child Trends Databank
- Government of Manitoba
- Government of Ontario
- Health Canada
- Health Promotion Clearinghouse
- *Health Promotion Practice Journal*
- *Paediatrics & Child Health*
- Prevention Institute
- Public Health Agency of Canada: Canadian Best Practices Portal
- Public Health Agency of Canada
- PubMed
- Safe Kids Canada
- SMARTRISK
- Social Determinants of Health: The Canadian Facts
- ThinkFirst
- World Health Organization

Health promotion, population health and the social determinants of health

The health and safety of Atlantic Canadian communities are impacted by social, economic, and political factors. An adequate income, a good education, and a safe, sustainable environment are just as important for one's health as exercise and the availability of appropriate health services. Healthy communities are strongly linked with opportunities to work, learn, play, and contribute to society, as well as the physical environment (e.g., soil, air, and water quality or safe housing and workplaces), a sense of belonging to one's community, and what types of programs are available in the community.

Health promotion is "the process of enabling people to increase control over, and to improve, their health."[12] Health promotion action includes building healthy public policy, creating supportive environments, strengthening community actions, developing personal skills, and reorienting health services. In many cases health promotion has been narrowly interpreted as education, and as a result excessive focus, time, and resources have been placed on knowledge-based initiatives at the level of the individual. This report recognizes the need for health promotion action to be comprehensive and to take place at each of the individual, community, and societal levels to truly effect change. The injury prevention community uses the "3 Es" framework – education, enforcement, and engineering – in reference to strategic directions for prevention activities. It is important for injury prevention practitioners and policymakers to interpret the Es in a broad sense and relate them to health promotion activities. Education may be a simplification of individual-level initiatives such as developing personal skills. The term enforcement can be expanded to incorporate the notion of healthy public policy at various levels, including the provision of services and supports. Engineering and design are integral to creating safe, supportive environments and ensuring access to appropriate services.

The population health approach aims to improve the health of the entire population or large sub-populations, such as seniors, youth or Aboriginal communities, by acting on the broad range of factors and conditions that affect health. Population health posits that small changes made by most people will have a much greater impact on the overall health of the population than large changes made by a few people. In addition to examining the broad factors that influence the health of a community and how they interact with one another, the population health approach also calls for stakeholders to develop multiple strategies that are based on best practices or evidence from a variety of sources (e.g., research, programs in other jurisdictions, community input) and address the root causes of community problems rather than treating the consequences.[13]

Population Health Approach

As an example, legislation requiring child-resistant packaging for some medications has been shown to be effective at reducing unintentional child poisoning.

There are a number of broad economic and social conditions known as the social determinants of health. These have been described in many ways; however, for the purpose of this report, the social determinants of health have been defined in the Canadian context[14] as:

1. **Income and income distribution or socioeconomic status:** Individual or family income and social status are strongly associated with health status. The way in which income is distributed is also linked to health. Health status is enhanced for all when the equality of income distribution is increased.
2. **Education:** Higher levels of education and literacy, which are associated with higher income and improved working conditions/employment, result in better health outcomes.
3. **Unemployment and job security:** Lack of employment or employment that is insecure is not only a source of stress but often results in material and social deprivation.
4. **Employment and working conditions:** Type of employment and working conditions can increase injury risk, particularly when jobs or the working environment are unsafe, highly stressful, or unsupportive.
5. **Early childhood development:** Social or material deprivation in early childhood, an important developmental stage, can lead to poor health outcomes later in life.
6. **Food insecurity:** Food insecurity occurs when a person is unable to have an adequate diet in either quality or quantity of food.
7. **Housing:** Homelessness, insecure housing or poor quality housing can negatively impact health and increase risk for injury.
8. **Social safety net:** Access to a social safety net means that there are a range of services, benefits, and supports available to citizens throughout their lifetime. This could include provision of supportive housing, employment support services, or child care.
9. **Social exclusion:** Social exclusion occurs when certain groups are denied the opportunity to participate in Canadian life, which can limit access to cultural, social, and economic resources.
10. **Health services:** Health is improved when individuals have timely access to appropriate, quality health care services. Despite universal health care, low-income Canadians have more difficulty accessing health care services than high-income Canadians.

Example: Youth Risk-Taking

Early childhood experiences of material or social deprivation can affect learning ability, relationships, and mental well-being. In the absence of safe and supportive environments, youth may be more likely to take excessive risks that place them at high risk for injury.

Example: Seniors' Falls

A senior living in a home with no grab bars, hand rails, and numerous obstacles may be at increased risk of falling. In addition, inadequate nutrition can contribute to risk of falling through overall poor health, weakness, injury severity, and poor fall recovery. Social safety net policies, including the provision of adequate services to seniors, could help mitigate these risk factors and reduce social isolation.

11. **Aboriginal status:** The health of Aboriginal populations in Canada is heavily impacted by the history of colonization which resulted in the residential school system, relocation and disregard for land claims. The social and economic conditions that were created as a result have caused adverse health outcomes among the First Nations, Inuit and Métis populations in Canada.

12. **Gender:** Differences in how individuals are socialized and treated based on their gender can lead to health disparities. Examples include gender-based discrimination, wage gaps, and access to resources.

13. **Race:** The experience of racism that is institutionalized, personally mediated and/or internalized has been shown to impact social and economic conditions, and ultimately health, for Canadians of colour.

14. **Disability:** In Canada many individuals living with disability are unemployed/underemployed or are low-income as a result of public policies and lack of integration.

Example: Suicide

Rates of suicide have been found to be lowest in Aboriginal communities that have some form of self-government and education system, access to community-based health and emergency services as well as cultural facilities, and resolution of land claims.

Example: Intimate-partner violence

The majority of those who experience inimate-partner violence and sexual violence are females while the majority of perpetrators are male. Societal gender norms often create power hierarchies wherein males are viewed as superior. This reduces opportunities for females and places them at higher risk of violence.

This review will focus on those determinants that research has demonstrated are highly relevant to injury and injury prevention.

Injury

In Atlantic Canada, injury is the leading cause of death for people under the age of 45.[15] In 2004 more than 1000 Atlantic Canadians died as a result of injury and the cost to the economy was $1.3 billion.[16] When injuries are not fatal, they can result in temporary or permanent disabilities. Injuries come with enormous personal cost in addition to taxing the health care system, reducing productivity, and threatening the sustainability of the four Atlantic Provinces. The majority of injuries are not "accidents" but result from factors that are embedded in the environments where people live, work, grow, and play.

People are not affected equally by injury. Reviews of the research literature worldwide indicate that individuals of low socioeconomic status (SES), members of some ethnic groups, the children of unemployed parents, and people who live in areas characterized by poverty are more likely to experience both fatal and non-fatal injuries.[17]

Canadian statistics do not suggest any outstanding exceptions to these trends. People who are young, of low socioeconomic status, and/or who are Aboriginal are disproportionately affected by injury in Canada; not only do these groups experience higher rates of injury, but individuals with low incomes also suffer from more severe types of injury.[10]

The relationship between the social determinants of health and injury is complex. Injury rates result from the interaction of factors at the individual, family, and community levels. Individual factors include lack of resources, knowledge, beliefs, and behaviours related to safety, personal stressors, work environment, and exposure to hazards. Contributors to injury at the family level include parental understanding of child development and family size, which may impact parent-child bonding, nurturing, and brain development. Factors at the community level include exposure to hazards, access to resources, and community climate or culture.[10] Injury prevention strategies must therefore carefully consider the various determinants of injury at multiple levels to effectively target interventions.

The social determinants of health are linked to injury through a variety of pathways such as risks and hazards in community and home environments, stress caused by poverty and social exclusion, workplace pressure, hazards, and access to safety equipment, services and education.[1] The connection between SES and injury is mediated by a variety of conditions in workplace, housing, education, family, and neighbourhood contexts as well as type of injury.

This report provides a review of the literature related to the social determinants of injury, particularly socioeconomic status. It highlights the interrelationship between the social determinants and the need for multiple strategies over a variety of settings. The report also identifies the implications for injury prevention strategies and considerations for best practices in injury prevention and control.


234

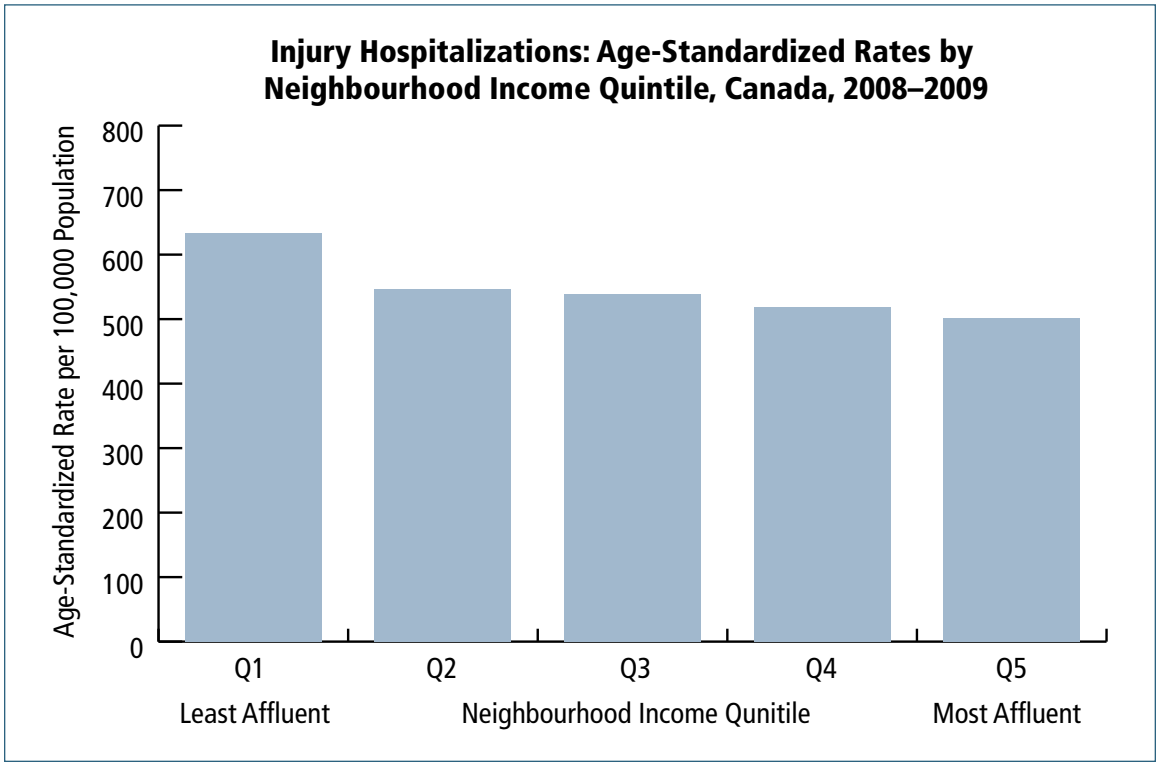
SOCIAL DETERMINANTS OF HEALTH AND INJURY

Income and income distribution

"The effect of income inequality on health reflects a combination of negative exposures and lack of resources held by individuals, along with systematic underinvestment across a wide range of human, physical, health and social infrastructure."[18]

It is estimated that if all Canadians had the injury rates of the wealthy, there would have been 21,000 fewer hospitalizations in 2008–2009.

Although injury rates have been declining in recent decades across all income levels, there is still a significant gap between the richest and poorest Canadians. A variety of studies show that observed decreases in SES are associated with increases in fatal and serious injuries.[2] As SES increases, rates of injury decline. The Canadian Institute for Health Information[3] reports that the poorest Canadians experience injury at a rate 1.3 times higher than the wealthiest. It is estimated that if all Canadians had the injury rates of the wealthy, there would have been 21,000 fewer injury hospitalizations in 2008-2009. The following table illustrates the variation in injury hospitalizations between the poorest and wealthiest neighbourhoods in Canada. Neighbourhoods are categorized into five approximately equal population groups.

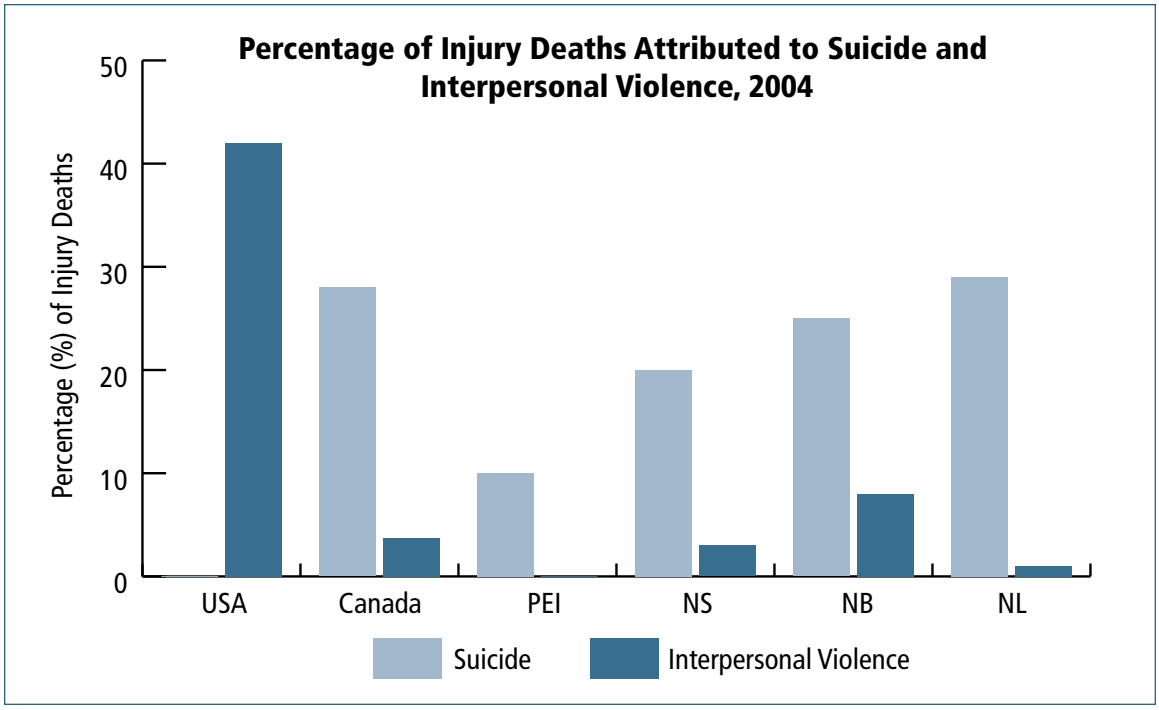


Note: Adapted from Canadian Institute for Health Information (2010)

The link between SES and more minor injuries does not always follow the same pattern as serious injury.[1,15, 19] Less serious injuries such as strains and sprains related to sports and leisure activities, for example, are more likely to occur among more affluent people than those of lower socioeconomic status. This is indicative of enhanced opportunity for recreation among wealthier individuals.[1]

International research has documented the relevance of social and cultural factors to injury, which in some cases may be a stronger predictor than SES. In the United States, 42% of all injury deaths are a result of interpersonal violence,[19] while in Canada interpersonal violence accounts for only about 3.7% of deaths. Rates of violence vary across Canada, with Manitoba experiencing the highest rate of deaths due to interpersonal violence and Prince Edward Island (PEI) showing the lowest rate. Even within Atlantic Canada there is variation: in 2004 New Brunswick had the highest rate (8%) of injury-related deaths caused by interpersonal violence followed by Nova Scotia (3%), Newfoundland and Labrador (1%), and PEI (0%).[16] Social and cultural differences are also evident when violence towards children is considered. Homicide is the cause of 36% of pediatric injury-related deaths in the United States, but only 3% in the United Kingdom.[19]

Correlation between suicide rates and SES also varies significantly among different countries, suggesting that culture and other societal influences play an important role in this type of injury.[1] However, research in Nova Scotia demonstrates that the rate of hospitalization for suicide attempts was higher in low-income quintiles than in high-income quintiles. In Canada, suicide was the leading cause (28%) of injury-related deaths in 2004; in Atlantic Canada, the rates varied among PEI (10%), Nova Scotia (20%), New Brunswick (25%), and Newfoundland and Labrador (29%). It is interesting to note that Newfoundland and Labrador simultaneously had the highest suicide rate in the Atlantic Provinces and nearly the lowest rate of deaths from interpersonal violence.[16]



Note: Adapted from SMARTRISK (2009)

Communities characterized by social deprivation frequently experience higher rates of suicide, especially among males and youth, who seem to be most vulnerable to the effects of low socioeconomic status.[17] In Canada, low-income individuals are 3.2 times more likely to die by suicide than individuals of middle- or high-income groups.[2] In addition, it has been found that risk of both interpersonal and self-inflicted violence was highest for adolescents from families in receipt of welfare benefits.[20] Suicide intervention and violence prevention strategies must therefore consider relevant societal and community influences, as well as the provision of appropriate mental health services and opportunities for social participation and self-actualization.

Falls are the leading cause of unintentional injuries and hospitalizations in Canada and are no exception to the trend of increased vulnerability for individuals of lower SES. Data from the Canadian Community Health Survey demonstrated that seniors with an annual household income of less than $15,000 were more likely to have experienced an injury from a fall than the senior population as a whole.[21] Income as a risk factor for seniors' falls influences and intersects with general health and well-being, social supports, quality of housing and nutrition, and access to services and assistive devices.[21]

Motor vehicle collisions are a leading cause of injury-related death and hospitalization in Atlantic Canada across all age groups.[16] As with other types of injuries, those related to motor vehicle collision increase as income decreases, with one notable exception. Among youth aged 15-24, who are at the highest risk of this injury type, there is no clear correlation between income and likelihood of injury.[3] Income is a predictor of motor vehicle injury among children aged 0-14 and adults over the age of 24. One Canadian study demonstrated that children living in low-income neighbourhoods, particularly in rural areas, had greater rates of hospitalization related to motor vehicle injury than children from wealthier neighbourhoods.[22] Increased exposure to hazards and decreased access to safety measures may be part of this problem; research has found, for example, that child safety seat use is lowest among rural and low-income families, at least in part because of financial barriers to purchasing suitable equipment.[23]

Employment, working conditions, and injury

While most types of injury have been on the decline in recent decades, deaths due to workplace injuries in Canada have increased. In 2003, Canada ranked fifth highest among 29 OECD countries in rates of death due to injury in the workplace and was the most highly developed country in the top five. The most dangerous workplaces in Canada include the mining, forestry, fishing, agriculture, and construction industries.[24] One study of workplace injury across Canada found that while young males are more likely to be injured at work than females, adolescent (age 15-17) males were less likely than young adult (age 18-24) males to be injured at work. White workers were also found to be 59% more likely than members of racialized groups to be injured at work. These findings may be due in part to adolescents and racialized individuals being relegated to more secondary roles that require them to perform different jobs within a workplace.[25]

While injuries in the workplace are often under-reported, 30% of Canadians believe that their health and safety are at risk because of their working conditions. Some of the factors that contribute to workplace safety concerns include stress, long working hours and not enough vacation time, lack of employment security, physical conditions, and a lack of control within the workplace.[14]

Social and economic exclusion in the labour market is linked in a variety of ways to health risk. Racialized persons and non-European immigrants to Canada tend to be employed at levels that fail to recognize their educational achievements. Regardless of education level, these groups are disproportionately represented in lower income brackets, and are more likely to live in low-income communities and to be employed in more dangerous work environments. Members of racial minorities are frequently employed in under-regulated conditions that require long hours and offer low pay. Increases in injury risk result from poor working conditions, high stress levels, and having to live in sub-standard housing and in areas of concentrated poverty.[5]

Individuals of lower SES are more vulnerable to workplace injury. "Blue-collar" labour is often simultaneously more dangerous and less well-paying than "white-collar" work. Differences are also clearly and predictably evident between type of workplace: individuals employed in farming, fishing, forestry, manufacturing, or transport sectors are far more likely to be injured than those employed in clerical or sales positions.[25]

Gender is also a contributing factor to workplace health and injury, intersecting with socioeconomic status and education. Jobs that have traditionally been dominated by males or females bring specific risks. Certain jobs that are traditionally occupied by females tend to be lower wage or underpaying. As an example, continuing care assistants are typically female, earn lower wages, and work in an environment that places them at higher risk of both intentional and unintentional injury. In addition to the effect of low income on injury risk, females are at higher risk for experiencing violence in the workplace, including physical, sexual, and psychological harassment and abuse. They may also be more likely to experience repetitive stress injuries such as carpal tunnel syndrome.[26] As described above, blue-collar labour, which is traditionally male-dominated, is typically more dangerous than other occupations.

Work-related injury has been found to vary among the Canadian provinces, with Ontario showing the lowest rate of injury at work for young males, the portion of the working population most at risk of injury. Atlantic Canada is second lowest, and experiences somewhat higher rates of job-related injury than Ontario. Ontario has the lowest rate of work-related injury, even when type of employment is controlled for, suggesting that differences in enforcement, education, and exposure to workplace hazards are relevant, as Ontario has the strongest occupational health and safety legislation and enforcement in the country.[25]

Social environments, social exclusion and injury

Several studies have identified correlations between community characteristics and higher rates of injury due to such causes as interpersonal violence and housing hazards.[1] Low levels of social cohesion are, for example, associated with high rates of suicide, interpersonal violence, and child abuse.[2] Suicide attempts have also been linked with social environment. Supportive social environments have been linked with fewer suicide attempts among lesbian, gay, and bisexual youth. Whether an environment is defined as "supportive" depends on such factors as the ruling political party, the number of same-sex couples and gay-straight alliances, and the existence and enforcement of anti-bullying policies.[27]

Higher injury rates are also correlated with living in areas of concentrated poverty and/or concentrated minority group status.[28] While it probably comes as little surprise that communities characterized by concentrated poverty have higher rates of intentional injury resulting from crime and violence, it is perhaps less intuitive that these communities also experience more fatal and non-fatal injuries from causes such as motor vehicle collisions and fire.[1]

Communities characterized by lower SES frequently experience higher rates of pedestrians being harmed in incidents involving motor vehicles, often because of high traffic volume and speeding cars in lower income areas of urban centres. Low income, education and employment status, and high neighbourhood unemployment rates also frequently correlate with increased risk of injury due to fire, drowning, and poisoning.[17] Studies in the United States and United Kingdom identify significantly higher risk of injury in house fires for individuals who either live in low-income neighbourhoods or who are themselves of low education or SES.[2] Increased injury rates in low-income areas are often due in part to structural hazards resulting from poor urban design and inadequate housing.

Social environments and exclusion are often influenced by SES. Poverty is commonly associated with a lack of opportunities and resources, as well as a sense of hopelessness and insecurity.[4] Reduced opportunity to access social and economic resources, or social exclusion, is linked to increased health risk generally.[5] The connection between poverty and poor health has been identified by many authors. Overall death rates have been found to be 28% higher in the poorest neighbourhoods of Canada, while suicide rates are nearly twice those seen in the wealthiest areas.[14] US studies have shown that both adults and children of visible minority groups (other than Asian) were significantly more likely to suffer from serious or fatal injuries. Racialized persons, and African-American children in particular, were found to be significantly more likely to suffer from both intentional and unintentional injury than children of European descent.[29]

Education, literacy and injury

Level of education and literacy intersect with SES, employment, and access to services to affect injury risk. Early childhood experiences are fundamental to shaping lifetime outcomes related to learning and physical and mental well-being. Stable, safe, and supportive environments that are bolstered by public and private sector policies and programs are crucial to optimal healthy child development and reduced risk of injury. Examples of such policies include universal child care, support for breastfeeding, and employer-paid subsidies to top up maternity leave benefits. Such environments allow for physiological adaptations in the brain that facilitate learning.[30]

Studies have demonstrated that education levels affect one's risk for serious injury, both fatal and non-fatal. The rate of serious non-fatal injury is higher for individuals of lower education levels, but less-serious injury is not so clearly correlated with education.[1] Lower education levels have been linked to significantly higher death rates from a variety of health concerns, especially for people with less than a high school education.[31] International studies indicate, for example, that less-educated men are more likely to experience fatal automobile crashes than more highly educated men.[32] Completion of post-secondary education is associated with lower risk of injury. Furthermore, Canadian children whose parents have some form of post-secondary education experience better health than those whose parents have lower levels of education.[14]

Housing and injury

The rate of injuries that occur in the home varies among different types of residence. Data from the United States indicates that older units and rental housing are strongly associated with increased risk of injury to children.[28] Residential hazards associated with injury include structural defects, insufficient lighting, and a lack of window guards, grab bars or safety gates.[33] (The specific risks to children and seniors are explored in the following section on *Age, Population and Injury*.) Individuals who reside in rental or substandard housing are more likely to be at risk because of a lack of safety equipment for their children and possible structural hazards. When housing maintenance and upgrading is deferred or neglected, the risk of hazards increases. Some of these potential risks include substandard heating or electrical systems, and stairways without appropriate safety features (e.g., too narrow, inadequate handrails, poor lighting, lack of safety gates). These risks are likely to be higher for individuals of lower SES, since people who are struggling to afford to maintain older homes or who reside in low-income rental units often live without appropriate upgrades. High tenant turnover in rental housing, as is often the case in more poorly maintained units, also exposes a greater number of people to potential hazards.[28] Poorly maintained and unaffordable housing options are linked to higher injury rates through associated stress, mental health issues, and substance abuse.[14]

Children are especially vulnerable to injury in the home. Given the large amount of time that children spend indoors, it is perhaps not surprising that the majority of childhood injuries happen where they live. Falls and burns are the most common types of residence-based injuries incurred by children,[28] followed by poisoning.[33] In Atlantic Canada, falls from stairs and furniture account for 17% of pediatric falls resulting in hospitalization, while burns are the second leading cause of fatal injury in children. About 10% of all burns resulting in hospitalization of children are caused by tap water that is too hot.[34] The link between living in areas of concentrated poverty and concentrated racial minority status and injury to children is partially explained by housing conditions, as children who live in older or rented homes experience higher rates of injury.[28] The injuries associated with structural problems are often more serious than those that result from more common household hazards, such as falls from furniture. Fatal household injuries are frequently caused by falls from windows and stairs, as well as by fires caused by faulty electrical wiring and appliances.[35]

Rural and urban environments and injury

Urbanization often results in a polarization of rich and poor, with areas of concentrated poverty in urban settings exacerbating the risks of injury associated with lower SES.[4] Having few informal sources of necessities (e.g., vegetable gardens, wood for heating) also makes life more stressful for the urban poor. There is some evidence of higher rates of mental illness, substance abuse, and a lack of social support for people of lower SES residing in cities.[4]

Rural life, on the other hand, has risks of its own. Rural populations have less access to emergency medical care, which can exacerbate the effects of an injury.[2] Children in rural Manitoba were found to be more likely to suffer injury and death as the result of an injury than children in the province's urban areas.[36] This difference was especially notable for the children of northern Manitoba, a finding that may be linked to the high Aboriginal population in that region.

Lower SES also correlates with increased risk of motor vehicle collisions in rural areas, most likely because people have to drive increased distances, rely on less road-worthy vehicles, and face poor road conditions – all of which increase their exposure to the risk of being injured in a motor vehicle crash. However, some studies have found the opposite in urban settings, suggesting that wealthier urban residents are more likely to have cars than the urban poor, who may be more likely to use public transport.[1]

Gender

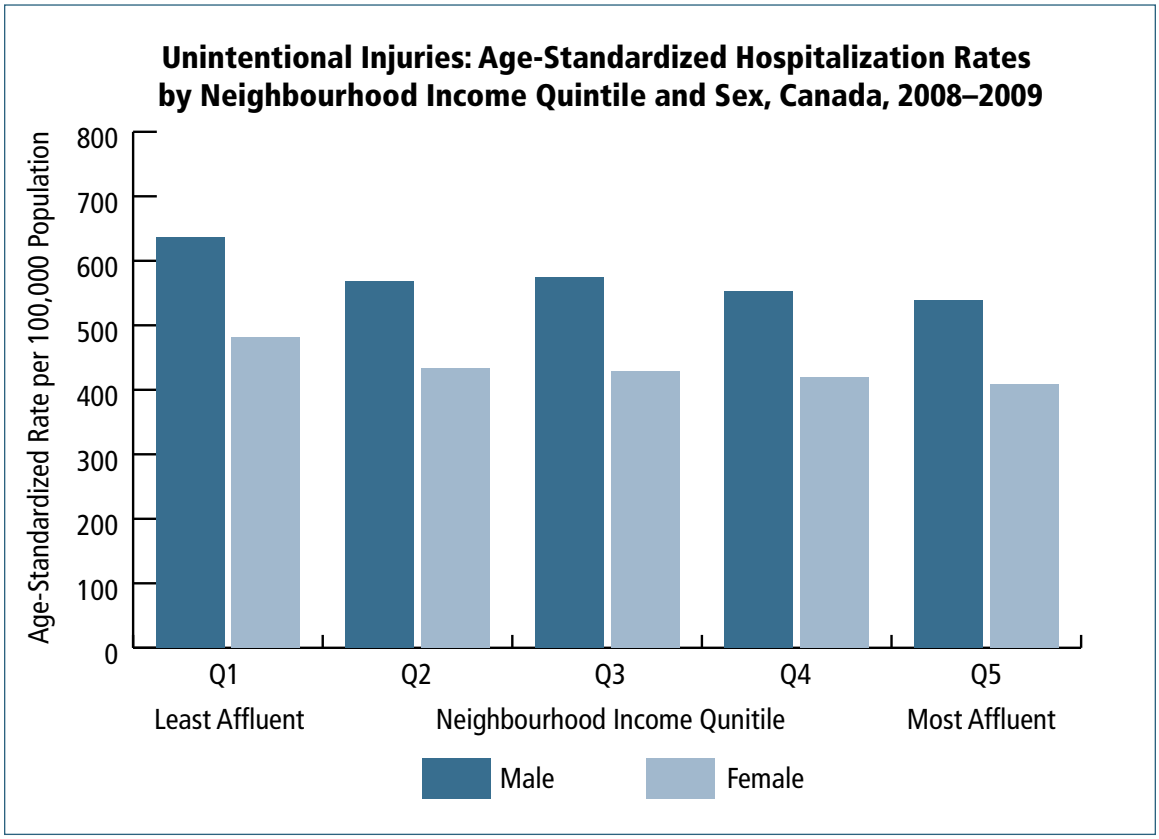
For the purposes of this section it is important to differentiate between sex and gender. Sex refers to biological and anatomical differences, whereas gender refers to socially constructed roles, attitudes, and behaviours that are assigned to men or women in a particular culture. Although both gender and sex are typically described in dichotomous terms of "male" and "female" and much of the research in this section is presented as such, this may not adequately encompass the experiences of all individuals when describing either their sex or gender identity.[54] The experiences of individuals who identify as transgendered are also addressed in this report's section on *LGBT People*.

Gender affects risk for injury. Until the age of 65, men are more likely to experience an injury. At age 65 the trend changes and women are more likely to be injured, particularly by falls.[21] Men are more likely to suffer injury from assault and from sports and leisure activities.[19] Canadian men, especially young men, are also more likely than women to be fatally injured in motor vehicle collisions, die by suicide, and be killed through interpersonal violence.[16]

Social constructs of masculinity have been identified as a social determinant of injury risk for Canadian males. *"…men's health is sometimes influenced – for the worse – by unhealthy constructs of masculinity that idealize aggressiveness, dominance and excessive self-reliance."*[14] Such constructs include projection of strength, individuality, dominance, and physical aggression while expressions of emotion or help-seeking are to be repressed as a sign of weakness. These socially driven traits can result in increased risk-taking and ultimately increased injury risk for males of all ages.[55]

While in Canada men tend to be at higher risk for injuries, women also face risk related to a variety of intersecting sociocultural factors that may result in unequal power relationships with males and reduced opportunities for employment or lower wages.[56] For example, Canadian women earn an average of $17,000 less per year than their male counterparts, with more women (10%) than men (9%) living with low income.[57] These sociocultural factors place women at increased risk for physical, sexual, and emotional violence in particular. Women are over-represented as victims of intimate-partner violence and sexual violence, while men are over-represented as perpetrators.

In North America, sexual harassment and violence toward females is associated with the cultural sexualization of women and girls in media, marketing practices, and products. Female children, teenagers, and adults are more likely to be sexualized in advertisements, television shows, movies, video games, music videos, and magazines. Messages of sexualization also exist in interpersonal relationships and may be internalized by females. The consequences vary but can impact physical and mental health, cognitive functioning, sexuality, and attitudes and beliefs.[58] This growing cultural phenomenon intersects with social constructs of masculinity to perpetuate gender inequity and power imbalances, increasing risk for sexual violence.



Note: Adapted from Canadian Institute for Health Information (2010)

Gender is a factor that interacts with culture and SES to impact health and injury rates in important ways. Although men have higher rates of injury, the socioeconomic gradient is similar between males and females as demonstrated in the following table.

Males in the lowest income areas of Canada have the shortest lifespan of all Canadians, and the difference between life expectancy for men and women is greatest in these areas, suggesting that poverty may have a stronger negative impact on men's health than on women's health. Social exclusion also appears to have a more severe impact on Canadian men, who are more likely to die by suicide, become homeless, develop severe substance abuse problems, and become involved in violent crime as either a victim or perpetrator.[14]

Injury trends are also associated with gender differences in children. Of children aged 1-14 who were hospitalized as a result of unintentional injury in Atlantic Canada between 1996 and 2005, 60% were male.[34] Many variations in injury rates can be attributed to socialization. Despite (or perhaps resulting in) a higher injury rate, boys are commonly encouraged to be risk takers; girls, on the other hand, are protected and cautioned more, as parents and children of both sexes commonly, and erroneously, assume that girls are more at risk of injury.[59]

Sex- and gender-based analysis (SGBA) is one way in which injury prevention programming, policy, and research can more effectively address gender disparities in injury risk. SGBA ensures that the similarities and differences of different genders and sexes are identified and addressed.[54]

AGE, POPULATION AND INJURY

Sub-populations and age groups can be considered social determinants of injury due to various social and economic conditions that may place these populations at higher risk of injury. This section will provide an overview of evidence demonstrating the increased rates of injury among certain sub-populations in Canada. The purpose of identifying those at higher risk of injury is not to lay blame, but to establish a basis for prioritization of efforts and resources where they are most needed in Atlantic Canadian society.

Children

"Injury is responsible for more deaths of children in Atlantic Canada aged 1-14 than any other cause, and in 2004 represented an economic burden of $206 million."[34]

"The overall unintentional injury hospitalization rate of children in Atlantic Canada was significantly higher (in 1995-2004) than the overall national rate: 741.9 hospitalizations /100,000 population as compared to the Canadian rate of 608.7 hospitalizations/100,000 population."[34]

In Canada the most common causes of injury-related death in children are motor vehicle collisions, suffocation, drowning, and burns. Deaths due to injury in Canada decreased between 1979 and 2002 for all causes except suffocation among children aged 10-14 (which increased because of a rise in suicide attempts by hanging) and infant drowning, which did not change significantly. Despite some progress in injury prevention, injuries remain the greatest cause of death and disability for Canadian children.[37]

Statistics specific to Atlantic Canada present some interesting variations from the national picture. While the overall rate of fatal unintentional injuries is similar to the national figure, the rate of hospitalization due to unintentional injury continues to be significantly higher in Atlantic Canada, despite a 31% decline in injury-related hospitalization between 1995 and 2006. However, the rate of childhood death from automobile collisions (0.5 deaths/100,000 population) is significantly lower than the national rate (1.1 deaths/100,000 population). The leading causes of injury-related pediatric deaths in Atlantic Canada are pedestrian (12%), threats to breathing (11%), drowning (11%), fire/burns (11%), and occupant of motor vehicle collisions (7%). The leading causes of injury to Atlantic Canadian children resulting in hospitalization are falls (44%), cycling (8%), and poisoning (7%).[34]

Rates of intentional injuries are also a serious concern. Childhood fatalities due to suicide increased slightly between 1979 and 2002, while rates of death due to assault were unchanged.[37] Suicide, which is the second leading cause of fatal injury in children across Canada, is one of the few types of injury whose rate is rising rather than declining. Suicide rates are clearly impacted by social context, as demonstrated by the significant differences in suicide rates among communities. For example, a Manitoba study found that children

were seven times more likely to be hospitalized and three times more likely to die due to suicide attempts in northern Manitoba, where there is a high concentration of Aboriginal communities, than in southern regions of that province.[36]

Male children and children aged 1-4 are particularly prone to injury requiring hospital emergency room care.[33] Numerous studies from around the world have linked lower SES with increased risk of death or disability from injuries to children.[38] While the rate of death from injury has declined for children in all socioeconomic levels in recent years, children from lower SES households continue to have disproportionately high fatal injury rates, especially in deaths due to pedestrian traffic incidents, fires, drowning, and falls.[38] Injury-related deaths among Nova Scotian children increase as household income decreases.[39] Children who live in the poorest urban areas in Canada experience a rate of injury from motor vehicle collisions with pedestrians or bicyclists that is four times higher than that of children in wealthy urban areas.[2] While most studies show a strong relationship between SES and fatal injury to children, the relationship between minor injury and SES is less clear.[19]

A Canadian study[40] that examined the connection between SES and childhood injury in Alberta sheds some light on this complex relationship. Male children of all socioeconomic groups were more likely to be injured than female children, especially in the age group 13-17 and at age 2, except for poisonings, dislocations, strains, and sprains. The most significant inverse correlation between SES and injury was apparent for children aged 0-9, with only a slight relationship for children aged 10-17. The only injuries not associated with lower SES included sprains, strains, and fractures. Such injuries may be associated with recreational activities that are less available to children of lower SES.[40]

Although low SES correlated with higher rates of childhood injury, children of families that relied on social assistance and those with Aboriginal status had the highest rates of all forms of injury; the rates of injury for children of the working poor were significantly less, despite having comparable income.[40] The correlation between childhood injury and receipt of social assistance or Aboriginal status was particularly significant for injuries caused by burns, poisoning, and (for social assistance recipients) internal injuries.[1] These authors also found higher rates of childhood injury within an urban setting, with the correlation between injury rates and SES disappearing in rural Alberta. These findings suggest that there may be a relationship between injury and the conditions that are associated with concentrated poverty (e.g., less-safe housing and neighbourhoods, lower levels of education, higher rates of drug and alcohol abuse).[40] High stress levels in these communities may also play a role; researchers found that parents with high stress levels and low ability to cope with stress showed less awareness of safety hazards and took fewer precautions to prevent injury.[41]

A recent study of serious and fatal injuries among children in Manitoba underlines the complexity of the nature of injury. Manitoba's rate of child mortality due to injury is significantly higher than national rates, so these findings must be considered in context. Contrary to some of the findings from nearby Alberta, data from Manitoba indicates that

1 Cause of injury was not included in the data set for this study

rural children, Aboriginal children and children of families experiencing low SES were at higher risk of injury hospitalizations and death. In particular, rates of serious injury to children from interpersonal violence, suicide, drowning, poisoning, and falls in more sparsely populated, northern regions were significantly higher than elsewhere in Manitoba. This may be related to increased exposure to hazards and a lack of safety equipment. Northern Manitoba is also populated primarily by First Nations people, who experience a higher rate of injury across the country. Low SES was found to be significantly correlated with death from drowning, falls, homicide, and fire, while individual SES was less clearly connected with death from poisoning, suicide, or motor vehicle collisions. Low neighbourhood SES also correlated with increased risk for hospitalization due to suicide attempts, choking, poisoning, fire, and violence perpetrated by others.[36]

Serious injury causing childhood hospitalization or death in Manitoba was also correlated with measures of neighbourhood SES, indicating that children who live in areas characterized by low income were more prone to serious injury. The authors of this study suggest that this may in part be related to community attitudes and access to and use of safety equipment; higher income families were significantly more likely to use seatbelts and helmets. Helmet use was also more prevalent in urban settings than in the rural areas of Manitoba.[36]

Despite a degree of success in injury prevention, injury continues to account for more deaths for children and youth than all other causes combined. Compared to other developed nations, Canada does not perform well, ranking 22nd out of 29 OECD countries in preventing childhood injuries.[42] If Canada had had injury control comparable to Sweden's, 1233 Canadian children who died between 1991 and 1995 would still be alive.[43] Despite this ranking, Statistics Canada data indicate that unintentional fatal child injuries have decreased significantly between 1979 and 2002, suggesting that prevention strategies have had some success.[37]

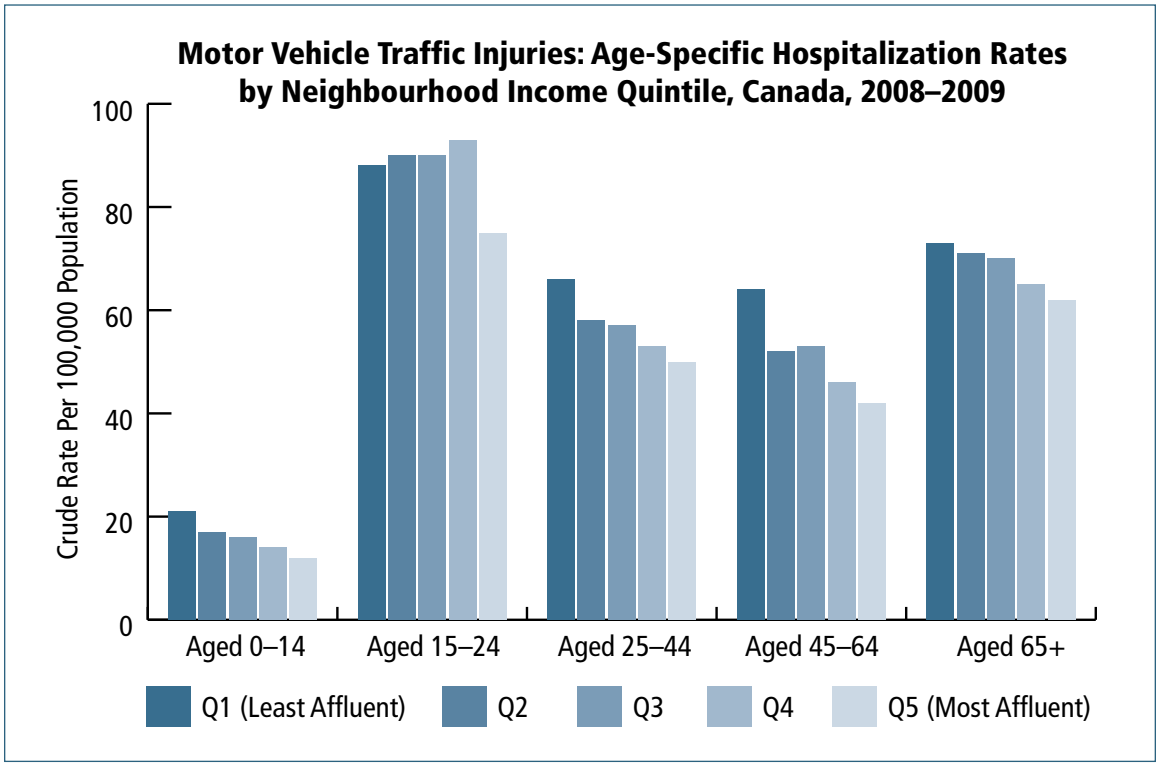
Adolescents

Although much research has been conducted on the high rates of injury among adolescents, practitioners struggle to understand how to effectively prevent injuries in this age group. Social and economic determinants interact with adolescents' biological propensity for higher risk-taking behaviours, so while risk-taking has benefits and is part of adolescent development, inappropriate or excessive risk-taking brings with it increased risk of harm. Although not applicable to all adolescents, evidence has shown that pubertal neurological changes that impact risk perception, reward-seeking, and social image can increase risk for injury.[6]

The pre-frontal cortex is an area of the brain that is important in regulating decision-making, impulsivity, and emotional arousal; it also influences one's ability to anticipate consequences. As the brain matures into one's 20s and the pre-frontal cortex becomes fully developed, this propensity for risk-taking is reduced. In addition to the role of the pre-frontal cortex, changes to sex hormones and neurotransmitters that come with puberty are known to impact stress and emotional responses among adolescents. The combination of these developmental changes helps to explain why adolescents may tend towards riskier behaviour despite having cognitive functioning that is similar to that of adults.[6] These developmental changes also help explain why perceived risks and benefits of a given behaviour may be interpreted differently between age groups.[44] The developmental changes that increase risk-taking also enhance the perceived importance of social image and social identity among adolescents.[6] Researchers argue that perceived social benefits of risk-taking and substance use may in fact be better predictors of whether the behaviour will be undertaken than knowledge of the consequences. Adolescents' perception of risks and benefits in relation to risk-taking means that knowledge of risk-related consequences is not a deterrent, and in some instances may increase the likelihood of the risk-taking behaviour.[6] That some of these risk-taking tendencies may be innate demonstrates the role that creating safer environments can play in mitigating injury risk. A safer environment includes not only the physical environment, but also the social and cultural influences that shape norms and perceptions for adolescents.

The social determinants of injury to adolescents across SES levels are not well understood. While injury risk is generally assumed to be inversely related to socioeconomic status, this does not appear to hold true for all forms of injury among adolescents.[45] The relationship between non-fatal injury and SES is complicated and research in this area is not consistent; however, it is clear that the relationship is complex and varies with community and individual factors as well as type of injury.[46] Research in Nova Scotia demonstrates that young males who are socially deprived and living in a rural area are at the highest risk of injury-related death for both intentional and unintentional injuries.[47]

An international study of injury in adolescents has revealed that sports-related injuries are more common in groups with higher SES, no doubt due to an increase in access to recreational opportunities. Adolescents are disproportionately represented in motor vehicle fatalities and non-fatal injuries. The link between SES and motor vehicle collisions, which are the leading cause of death for Canadian adolescents, is not as evident with this age group



Note: Adapted from Canadian Institute for Health Information (2010)

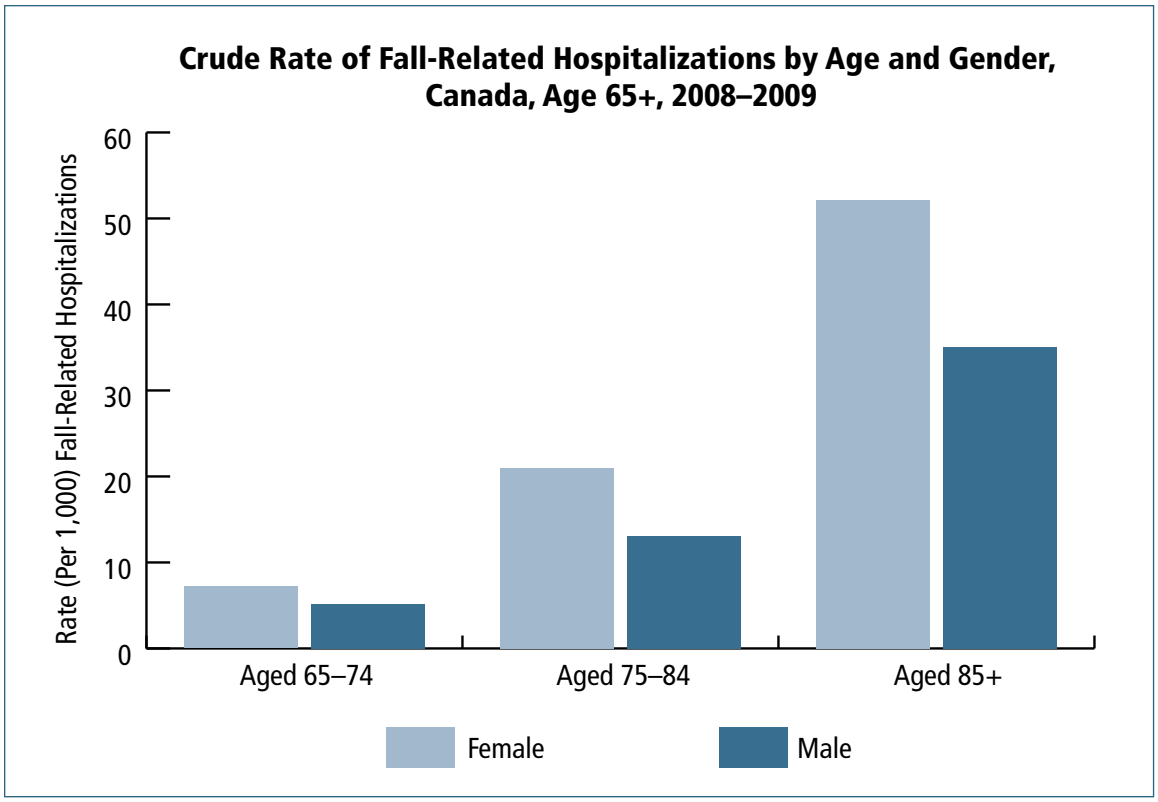
as with other age categories. The following graph shows that hospitalizations as a result of motor vehicle collisions are more frequent in lower-income quintiles for all age groups except adolescents.[3]

Lower SES and alcohol use (a risk-taking behaviour) were found to be strongly correlated with injuries related to fighting and injuries that occurred on the street, as opposed to in a more organized setting such as a school.[45] A Canadian study has replicated these findings, revealing that lower SES is correlated with increased risk for fighting injuries and serious injuries requiring hospitalization, while higher SES is correlated with increased risk for sports-related injuries.[48] Increased hospitalization due to injury was also positively correlated with lower neighbourhood SES, reinforcing the importance of community factors on injury prevalence. Neighbourhood characteristics such as increased levels of crime and violence, as well as family characteristics such as low levels of supervision and antisocial attitudes, may contribute to the increased risk of injury.[48] While low SES has been correlated with increased aggression in youth, support from families, peers, and schools has been found to mitigate this risk factor.[49]

A Swedish study of youth aged 10-19 has revealed that families with a sole parent and those in receipt of social assistance benefits experience increased rates of suicide and interpersonal violence. Given the relative generosity of the Swedish welfare system, which is designed to ensure that recipients of welfare benefits do not live in poverty, these findings suggest that low income is neither the primary nor sole factor in these statistics. This study underscores the importance of family and social circumstances in understanding intentional injury in adolescents.[20]

Seniors

Falls are the most common form of injury for individuals over age 50.[21] While younger males are more likely than younger women to be injured by falling, this statistic reverses among seniors: elderly women are far more likely to be injured through falls than elderly men. Although higher among women, rates of fall-related injuries dramatically increase for both males and females as they age, with the highest rates experienced by those aged 80+ years, as shown in the following chart.[50]



Note: Adapted from Scott, Wagar & Elliott (2010)

In Canada in 2004, the per capita cost of falls was 23% higher for males aged 25-64 than for females of the same age. In the over-65 age group, however, costs due to falls were 74% higher for women.[16]

In Atlantic Canada, care for seniors accounts for 30% of the direct cost of injuries. Of those seniors injured by falls, 70% are women. While the rates vary somewhat throughout the Atlantic Provinces, this trend remains constant. A significant proportion of the direct costs of injury in Atlantic Canada can be attributed to injured seniors. Injuries to seniors caused by falls ranges between 79% in PEI and 85% in Nova Scotia. The majority of the cost of falls can be attributed to senior women, including 68% in Newfoundland and Labrador and 77% in PEI.[16]

Falls frequently have more severe consequences for the elderly and these are exacerbated by socioeconomic circumstances. Many of the key risk factors for seniors' falls are either directly or indirectly related to social determinants of health. For example, low income can lead to poor diet and housing, lack of social support, a dearth of opportunities for activity, and even inappropriate footwear. Low education levels also can contribute to risk of falls since such seniors may have less understanding of safety measures, proper diet, and healthy lifestyles. Inadequate housing that does not have safety features such as grab bars, hand rails, and non-slip surfaces in bathrooms also contributes to an increased likelihood of injury. (Quality of housing and its implications for injury is addressed in the Housing section of this report.) Research has demonstrated that seniors living with dementia are more likely to experience a fall than those without dementia.[51]

In addition to encountering barriers that hinder access to services such as "meals on wheels", home care, and community support, low-income seniors are more likely to live in low SES neighbourhoods that suffer from disrepair, poor design features, and inadequate maintenance. Community characteristics that contribute to falls include poorly maintained sidewalks, obstacles, poor ice and snow removal, and a lack of handrails and rest areas.

Older drivers may be at increased risk of a motor vehicle collision as a result of functional or cognitive conditions or medical issues. However, seniors still have a lower rate of collisions than other segments of the population, particularly new and young drivers. Because the ability to drive is linked with quality of life, it is important that older Canadians be allowed to drive according to their ability, a practice called conditional driving.[52]

After falls and motor vehicle collisions, injuries related to burns are common among older adults. A recent review of the literature demonstrated that older adults have a higher frequency of burns from fire than other age groups. Incorrect use of electrical appliances and mobility issues were found to be common factors.[53]

Aboriginal people

> The purpose of identifying those at higher risk of injury is not to lay blame, but to establish a basis for prioritization of efforts and resources where they are most needed in Atlantic Canadian society.

While overall injury rates have been decreasing for Aboriginal and non-Aboriginal populations, the Aboriginal people of Canada continue to experience significantly higher injury rates than non-Aboriginal people. Injury is a leading cause of death for First Nations and Inuit people, with rates 3.5 times the national average.[7] The high rates of intentional and unintentional injury in Aboriginal communities are the result of a complex interaction of social and economic determinants of health. High rates of poverty, social exclusion, poor housing quality and housing shortages, lower levels of education and employment, and a young population contribute significantly to injury rates. In addition to the social determinants of health listed above and discussed throughout this report, a number of other determinants specific to Aboriginal people have been identified. These additional determinants incorporate the historical experiences and culture of Aboriginal people in Canada and include the effects of colonization, globalization, and migration, as well as the need for cultural continuity, access, territory, and self-determination.[60] Researchers specifically studying rates of suicide among Aboriginal communities found that rates were lowest in communities that had certain characteristics relevant to enhancing cultural continuity. Self-governance, education, health and emergency services, cultural facilities, and land claims resolution are all protective factors against suicide. Having a minimum of three of these factors in a community has been shown to have a protective effect.[61]

Motor vehicle collisions, suicide, and drug overdose are the most common causes of injury-related deaths in the Aboriginal population. Unintentional injuries – such as drowning, motor vehicle collisions, injury from fire, falls, and poisoning – as well as intentional injury caused by suicide attempts and interpersonal violence all occur at rates significantly higher than in the non-Aboriginal population.[7]

Motor vehicle collisions are responsible for the greatest number of injury-related deaths among Canada's Aboriginal people. Seatbelt use in First Nations communities is reported at 50% compared to the Canadian usage average of 80%.[62] In addition to on-road vehicles, many of these injuries are associated with the use of snowmobiles and all-terrain vehicles (ATVs). The remoteness of many Aboriginal communities often means that people need to travel greater distances on poor-quality roads or cross-country on off-road vehicles. Males are most likely to be affected by motor vehicle collisions, while children are most commonly injured in incidents involving pedestrians and school buses.[62]

Drowning is the second most common cause of injury-related death in Aboriginal communities, particularly as associated with snowmobile, boating, and recreational water use.[62] Disproportionate rates of drowning in Canada's Aboriginal population are likely related in part to geography; the proximity of many reserves to bodies of water, the increased danger of hypothermia in the water near northern communities, and the fact that Aboriginal people access bodies of water for both recreation and food all serve to increase the risk of drowning. Geographic remoteness and distance from emergency rescue and medical assistance also heighten the risk. Demographic factors, such as having more children in the community, increase the likelihood of drowning incidents that are most common among children, including falls into water. Consumption of alcohol and drugs and resistance to wearing flotation devices have also been found to contribute to high drowning rates in the Aboriginal population. Health Canada statistics from 1996 indicate that among drowning victims, only 6% of Aboriginals wore a flotation device and Aboriginal victims were more likely to have had a high blood-alcohol level than non-Aboriginals.[62] Statistics from 1996 indicate that the drowning rate for Atlantic Canada's Aboriginal population was second in Canada, higher than for all other regions except the Northwest Territories and Yukon.[62]

Aboriginal people are also at higher risk of injury and death by fire. Higher rates of smoking, reliance on wood heat, poor housing conditions, and a lack of smoke detectors increase this risk.[62] Unlike other forms of injury, rates of poisoning in First Nations communities actually increased in the 1990s for both children and adults. Adult experiences of poisoning were commonly linked to toxic levels of alcohol intake.[62]

In Canada suicide rates among Aboriginal people are significantly higher than in the non-Aboriginal population. There is a particular discrepancy in the youth sector, with Aboriginal youth considerably more likely than their non-Aboriginal peers to attempt or complete suicide. As in the population at large, Aboriginal males are more likely to complete suicide, but women are more likely to attempt suicide. Hanging, drug overdose, and firearms use are the most common means.[62] Social exclusion – characterized by high rates of poverty, hopelessness, drug and alcohol abuse, and despair – is likely to be significantly related to suicide in the Aboriginal population.

Rates of interpersonal violence are also elevated among First Nations. Between 1989 and 1993, homicide was the third leading cause of injury-related death for Aboriginal Canadians in the Atlantic region.[62] First Nations communities also experience higher rates of family violence; statistics include spousal, elder, and child abuse and are often linked to elevated levels of alcohol consumption. Aboriginal women are at an increased risk of experiencing intimate-partner violence than non-Aboriginal women.[62]

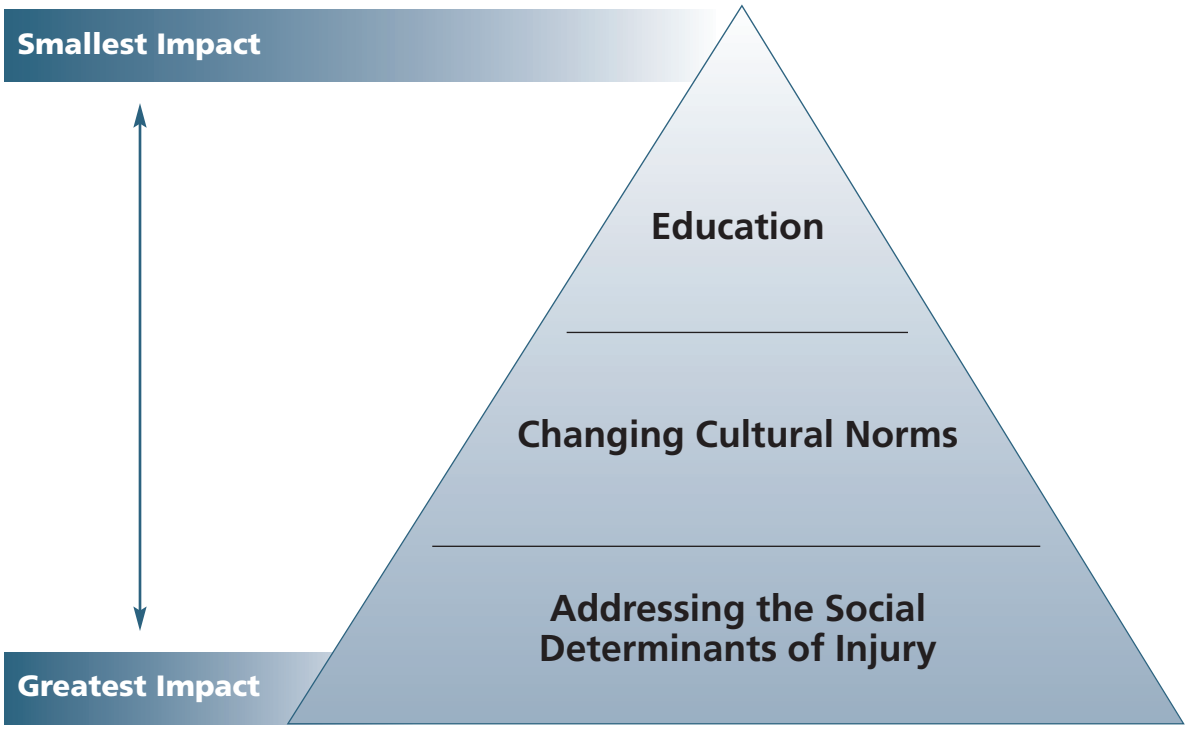
LGBT people

While data around specific injury rates for the lesbian, gay, bisexual and transgendered (LGBT) population in Atlantic Canada are not available, sexual orientation has been found to influence health and risk for injury, particularly through experiences of homophobia, biphobia, transphobia, and heterosexism. The threat or occurrence of physical violence is one way in which these phobias manifest to cause harm. Physical violence or the threat of violence is experienced at higher rates by members of LGBT communities, typically perpetrated by individuals from outside the LGBT community. These stressors can combine to increase rates of substance use and, ultimately, risk for both intentional and unintentional injuries.[63] Social exclusion manifests itself in a variety of ways for LGBT people, including discrimination in the workplace and health care settings, and can affect self-esteem and interpersonal relationships. These experiences have consequences for health and specifically for risk of injury.[64]

Although more research needs to be done, the majority of evidence for higher injury disparity in the LGBT population points to increased rates of suicidal ideation and self-harm related to poorer mental health and higher rates of depression. The rate of suicide attempts among youth has been shown to be influenced by the social environment. One American study demonstrated that LGBT youth who were not living in a supportive social environment were 20% more likely to attempt suicide than those who were. Social environments by county were measured by the proportion of same-sex couples, Democrats, gay-straight alliances, and schools with anti-bullying and anti-discrimination policies.[27]

BEST PRACTICE CONSIDERATIONS

While there is a great deal of research evaluating the effectiveness of specific injury prevention strategies, those that target the social determinants of injury are less commonly represented in the literature. What is clear, however, is that reducing injuries is a complex process that must take into account the multilevel factors that influence behaviour, environments, and outcomes. Injuries are the result of a complex interplay of factors on a variety of levels: individual, community, structural, and societal. The complicated, multilevel dynamic of injury means that a comprehensive, coordinated approach is required for effective injury prevention strategies. Excessive focus on either micro- or macro-level influences is likely to result in ineffective strategies.[8] As indicated in the following chart, it is important to incorporate a range of interventions recognizing that a comprehensive strategy that addresses the social determinants of injury will have the most effect:



Furthermore, practitioners and policymakers must be mindful of the fact that prevention strategies can at times increase disparity if they primarily benefit those least at risk. On individual, family and community levels, effective strategies must reduce barriers to safety, inform, create opportunities for safer behaviour, and enhance self-efficacy while influencing social norms in favour of behavioural shift.[9] Developments in education, healthy public policy, and safer environments are all essential components of successful injury prevention strategies.[10]

Coordinated approach

Coordination of effort among various levels of government and stakeholders as well as the sufficient allocation of resources are critical elements in making any strategy effective.[65] The enormous potential cost avoidance to the health care sector means that investment in injury prevention efforts will save money in the immediate and long term.

Focus on populations at higher risk

Given the significant variations in injury rates between segments of the population, it is generally considered to be best practice to consider the characteristics of specific audiences and to orient the strategy appropriately for different populations.[66] Utilizing one approach for the entire population will be ineffective at creating change. Programs should ensure that they are appropriately targeting the communities most at risk.[2] In addition,

> "…beliefs, access to information, and injury-prevention behaviors vary by SES. Without access to information and resources tailored to their needs, low SES individuals are less likely to believe that injuries are preventable…and are less likely to practice effective injury-prevention measures."[1] (p. 370)

Interventions targeting lower SES groups should take into account such factors as high stress levels, a sense of hopelessness and external locus of control, housing and physical surroundings, and environmental hazards. There must be assurance that programs are reaching individuals who may be socially isolated (e.g., not well connected to community centres, other sources of information, workshops) and who have low education or literacy levels.[29] Possible linkages between education and injury rates suggest that injury prevention campaigns should be accessible and clear to individuals with low literacy rates and basic levels of comprehension, to ensure adequate outreach to people most likely at risk.[15] Failure to do so could increase disparity by only benefiting those at lower risk for injury.

Higher rates of injury for lower SES groups suggest that prevention efforts must specifically target the characteristics of such groups. A good understanding of the population being targeted and the injury to be prevented is clearly important to ensure effectiveness. Going beyond simple SES categories to further understand the dynamics of risk elevation is likely to provide important information for targeting injury prevention strategies. Specific information on the characteristics of high-risk segments of the population should be gathered before information and strategies are developed.

Healthy public policy and safety environments

Healthy public policy can be one of the most effective methods of injury prevention by ensuring that individuals live in safe and supportive environments. Universal policies that support healthy child development, healthy aging, and positive social environments as well as a quality standard of living for all provide a foundation for healthier and safer individuals, families, and communities. Specific to injury prevention, policies that ensure that all products meet certain safety standards prevents the sale and distribution of unsafe merchandise. Regulatory change, when coupled with enforcement strategies, can sometimes circumvent the process of attitudinal change and may contribute to a cultural shift. Enforcement programs have proven to be effective in reducing risk of many types of injury. Laws governing child safety seats, for example, have had a significant impact in reducing the incidence of both fatal and non-fatal injuries resulting from automobile crashes.[23] Legislated use of seatbelts and child safety seats, age limits on ATV use, and graduated licensing are important measures that can reduce injury from vehicle crashes.[67] Rates of alcohol-related injuries have been shown to decrease when policies governing the sale of alcohol place restrictions on advertising, outlet density, and low pricing.[68] Healthy public policies, legislation, and regulations ultimately result not only in improved safety but also in a shift in social norms and attitudes.

Links between community characteristics and injury rates suggest that significant strides can be made by addressing safety issues at a structural level. Initiatives such as traffic calming in residential areas, urban planning that prevents the creation of areas of concentrated poverty, better car and road design, enforcing housing standards, and safety precautions in work environments can have a positive impact on reducing injury for all, but particularly for those at high risk.[2] Modifying the environment and ensuring that safety standards are adhered to offers significant opportunities for reducing risk of injury. Some key areas of engineering regulation include playground safety standards, window guards, and fencing around pools.[69]

Influencing social norms

Elevated frequency of injury is often related to misperceptions about risk levels and social norms.[70] These attitudes are frequently more prevalent in groups of lower SES, perhaps because of education level and normative behaviour. Reducing risk of injury frequently requires a shift in attitude and understanding of risk by significant members of the social milieu, a shift that can begin through a combination of policy change and effective targeting of education and awareness campaigns.

Despite the importance of education, there is some evidence that the most effective methods of injury prevention are those that require little individual effort or behavioural change.[2] Emphasis should therefore be placed on removing hazards through such means as road improvements and universal child safety caps on hazardous substances.

Reducing barriers to safety

No amount of information will make a difference if one is unable to afford the safety devices, such as car seats, helmets and safety gates, that make a difference to injury rates and severity. Provision of low- or no-cost safety equipment is one primary prevention measure that is likely to be particularly effective for low SES groups who may have financial barriers that restrict them from using safety equipment such as car seats.[2,10,23] The effectiveness of educational programming has been found to be greatly improved if safety equipment is provided free of charge to low-income families.[35] Access to emergency medical attention can also improve the outcome of injuries and mean the difference between a fatal injury and a non-fatal one, or between lifelong disability and recovery. However, living in a rural environment can mean reduced access to medical care.[2]

It is important to note that in addition to physical barriers to safety, there may be also be psychological barriers, such as embarrassment, that keep individuals from seeking programs, free equipment, or additional assistance. Injury prevention activities must be cognizant of this barrier and work not only to destigmatize help-seeking but also to improve social policies that create equity among populations.

Injury prevention activities for lower SES groups should include free or reduced-cost access to safety equipment and affordable recourse to address housing hazards. A focus on the reduction of barriers and improvement of self-efficacy in injury prevention strategies for small children is also important.[71] Childproofing is one aspect of injury prevention that most people are in favour of, but for which there are numerous barriers for low SES families, including financial limitations, poor-quality housing, and frequent moves. Strategies to prevent injuries in such situations must include efforts to eliminate the barriers to implementing injury prevention measures.

Community-level change

The impact of community dynamics on injury rates suggests that community-level interventions may be effective in reducing certain types of injury. Reducing social inequality and community rates of crime and violence, avoiding the creation of communities characterized by concentrated poverty, improving access to services, and improving the available social support are all strategies that are likely to have a beneficial impact on injury rates for lower SES communities.

Community-specific approaches to injury prevention offer the opportunity to develop strategies that directly address relevant concerns and risks. Actively involving members of the target population in program development is also likely to increase the effectiveness of community-specific strategies, since accurate representation of community characteristics, dynamics, and risk factors is enhanced when community members participate.[10] The mobilization of community efforts in injury prevention also promotes necessary shifts in awareness and social norms towards safer behaviour.

Providing information

Although typically not effective on its own, providing information is an important component of injury prevention strategies. While equipment such as child restraints can be very effective in reducing injury due to motor vehicle crashes, equipment is not effective if it is not properly used. Numerous studies have shown that a high proportion of the population does not know how to properly install and use car seats for children.[35,42] Hands-on demonstrations of installation and buckling procedures are likely to be effective but must be widely available and accessible.

While increasing awareness and understanding is a critical element of injury prevention, it is not an effective stand-alone strategy. Evaluations have indicated that even programs with a primarily educational focus must utilize a multimodal approach. Interventions that combined education with equipment distribution or incentives for use of safety equipment were supported by program evaluations, while education-only approaches were not found to be effective.[23] Similarly, it has been found that educational home-visiting programs were more effective in improving safety-conscious behaviour in families living in low-income areas than programs that offered only information without a home-visiting component.[72] Education is a key component of many injury prevention strategies, but it is not sufficient by itself.

RECOMMENDATIONS

This literature review has demonstrated that although there is a large amount of research linking injury and the social determinants of health, there is minimal information specific to Atlantic Canada. The literature and current injury prevention practices demonstrate that the majority of efforts focus at the level of primary or secondary prevention with less attention paid to primordial prevention. There are clear implications for practice. The evidence demonstrates that injury prevention practitioners and policymakers have a professional obligation to advocate for improved social policies that reduce the risk of injuries and poor health. Practitioners and policymakers must always consider the relationship of an injury issue to the social determinants of health when designing interventions in order to ensure that the intervention benefits those most at risk and does not increase disparity.

Based on the social determinants of health and injury literature review, including the identified implications for injury prevention strategies, the following recommendations for data collection, research and practice are proposed for Atlantic Canada.

Improved Collaboration

Enhance collaboration with sectors outside health to facilitate better use of existing data. Examples of other sectors include:

- Transportation
- Police/RCMP
- Community services

Investigate opportunities to synthesize existing databases and data that would demonstrate linkages between socioeconomic status and injury in Atlantic Canada.

Increase partnerships outside health and injury prevention and include those working to improve quality of life.

Research

Identify social determinants of health and prevention strategies that warrant further research in the context of Atlantic Canada in order to improve policies and interventions. Possible areas of exploration include:

- Rural/urban differences
- Gender
- Aboriginal populations and injury

Knowledge Translation

Build understanding among injury prevention practitioners and policymakers of the link between the social determinants of injury and the role that policies and/or interventions may play in reducing or increasing health disparities.

Encourage Atlantic Canadian injury prevention practitioners and policymakers to play an active role in primordial prevention in addition to working at other levels of injury prevention.

RECOMMENDED RESOURCES

The Chief Public Health Officer's Report on the State of Public Health in Canada 2008: Addressing Health Inequalities

Author: Government of Canada

Publication Year: 2008

Available at: http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2008/fr-rc/index-eng.php

The Social Determinants of Health: The Canadian Facts

Authors: Juha Mikkonen and Dennis Raphael

Publication Year: 2010

Available at: www.thecanadianfacts.org

Stepping It Up: Moving the Focus from Health Care in Canada to a Healthier Canada

Author: Health Council of Canada

Publication Year: 2010

Available at:
http://healthcouncilcanada.ca/en/index.php?option=com_content&task=view&id=2&Itemid=3

GLOSSARY

Aboriginal: First Nations, Métis, and Inuit peoples of Canada

Biphobia: Fear or hatred of people who are bisexual

Colonization: In the context of Canada, colonization involved the process of European countries' geographic, political, economic, and social expansion, beginning in the 15th century.[73]

Gender: "The socially constructed roles, behavior, activities and attributes that a particular society considers appropriate for men and women."[74]

Globalization: "Globalization is a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world."[75]

Heterosexism: "Assuming every person to be heterosexual, therefore marginalizing persons who do not identify as heterosexual. It is also believing heterosexuality to be superior to homosexuality and all other sexual orientations."[76]

Homophobia: "The irrational fear and intolerance of people who are homosexual or of homosexual feelings within one's self. This assumes that heterosexuality is superior."[76]

Primordial prevention: Taking measures that prevent the "emergence and establishment of environmental, economic, social and behavioural conditions, cultural patterns of living and so on that are known to increase the risk of disease" and injury.[11]

Racialization: "The process whereby populations have been socially constructed as races, usually based on real or imagined cultural, physical and/or genetic attributes. Referring to racialized groups and racialized minorities focuses on the social processes by which people come to be classified as racially different and under what historical circumstances."[77]

Sex: "Refers to a person based on their anatomy (external genitalia, chromosomes, and internal reproductive system). Sex terms are male, female, transsexual, and intersex. Sex is biological, although social views and experiences of sex are cultural."[76]

Socioeconomic status: "This term includes both resource-based and prestige-based measures, as linked to both childhood and adult social class position. Resource-based measures refer to material and social resources and assets, including income, wealth, and educational credentials; terms used to describe inadequate resources include 'poverty' and 'deprivation'. Prestige-based measures refer to individuals' rank or status in a social hierarchy, typically evaluated with reference to people's access to and consumption of goods, services, and knowledge, as linked to their occupational prestige, income, and educational level."[78]

Transgender: People whose gender identity differs from the social expectations of the physical sex they were born with[76]

Transphobia: Fear or hatred of people who are transgender

REFERENCES

1 Cubbin, C., Smith, G. (2002). Socioeconomic inequalities in injury: Critical issues in design and analysis. *Annual Review of Public Health* 23:349–75.

2 Laflamme, L., Burrows, S., Hasselberg, M. (2009). Socioeconomic differences in injury risks: A review of findings and a discussion of potential countermeasures. World Health Organization Europe.

3 Canadian Institute for Health Information. (2010). Injury hospitalizations and socioeconomic status. Ottawa: Canadian Institute for Health Information.

4 Kjellstrom, T., Mercado, S. (2008). Towards action on social determinants for health equity in urban settings. *Environment and Urbanization* 20(2):551–74.

5 Galabuzi, G. (2009). "Social exclusion." In Raphael, D. (ed.) Social Determinants of Health, 2nd edition. Toronto: Canadian Scholars' Press Inc.

6 Johnson, S.B., Jones, V.C. (2011). Adolescent development and risk of injury: Using developmental science to improve interventions. *Injury Prevention* 17:50–4.

7 Health Canada. (2009). A statistical profile on the health of First Nations in Canada: Health services utilization in Western Canada, 2000. Retrieved June 20, 2011 from http://www.hc-sc.gc.ca/fniah-spnia/pubs/aborig-autoch/2009-stats-profil-vol2/index-eng.php

8 Reeve, B. (2006). Causal frameworks in child unintentional-injury prevention policy in New Zealand. *Social Policy Journal of New Zealand* 27:38–56.

9 Gielen, A., Sleet, D. (2003). Application of behavior-change theories and methods to injury prevention. *Epidemiologic Reviews* 25:65–76.

10 Alberta Centre for Injury Control and Research. (2006). Socioeconomic status and injury. *Injury Examiner.* Retrieved June 20, 2011 from http://acicr.ca/Upload/news-events/communications-education/injury-examiner/socioeconomic-status/SES.pdf

11 Ursoniu, S. (2009). Primordial prevention, developing countries and the epidemiological transition: Thirty years later. *Wiener klinische Wochenschrift* 121:168–72.

12 World Health Organization. (1986). Ottawa Charter for Health Promotion. First International Conference on Health Promotion, Ottawa, Canada. Retrieved June 20, 2011 from http://www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf

13 Nova Scotia Department of Health. (2002). Healthy People, Healthy Communities: Using a population health approach in Nova Scotia. Retrieved May 17, 2010 from http://www.hpclearinghouse.ca/downloads/hphc.pdf

14 Mikkonen, J., Raphael, D. (2010). Social Determinants of Health: The Canadian Facts. Toronto: York University School of Health Policy and Management. Retrieved June 20, 2011 from http://www.thecanadianfacts.org/

15 Batty, D., Gale, C., Tynelius, P., Deary, I., Rasmussen, F. (2008). IQ in early adulthood, socioeconomic position, and unintentional injury mortality by middle age: A cohort study of more than 1 million Swedish men. *American Journal of Epidemiology* 169(5):606–15.

16 SMARTRISK. (2009). The Economic Burden of Injury in Canada. Toronto: SMARTRISK. Accessed June 20, 2011 from http://www.smartrisk.ca/index.php/burden

17 Laflamme, L., Sethi, D., Burrows, S., Hasselberg, M., Racioppi, F., Apfel, F. (2009). Addressing the socioeconomic safety divide: A policy briefing. World Health Organization Europe.

18 Lynch, J.W., Smith, G.D., Kaplan, G.A., House, J.S. (2000). Income inequality and mortality: Importance to health of individual income, psychosocial environment, or material conditions. *BMJ* 320:1220–4.

19 Alexandrescu, R., O'Brien, S., Lecky, F. (2009). A review of injury epidemiology in the UK and Europe: Some methodological considerations in constructing rates. *BMC Public Health* 9:226.

20 Engstrom, K., Diderichsen, F., LaFlamme, L. (2004). Parental social determinants of risk for intentional injury: A cross-sectional study of Swedish adolescents. *American Journal of Public Health* 94(4):640–5.

21 Public Health Agency of Canada. (2005). Report on Seniors' Falls in Canada. Ottawa: Minister of Public Works and Government Services Canada.

22 Oliver, L., Kohen, D. (2009). Neighbourhood income gradients in hospitalizations due to motor vehicle traffic incidents among Canadian children. *Injury Prevention* 15:163–9.

23 Zaza, S., Sleet, D., Thompson, R., Sosin, D., Bolen, J. and the Task Force on Community Preventive Services. (2001). Reviews of evidence regarding interventions to increase use of child safety seats. *American Journal of Preventive Medicine* 21(4S):31–48.

24 Jackson, A. (2009). "The unhealthy Canadian workplace." In Raphael, D. (ed.) Social Determinants of Health, 2nd edition. Toronto: Canadian Scholars' Press Inc.

25 Breslin, F., Smith, P., Mustard, C., Zhao, R. (2006). Young people and work injuries: An examination of jurisdictional variation within Canada. *Injury Prevention* 12:105–10.

26 Centers for Disease Control and Prevention. (2010). Women's safety and health issues at work. Retrieved June 20, 2011 from http://www.cdc.gov/niosh/topics/women/

27 Hatzenbuehler, M. (2011). The social environment and suicide attempts in lesbian, gay, and bisexual youth. *Pediatrics*. Published online Apr. 18, 2011. Retrieved June 20, 2011 from http://pediatrics.aappublications.org/content/early/2011/04/18/peds.2010-3020.abstract

28 Shenassa, E., Stubbendick, A., Brown, M. (2004). Social disparities in housing and related pediatric injury: A multilevel study. *American Journal of Public Health* 94(4):633–9.

29 Hayes, J., Groner, J. (2005). Minority status and the risk of serious childhood injury and death. *Journal of the National Medical Association* 97(3):36–9.

30 Center on the Developing Child at Harvard University. (2011). The foundations of lifelong health are built in early childhood. Retrieved June 20, 2011 from http://developingchild.harvard.edu/index.php/resources/reports_and_working_papers/foundations-of-lifelong-health/

31 Woolf, S., Johnson, R., Phillips, R., Philipsen, M. (2007). Giving everyone the health of the educated: An examination of whether social change would save more lives than medical advances. *American Journal of Public Health* 97(4):679–83.

32 Lu, T., Chiang, T., Lynch, J. (2005). What can we learn from international comparisons of social inequalities in road traffic injury mortality? *Injury Prevention* 11:131–3.

33 Breysse, P., Farr, N., Galke, W., Lanphear, B., Morley, R., Bergofsky, L. (2004). The relationship between housing and health: Children at risk. *Environmental Health Perspectives* 112(15):1583–8.

34 ACIP and Safe Kids Canada. (2009). Child and youth unintentional injury in Atlantic Canada: 10 years in review. Halifax: Atlantic Collaborative on Injury Prevention. Retrieved May 5, 2010 from www.safekidscanada.ca/SKCForPartners/custom/AtlanticReport_Eng.pdf

35 McDonald, E., Gielen, A., Trifiletti, L., Andrews, J., Serwint, J., Wilson, M. (2003). Evaluation activities to strengthen an injury prevention resource center for urban families. *Health Promotion Practice* 4(2):129–37.

36 Brownell, M., Friesen, D., Mayer, T. (2002). Childhood injury rates in Manitoba. *Canadian Journal of Public Health* 93(2):S50–6.

37 Pan, S., Ugnat, A.M., Semenciw, R., Desmeules, M., Mao, Y., MacLeod, M. (2006). Trends in childhood injury mortality in Canada, 1979–2002. *Injury Prevention* 12:155–60.

38 Birken, C., Parkin, P., To, T., MacArthur, C. (2006). Trends in rates of death from unintentional injury among Canadian children in urban areas: Influence of socioeconomic status. *Canadian Medical Association Journal* 175(8):867–8.

39 Nova Scotia Health Promotion and Protection. (2009). Child and youth injuries in Nova Scotia 1995–2004: A report. Halifax, NS: Government of Nova Scotia.

40 Gilbride, S., Wild, C., Wilson, D., Svenson, L., Spady, D. (2006). Socio-economic status and types of childhood injury in Alberta: A population-based study. *BioMed Central Pediatrics* 6:30. Retrieved June 20, 2011 from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1687186/pdf/1471-2431-6-30.pdf

41 Kronenfeld, J., Reiser, M., Glik, D., Alatorre, C., Jackson, K. (1997). Safety behaviors of mothers of young children: Impact of cognitive, stress and background factors. *Health.* 1(2):205–25.

42 Leitch, K. (2007). Reaching for the top: A report by the advisor on healthy children and youth. Ottawa: Health Canada. Retrieved on Oct. 10, 2009 from http://www.hc-sc.gc.ca

43 Safe Kids Canada. (2006). Child and youth unintentional injury: 10 years in review 1994–2003. Retrieved June 20, 2011 from http://www.ccsd.ca/pccy/2006/pdf/skc_injuries.pdf

44 Boyer, T. (2006). The development of risk-taking: A multi-perspective review. *Developmental Review* 26:291–345.

45 Pickett, W., Molcho, M., Simpson, K., Janssen, I., Kuntsche, E., Mazur, J., Harel, Y., Boyce, W. (2005). Cross national study of injury and social determinants in adolescents. *Injury Prevention* 11:213–8.

46 Potter, B., Speechley, K., Koval, J., Gutmanis, I., Campbell, M.K., Manuel, D. (2005). Socioeconomic status and non-fatal injuries among Canadian adolescents: Variations across SES and injury measures. *BMC Public Health* 5:132.

47 Dummer, T., Bellemare, S., MacDonald, N., Parker, L. (2010). Death in 12-24 year old youth in Nova Scotia: High risk of preventable deaths for males, socially deprived and rural populations – A report from the NSYOUTHS program. *International Journal of Pediatrics.* doi:10.1155/2010/769075. Published online July 28, 2010.

48 Simpson, K., Janssen, I., Craig, W., Pickett, W. (2005). Multilevel analysis of associations between socioeconomic status and injury among Canadian adolescents. *Journal of Epidemiology and Community Health* 59:1072–7.

49 Pickett, W., Simons-Morton, B., Dostaler, S., Iannotti, R. (2009) Social environments and physical aggression among 21,107 students in the United States and Canada. *Journal of School Health* 79(4):160–8.

50 Scott, V., Wagar, L., Elliott, S. (2010). Falls and related injuries among older Canadians: Fall-related hospitalizations and intervention initiatives. Prepared on behalf of the Public Health Agency of Canada, Division of Aging and Seniors. Victoria, BC: Victoria Scott Consulting.

51 Van Doorn, C., Gruber-Baldini, A., Zimmerman, S., Hebel, J., Port, C., Baumgarten, M., et al. (2003). Dementia as a risk factor for falls and fall injuries among nursing home residents. *Journal of the American Geriatrics Society* 51(9): 1213-8.

52 Canadian Institutes of Health Research. (2009). Getting the facts on seniors' safety behind the wheel. Retrieved May 6, 2011 from http://www.cihr-irsc.gc.ca/e/39178.html

53 Douglas, A., Letts, L., Richardson, J. (2011). A systematic review of accidental injury from fire, wandering and medication self-administration errors for older adults with and without dementia. *Archives of Gerontology and Geriatrics,* 52:e1-e10.

54 Clow, B., Pederson, A., Haworth-Brockman, M., Bernier, J. (2009). Rising to the challenge: Sex- and gender-based analysis for health planning, policy and research in Canada. Halifax, NS: Atlantic Centre of Excellence for Women's Health.

55 Williams, D. (2003). The health of men: Structured inequalities and opportunities. *American Journal of Public Health* 93(5):724–31.

56 World Health Organization. (2009). Women and health: Today's evidence, tomorrow's agenda. Geneva: World Health Organization.

57 Statistics Canada. (2011). Women in Canada: A gender-based statistical report, 6th edition. Ottawa: Government of Canada..

58 American Psychological Association. (2007). Report of the APA Taskforce on the sexualization of girls. Retrieved June 13, 2011 from http://www.apa.org/pi/women/programs/girls/report.aspx

59 Morrongiello, B., Dawber, T. (2000). Mothers' responses to sons and daughters engaging in injury-risk behaviors on a playground: Implications for sex differences in injury rates. *Journal of Experimental Child Psychology* 76(2):89–103.

60 National Aboriginal Health Organization. (2007). Broader Determinants of Health in an Aboriginal Context. Ottawa: National Aboriginal Health Organization.

61 Chandler, J., Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry* 35(2):191-219.

62 Health Canada. (2005). Unintentional and intentional injury profile for Aboriginal people in Canada. Ottawa: Minister of Public Works and Government Services Canada. Retrieved June 20, 2011 from http://www.hc-sc.gc.ca/fniah-spnia/pubs/promotion/_injury-bless/2001_trauma/index-eng.php

63 Canadian Rainbow Health Coalition. What are social determinants of health for LBGTTTIQ people? Retrieved Apr. 14, 2011 from http://www.rainbowhealth.ca/documents/english/SDOH%20Pamphlet.pdf

64 Nova Scotia Department of Health Promotion and Protection. (2009) Links between the LGBT communities and injury: Discussion paper. Halifax: Government of Nova Scotia.

65 Mitchell, R., McClure, R. (2006). The development of national injury prevention policy in the Australian health sector: and the unmet challenges of participation and implementation. *Australia and New Zealand Health Policy* 3:11.

66 Vladutiu, C., Nansel, T., Weaver, N., Jacobsen, H., Kreuter, M. (2006). Differential strength of association of child injury prevention attitudes and beliefs on practices: A case for audience segmentation. *Injury Prevention* 12:35–40.

67 Task Force on Community Preventive Services. (2001) Motor-vehicle occupant injury: Strategies for increasing use of child safety seats, increasing use of safety belts, and reducing alcohol-impaired driving: A report on recommendations of the Task Force on Community Preventive Services. *MMWR Recommendations and Reports* 50(RR07):1-13. Retrieved Oct. 11, 2009 from http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5007a1.htm

68 Giesbrecht, N., Stockwell, T., Kendall, P., Strang, R., Thomas, G. (2011). Alcohol in Canada: Reducing the toll through focused interventions and public health policies. *Canadian Medical Association Journal* 183(4):450–5.

69 Howard, A. (2009). Keeping children safe: Rethinking how we design our surroundings. *Canadian Medical Association Journal* 182(6):573–8. Epub Oct. 5, 2009 as doi: 10.1503/cmaj.080162

70 Simons-Morton, B., Ouimet, M. (2006). Parent involvement in novice teen driving: A review of the literature. *Injury Prevention* 12(suppl):i30–7.

71 Gielen, A., Wilson, M., Faden, R., Wissow, L., Harvilchuck, J. (1995). In-home injury prevention practices for infants and toddlers: The role of parental beliefs, barriers and housing quality. *Health Education Quarterly* 22(1): 85–95.

72 Birken, C., MacArthur, C. (2004). Socioeconomic status and injury risk in children. *Paediatric Child Health* 9(5):323–5.

73 University of Victoria. Cultural Safety: Module 3 – People's experiences of colonization in relation to health care. Retrieved May 5, 2011 from http://web2.uvcs.uvic.ca/courses/csafety/mod3/glossary.htm

74 World Health Organization. (2011). Gender. Retrieved May 5, 2011 from http://www.who.int/topics/gender/en/

75 Levin Institute. (2011). *What is globalization?* Retrieved May 5, 2011 from http://www.globalization101.org/What_is_Globalization.html

76 Gender Equity Resource Centre. (2011). LGBT Resources – Definition of Terms. Retrieved May 6, 2011 from http://geneq.berkeley.edu/lgbt_resources_definiton_of_terms#transphobia

77 Warburton, T. (2002). University of Victoria SOCI 335 class notes, Sept. 9, 2002. Retrieved May 5, 2011 from http://web2.uvcs.uvic.ca/courses/csafety/mod3/glossary.htm

78 PAHO. Global learning device on social determinants of health and public policy formation. Retrieved May 6, 2011 from http://dds-dispositivoglobal.ops.org.ar/curso/cursoeng/glosario.html


COLLABORATION ATLANTIQUE
POUR LA PRÉVENTION DES BLESSURES
acipcapb
ATLANTIC COLLABORATIVE
ON INJURY PREVENTION