BC INJURY research and prevention unit

Injury Insight

Fall-related deaths among older adults in British Columbia

British Columbia (BC) is experiencing a rapidly aging population, with older adults living longer and healthier lives than previous generations. By 2021, there are expected to be over one million British Columbians aged 65 years and older, with most of them living at home in their communities.[1]

Falls are the number one cause of injury-related deaths among older adults, with one in three older adults falling each year.[2] Falls, however, are not a normal part of aging and can be prevented.[3,4] Researchers and policy makers can look to injury data to help determine the types of programs that can reduce the risk of injury from falls. This includes examining patterns in fall-related deaths (mortality trends).

Recently we noticed something interesting when comparing fall-related mortality patterns with other provinces. There was an unexpected increase found in the rate of fall-related deaths among older adults in BC between 2008 and 2012, followed by a gradual decline (Figure 1). Upon further investigation, we found that this anomaly is actually the result of a 2010 policy change in how cause of death is captured and recorded, rather than a spike in deaths, highlighting that context is always needed before drawing conclusions from injury data.

The Issue

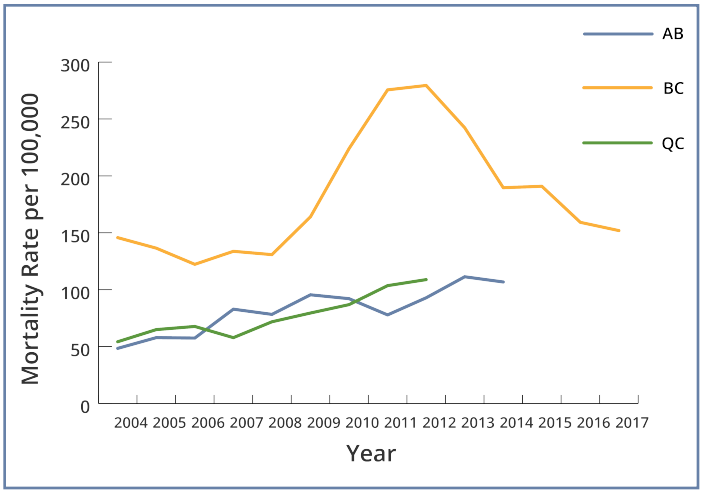
When an older adult is hospitalized from a fall-related injury, such as a broken hip, overall health can be compromised, resulting in reduced mobility, increased illness, and sometimes death. Those aged 80 years and older tend to be more frail than their younger counterparts and particularly vulnerable to this type of situation. Depending on the length of time between the fall and the death, this can be considered as either:

a) a 'natural death' where the fall was a contributing factor; or

b) a 'fall-related death' where the fall was the primary cause of death.

FIGURE 1

Fall-related mortality rates per 100,000 population among adults 80 years and older, by province (Alberta, Quebec, British Columbia), 2004-2017



Data Sources: AB: Data tables obtained from Injury Prevention Centre, University of Alberta; BC: BC Vital Statistics, Fall-Related fatality data 2004-2017, accessed from BCCDC, Chronic Disease and injury Datamart, 17 Jan 2019; QC: Data tables obtained from Institut de la statistique du Québec.

The International Classification of Diseases (ICD) codes, the global standard for identifying diseases, disorders, and injuries, are used to record causes of death. In 2000, BC began the process of updating its coding system from the old version of the ICD codes (ICD-9) to a new version (ICD-10). The new version changed the criteria used to identify fall-related deaths, increasing the identification of 'fall-related deaths' over 'natural deaths' when a fall is involved,[5] as falls are considered to be both predictable and preventable.

It is important to understand context before drawing conclusions from injury data.

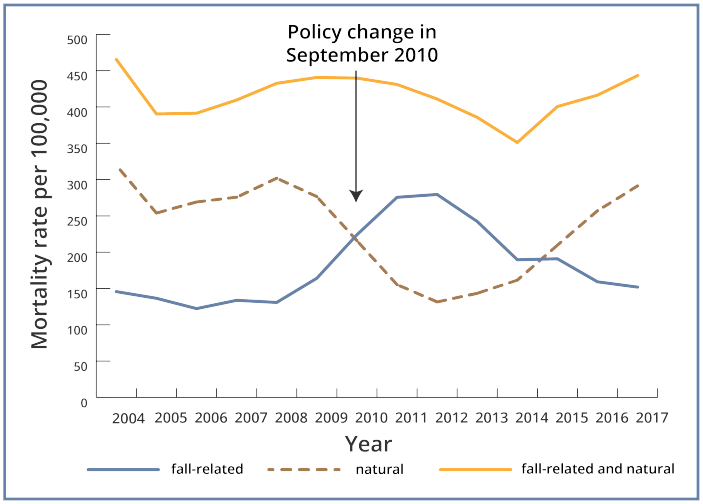
Although the BC Coroners Service (BCCS) is often responsible for determining cause of death, it does not assign codes. While the change from ICD-9 to ICD-10 in 2000 had a ripple effect on how cause of death is determined in BC, the BCCS Classification Guideline was not revised until 2010, bringing it in line with ICD-10 in terms of coding fall-related deaths. This 2010 policy change states that death due to a fall for someone whose health was compromised by significant pre-existing natural disease is to be captured a a fall-related death rather than a natural death.[6]

Taking a close look at the data revealed that the trends in deaths coded as 'fall-related' among older adults in BC, especially among those aged 80 years and older, started to rise in the lead up to the implementation of the 2010 BCCS policy and continued to rise until 2012 (Figure 2). A mirrored pattern was observed for deaths coded as 'natural' where a fall was a contributing factor, with trends declining during this period—when deaths coded as "fall-related" increased, deaths coded "natural" declined.

However, when looking at all deaths where a fall was involved, both 'fall-related' and 'natural', the trend was seen to be stable. Therefore, the rise in fall-related mortality trends between 2009 and 2012 was a result of the change in BCCS reporting practice. The subsequent decline in fall-related deaths from 2012 to 2014 appears to be an unofficial reversion to previous reporting practices.

FIGURE 2

Mortality rates where a fall was involved, per 100,000 population among adults 80 years and older, by cause of death (fall-related vs. natural), BC, 2004-2017



Data Source: BC Vital Statistics, Fall-Related fatality data 2004-2017, accessed from BCCDC, Chronic Disease and Injury Datamart, 17 Jan 2019.

Key Take-Away Messages

- The sudden increase in fall-related deaths among older adults in BC from 2008 to 2012 reflects a change in coding under the 2010 BC Coroners Service policy change; no true increase in mortality rates occurred.
- It is important to consider the relationship between data and policy, particularly when there are unexpected and unexplained trends.
- Fall-related mortality data in BC for the period surrounding the BCCS policy change (2009-2014) should be used with extreme caution for ages 80 years and older.
- The BC fall-related mortality data among older adults aged 80 years and older has influenced the 2009-2014 national data.

For further information on the implications and recommendations, refer to the full article on BMJ Journals.[7]

References

1. SPARC BC, United Way Lower Mainland. B.C. Seniors' Poverty Report Card, 2018. Available: https://www.sparc.bc.ca/wp-content/uploads/2018/07/B.C.-Seniors-Poverty-Report-Card.pdf
2. Public Health Agency of Canada. Seniors' Falls in Canada: Second Report, 2014. Available: http://epe.lac-bac.gc.ca/100/201/301/weekly_checklist/2014/internet/w14-36-U-E.html/collections/collection_2014/aspc-phac/HP25-1-2014-eng.pdf.
3. Grossman DC, Curry SJ, Owens DK, et al. Interventions to prevent falls in community-dwelling older adults: US preventive services Task force recommendation statement. JAMA, 2018;319:1696–704.doi:10.1001/jama.2018.3097
4. Phelan EA, Ritchey K. Fall prevention in community-dwelling older adults. Ann Intern Med, 2018;169:ITC81– ITC94.doi:10.7326/AITC201812040
5. Anderson RN, Miniño AM, et al., Hyattsville, Maryland: National Center for Health Statistics. Comparability of cause of death between ICD-9 and ICD-10: preliminary estimates. National Vital Statistics Report, 2001;49:1–32.
6. BC Coroners Service. BC Coroners Service 2010 Annual Report 2013:1–101. Available: https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/reports/annual/2010.pdf.
7. Joshi A, Rajabali F, Turcotte K, et al. Fall-related deaths among older adults in British Clumbia: cause and effect of policy change. Inj Prev, 2019;0:1–5. doi:10.1136/injuryprev-2019-043280

Images courtesy of: P.1 – Toa55 (Shutterstock); P.2 – Freepik (Flaticon)