

# Temporal Variations of Work-Related Traumatic Brain Injury

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## Introduction

Traumatic brain injury (TBI) is a major cause of death and permanent disability in Canada. TBI occurring at the workplace, comprising about 7 % of all TBI population, and carries major economic repercussions in terms of lost wages and costs. Work-related TBI also has been found to be a significant contributor to the number of work-related deaths overall. Therefore, it is important to make every effort to prevent this injury by identifying the profile of this high risk population. However, little is known on temporal variations of work-related TBI.

## Aim

This study aimed to provide incident time and seasonal variations of occurrence of TBI at the workplace to better inform preventative efforts. This study described the incident time and incident months of work-related TBI by 4 major occupational types and 5 major mechanisms of injury.

## Methods

This study is a cross-sectional study using an existing available data, Comprehensive Data Set (CDS) of the Ontario Trauma Registry (OTR) from April 1, 1993 to March 31, 2001. Eligible participants from the OTR data were between the ages of 16 to 64, comprising the working population, at time of injury with the following ICD-9-CM codes for head injury: 800-801, 803-804 and 850-854.

## Results

For work-related TBI, not surprisingly, over two thirds of all injuries occurred between the daytime working hours of 9:00 am and 5:59 pm (67%). Frequency of work-related TBI was sharply decreased after the working hours till the next morning. During the work hours, there were two peaks for work-related TBI of incidence: before and after lunch time, 11 am and 2 pm. Falls, the most common mechanism of injury of the work-related TBI, occurred with greatest frequency at noon (12:00 pm – 2:59 pm) (45.4%). Motor vehicle crashes (MVCs), Struck by object also occurred a lot at this time. However, MVCs had the highest proportion for the night time onset (6:00 pm- 5:59 am) of head injury (40.1%) among all the mechanisms of injury. Also, the highest night time onset of the TBI was for transportation workers (41.3%). Overall, work-related TBI peaked in July and October. December and April were the lowest months for the work-related TBI occurrence. With respect to seasonal variations, work-related TBI due to falls occurred the most in the summer months (28.5%) and TBI due to MVCs occurred most commonly in the fall (33.0%).

## Discussion

This pilot study is the first descriptive analysis on temporal variations of onset of work-related TBI based on Canadian data. More targeted prevention efforts in terms of incident time and months would be appropriate. More studies are needed examining the relationships between worker's fatigue and circadian rhythm and shift work which may cause greater risk of TBI.