

A study aimed to investigate the epidemiology of Sports-related traumatic brain injury in Hong Kong and to examine predictors for recreational cycling-induced intracranial haemorrhage.

Methods: This retrospective multicentre study included patients diagnosed with sports-related TBI in public hospitals in Hong Kong from 2015 to 2019. Computed tomography scans were reviewed by an independent assessor. The primary endpoint was traumatic intracranial haemorrhage. The secondary endpoint was an unfavourable Glasgow Outcome Scale (GOS) score at discharge from hospital.

Results: In total, 720 patients were hospitalised with sports-related TBI. The most common sport was cycling (59.2%). The crude incidence of cycling-related TBI was 1.1 per 100 000 population. Cyclists were more likely to exhibit intracranial haemorrhage and an unfavourable GOS score, compared with patients who had TBI because of other sports. Although 47% of cyclists had intracranial haemorrhage, only 15% wore a helmet. In multivariate analysis, significant predictors for intracranial haemorrhage were age ≥ 60 years, antiplatelet medication, moderate or severe TBI, and skull fracture. Among 426 cyclists, 375 (88%) had mild TBI, and helmet wearing was protective against intracranial haemorrhage, regardless of age, antiplatelet medication intake, and mechanism of injury. Of 426 cyclists, 31 (7.3%) had unfavourable outcomes on discharge from hospital.

Conclusions: The incidence of sports-related TBI is low in Hong Kong. Although cycling-related head injuries carried greater risks of intracranial haemorrhage and unfavourable outcomes compared with other sports, most cyclists experienced good recovery. Helmet wearing among recreational cyclists with mild TBI was protective against intracranial haemorrhage and skull fracture. ¹⁾

A study explored trends in hospitalized bicycle injuries at a Norwegian level I trauma centre during the last decade.

Methods: Data was extracted from the prospectively registered institutional trauma registry. We identified patients admitted after bicycle injuries between 2005 and 2016.

Results: A total of 1543 patients were identified. Median age was 40 years (range 3-91) and 73 % were males. The majority of weekday injuries occurred in the morning and during the afternoon rush-hour, peaking at 8 am. and 4 pm. The annual number of admitted bicycle injuries increased from 79 to 184 during the study period. Also, an increase in the share of bicyclists using helmets was observed. The median Injury Severity Score (ISS) of 10 remained unchanged. 63 % had serious trauma (ISS ≥ 9), while 34 % suffered severe trauma (ISS ≥ 16). The absolute number of both serious and severe trauma increased annually. 36 % had head and neck injuries, while 16 % had chest injuries graded with Abbreviated Injury Scale ≥ 3 . Loss of consciousness with Glasgow Coma Scale score < 9 was seen in 7%. Median length of hospitalization was 3 days, and 39 % had surgery in one or more body regions. The 30-day mortality was 2.3 %.

Conclusions: The number of admitted bicycle injuries to our trauma centre is increasing. Rush-hour injuries dominate during weekdays. Bicycle injuries can be devastating and deserve more public attention to promote road safety ²⁾

Data of adult patients hospitalized for motorcycle or bicycle accidents between January 1, 2009 and December 31, 2015 were retrieved from the Trauma Registry System. These included 7735 motorcyclists with helmet use, 863 motorcyclists without helmet use, 76 bicyclists with helmet use, and 647 bicyclists without helmet use. The primary outcome measurement was in-Hospital mortality.

Secondary outcomes were the hospital length of stay (LOS), intensive care unit (ICU) admission rate, and ICU LOS. Normally distributed continuous data were analyzed by the unpaired Student t-test, and non-normally distributed data were compared using the Mann-Whitney U-test. Two-sided Fisher exact or Pearson chi-square tests were used to compare categorical data. Propensity score matching (1:1 ratio using optimal method with a 0.2 caliper width) was performed using NCSS software, adjusting for the following covariates: sex, age, and comorbidities. Further logistic regression was used to evaluate the effect of helmet use on mortality rates of motorcyclists and bicyclists, respectively. RESULTS:

The mortality rate for motorcyclists with helmet use (1.1%) was significantly lower than for motorcyclists without helmet use (4.2%; odds ratio [OR] 0.2; 95% confidence interval [CI]: 0.17-0.37; $p < 0.001$). Among bicyclists, there was no significant difference in mortality rates between the patients with helmet use (5.3%) and those without helmet use (3.7%; OR 1.4; 95% CI: 0.49-4.27; $p = 0.524$). After propensity-score matching for covariates, including sex, age, and comorbidities, 856 well-balanced pairs of motorcyclists and 76 pairs of bicyclists were identified for outcome comparison, showing that helmet use among motorcyclists was associated with lower mortality rates (OR 0.2; 95% CI: 0.09-0.44; $p < 0.001$). In contrast, helmet use among bicyclists was not associated with a decrease in mortality (OR 1.3; 95% CI: 0.30-5.96; $p = 0.706$). The hospital LOS was also significantly shorter for motorcyclists with helmet use than for those without (9.5 days vs. 12.0 days, respectively, $p < 0.001$) although for bicyclists, helmet use was not associated with hospital LOS. Fewer motorcyclists with helmet use were admitted to the ICU, regardless of the severity of injury; however, no significant difference of ICU admission rates was found between bicyclists with and without helmets.

Motorcycle helmets provide protection to adult motorcyclists involved in traffic accidents and their use is associated with a decrease in mortality rates and the risk of head injuries. However, no such protective effect of helmet use was observed for bicyclists involved in collisions ³⁾.

All patients living in the county of Västmanland, Sweden, visiting a physician or dentist because of bicycle-related injury during one year (November 1989-October 1990). Cyclists were mostly injured on pavements, pedestrian malls and cycle tracks. Twenty percent of the events occurred on public roads in urban areas; most frequently, the injured were in the age range 0-24. The most common bicycle injury event involved no other party. The events were often caused by environmental factors, in combination with behaviour such as excessive speed, lack of attention, breach of traffic regulations or a co-ordination problem. Head injuries, including oral injuries, were the most common, in particular among children and adolescents. One in four children in the age range 0-9 sustained an oral injury ⁴⁾.

44 patients were hospitalized for neurosurgical care after bicycle accidents during a period of 50 months. Ten times as many were injured in other types of road accidents. 42 of the 44 cases had brain injury, with a mean hospitalization of 9.7 days. A third needed operation and a fourth were discharged with residual neurological deficits. The low incidence of 0.95 cases per 100,000 per year led us to examine the factors which limit the use of bicycles in our region. The severity of the injuries in our cases was much greater than in those in other countries, with a mean injury severity score of 14.2. None of our cases had worn a protective helmet, and we join in the world-wide plea for an educational campaign for their use ⁵⁾.

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