

**Title: Driver factors affecting injury severity of light motorcycle crashes: a multicenter study in an emerging economy setting**

**Authors**

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**Abstract**

**Objective:** Light motorcycles (with cylinder capacities between 50 to 250cc) are popular for commuting in Taiwan. As motorcyclist casualties have continuously increased of recent, we conducted a multicenter study to analyze the driver factors' effects on injury severity.

**Methods:** Drivers who were hospitalized upon motorcycle injury were contacted. Information on demography, comorbidity, and driving behaviours was collected via questionnaire and linked to admission data. Injury Severity Score (ISS) and Length of Hospitalization (LOH) were applied as outcome measures.

**Results:** Totally 718 patients completed their questionnaires. The mean age was 37.7 years and 63% were male. Average ISS and LOH were 8.24 and 8.3 days respectively. Multivariate analysis showed age  $\geq 65$  (OR 3.07, 95%CI [1.52-6.19]), half-faced helmets (1.95, 1.14-3.34), collision with car/ small truck (1.53, 1.00-2.38), crash due to opponent vehicle speeding (1.72, 1.10-2.67), and fatigue (1.95, 1.08-3.53) were risk factors for more severe injury (ISS  $\geq 9$ ). For increased LOH, age  $\geq 65$  (estimate 3.88, 95%CI [1.21-6.56],  $p=0.004$ ), tinnitus (10.24, 5.20-15.29,  $<0.001$ ), anemia (5.00, 1.76-8.24, 0.003), collisions with stationary object (3.69, 0.13-7.25, 0.042), and alcohol/ stimulating refreshments use (3.86, 0.76-6.96, 0.015) were risk factors.

**Conclusion:** For light motorcycle crashes, elder drivers were prone to severe injury. Helmet's head protection effects should not be underestimated. Crashes with vehicle or stationary object, speeding, and driving with impaired attention resulted in more severe injury. Comorbidity and psychoactive substances also increased the medical resource consumption. Some of these risk factors were similar to those in heavy motorcycles. Light motorcycle crashes deserve more attention for injury prevention.

**Category:** Epidemiology

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