

The Diurnal and Seasonal Relationships of Pedestrian Injuries Secondary to Motor Vehicles in Young People

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Abstract : Introduction: There remains significant morbidity and mortality in young pedestrians hit by motor vehicles, even in the era of pedestrian crossings and speed limits. The aim of this study was to compare incidence and injury severity of motor vehicle-related pedestrian trauma according to time of day and season in a young population, based on the supposition that injuries would be more prevalent during dusk and dawn and during autumn and winter. Methods: Data was retrieved for patients between 10-25 years old from the National Trauma Audit and Research Network (TARN) database who had been involved as pedestrians in motor vehicle accidents between 2015-2020. The incidence of injuries, their severity (using the Injury Severity Score [ISS]), hospital transfer time, and mortality were analysed according to the hours of daylight, darkness, and season. Results: The study identified a seasonal pattern, showing that autumn was the predominant season and led to 34.9% of injuries, with a further 25.4% in winter in comparison to spring and summer, with 21.4% and 18.3% of injuries, respectively. However, visibility alone was not a sufficient factor as 49.5% of injuries occurred during the time of darkness, while 50.5% occurred during daylight. Importantly, the greatest injury rate (number of injuries/hour) occurred between 1500-1630, correlating to school pick-up times. A further significant relationship between injury severity score (ISS) and daylight was demonstrated (p-value= 0.0124), with moderate injuries (ISS 9-14) occurring most commonly during the day (72.7%) and more severe injuries (ISS>15) occurred during the night (55.8%). Conclusion: We have identified a relationship between time of day and the frequency and severity of pedestrian trauma in young people. In addition, particular time groupings correspond to the greatest injury rate, suggesting that reduced visibility coupled with school pick-up times may play a significant role. This could be addressed through a targeted public health approach to implementing change. We recommend targeted public health measures to improve road safety that focus on these times and that increase the visibility of children combined with education for drivers.

Keywords : major trauma, paediatric trauma, road traffic accidents, diurnal pattern

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