

The Severity of Electric Bicycle Injuries Compared to Classic Bicycle Injuries in Children: A Retrospective Review

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Abstract : Background: Electric bicycles (E-bikes) are one of a wide range of light electric vehicles that provide convenient local transportation and attractive recreational opportunities. Along with their growing use worldwide, the E-bike related injury rate increases. To the best of our knowledge, this study is the first to specifically compare E-bike with classic bicycle related injuries in children. Methods: Data of all pediatric (< 16 years of age) bicycle related injuries presenting to an urban level I trauma center between 2014 and 2015 were collected and analyzed. The recorded data included age, gender, details of the accident, as well severity of injury, medical diagnosis, and the outcome. Abbreviated Injury Score (AIS) and Injury Severity Score (ISS) were calculated for each patient. Data of E-bike related injuries and classic bicycle were then compared. Results: A total of 124 bicycle related injuries and 97 E-bike related injuries presented to the emergency department. Once pedestrians and bicycle passengers were removed, the groups of riders consisted of 111 bikers and 85 E-bikers. The mean age of bikers was 9.9 years (range 3-16 years) and of E-bikers was 13.7 years (range 7.5-16 years). Injuries to the head and the extremities were common in both groups. Compared to bikers, E-bikers had significantly more injuries to intra-abdominal organs ($p = 0.04$). Twenty patients (16%) with bicycle related injuries were admitted, and 13 (15%) patients with E-bike related injuries, of the latter group four underwent surgical intervention. ISS scores were low overall, but the injuries of higher severity ($ISS > 9$) were among the E-bikers. Conclusions: This study provides unique information which suggests that injuries in E-bikers tend to be more severe than in classic bikers. There is a need for regulation regarding the use of E-bikes to enhance the safety of both bikers and other road and pavement users.

Keywords : bicycle, electric bicycle, injury, pediatric, trauma

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