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Freedom on Two Wheels, Trauma on Impact: A Scoping Review of Electric Scooter-Related Traumatic Brain Injuries

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ADMINISTRATIVE INFORMATION

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Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 March 2025 and was last updated on 31 March 2025.

INTRODUCTION

Review question / Objective Determine the injury patterns and outcomes of electric-scooter-related traumatic brain injury.

Rationale Comprehensive synthesis of the evidence on injury patterns and outcomes of electric-scooter-related traumatic brain injury.

Condition being studied Electric-scooter-related traumatic brain injuries.

METHODS

Participant or population Electric scooter related traumatic brain injury.

Intervention Electric scooter accidents.

Comparator Nil.

Study designs to be included Retrospective.

Eligibility criteria Specifically, studies were included if they met the following criteria: (1) Population: individuals who sustained e-scooter–related injuries; (2) Concept: traumatic brain injury (TBI) of any severity, as defined or reported by the study; (3) Context: any real-world environment where e-scooter use occurs, including urban, suburban, and rural settings; (4) peer-reviewed publications; (5) cohorts with more than five patients; and (6) at least 20% of injuries specifically attributable to e-scooter incidents.

Information sources PubMed, Embase (Ovid), Scopus, Web of Science, and the Cochrane Database of Systematic Reviews.

Main outcome(s) We collection information on patterns of brain injuries, associated injury characteristics, neurosurgical interventions, and other outcome measures (mRS, hospital/rehabilitation stay, and mortality).

Quality assessment / Risk of bias analysis We critically appraised the methodological quality of

included studies using the appropriate Critical Appraisal Skills Programme (CASP) checklists tailored to each study design.

Strategy of data synthesis We systematically gathered and analysed both quantitative and qualitative data from the included studies. Descriptive statistics, such as frequencies and proportions, were employed to summarise injury patterns, associated risk factors, interventions administered, and clinical outcomes.

Subgroup analysis Nil.

Sensitivity analysis We systematically gathered and analysed both quantitative and qualitative data from the included studies. Descriptive statistics, such as frequencies and proportions, were employed to summarise injury patterns, associated risk factors, interventions administered, and clinical outcomes.

Country(ies) involved Australia.

Keywords Electric scooter, traumatic brain injury, characteristics, and outcome.

Contributions of each author

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