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PhD Dissertation Defense

Entitled

QUAD BIKE INJURIES IN THE UNITED ARAB EMIRATES: EVIDENCE FOR INJURY PREVENTION STRATEGIES

by

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Abstract

Background: Quad bikes, also known as all-terrain vehicles (ATVs), are versatile vehicles designed for navigating uneven terrain. Originally intended for agricultural purposes, they have gained popularity for recreational use, particularly in the Middle East, notably the United Arab Emirates (UAE). They are associated with substantial safety risks, resulting in injuries ranging from lacerations to severe traumatic injuries, imposing a significant economic burden on healthcare systems. Aims: This research addresses a critical gap in the existing literature by focusing on quad bike injuries in the unique context of the UAE, taking into account its desert environment, rider characteristics, and sociodemographic factors. The study aims to develop evidence-based intervention strategies for promoting safe quad bike riding habits and creating a safer riding environment in the UAE. Methods: The research comprises three studies, namely a retrospective analysis of Dubai Ambulance data, a cross-sectional survey, and a qualitative stakeholder analysis. The retrospective analysis of ambulance data examined patient admission reports from quad bike crashes attended by Dubai ambulance services between 2017 and 2021. Time series analysis revealed injury trends and seasonality, while cluster analysis identified vulnerable groups and regression models explored factors influencing injury outcomes. The UAE Quad Bike Survey utilized a cross-sectional approach through structured interviews with active quad bike riders across multiple Emirates. Descriptive frequency analysis and regression models were applied to the survey data, highlighting injury risk factors and riding behaviors associated with risk. A comprehensive stakeholder assessment involved in-depth interviews with nine stakeholder groups, shedding light on the influencers of riding behavior and the riding environment. Stakeholders ranged from parents and police to tour operators and medics, and their insights were analyzed using framework analysis. Results: The findings indicate that quad bike injuries follow a negative annual trend but are highly seasonal, peaking during winter months. Distinct clusters of injuries were observed, with tourists suffering milder injuries compared to resident riders. The survey identified risky riding habits, including night riding, and use of paved roads, showing a strong association with injury. Stakeholders identified systemic gaps and the need for multi-level interventions. Recommendation: The implications of this research call for coordinated efforts among government authorities, riders, parents, and the broader community. Suggestions include safeguarding desert riding spaces, extending police responsibilities, enforcing helmet use, discouraging night riding, promoting off-road areas, establishing training facilities, and raising awareness during peak injury seasons. In conclusion, this research fills a critical void in understanding quad bike injuries in the context of the UAE, offering a foundation for evidence-based interventions to reduce injuries and enhance the safety of quad bike riders in the region.

Keywords: Quad bikes; ATV (All-Terrain Vehicles); Injury; Risk Factor; Stakeholder; United Arab Emirates; Evidence based Intervention