

Epidemiology of Cervical Spinal Fractures in the U.S: An NEISS Analysis 2001-2019

Introduction: Understanding the epidemiology of cervical spine injuries is crucial to optimizing treatment, management and reducing incidence. This study evaluates the demographics, mechanism of injury, and disposition over time in cervical fracture patients.

Methods: The National Electronic Injury Surveillance System (NEISS) was queried to identify patients with cervical spinal injuries that presented to U.S. emergency departments between January 2001 and December 2019. Study endpoints were incidence rates (in 1 million person-years), patient demographics, including age, sex, race, disposition, and mechanism of injury.

Results: A total of 7760 cervical fracture patients were identified. An estimated national total of 53,514 cervical fractures occurred during this period, with an incidence rate (IR) of 9.0 [7.4 – 10.6]. The mean patient age was 67.0± 20.7. 4.0% of cervical fractures occurred in patients aged 18-24 (IR 3.5 [2.2 – 4.82]), 5.8% aged 25-34 (IR 4.1), 6.2% aged 35-44 (IR 4.2), 9.7% aged 45-54 (IR 7.4), 12.0% aged 55-64 (IR 9.0), 15.8% aged 65-74 (IR 16.6), 22.2% aged 75-84 (IR 43.3), and 24.2% aged above 85 (IR 95.3). Of these cases, 51.4% (IR 53.6) of fractures were in male patients, while 48.6% (IR 46.8) in female patients. By race, 88.9% of the patients were white (IR 6.7), and 6.7% were black (IR 5.2). By mechanism of injury, 77.1% of all cervical fractures resulted from a fall, while 7.1% from sports and exercise. The most common disposition was admission post-treatment at 54.3%, followed by release with or without treatment at 22.4%.

Discussion: The incidences of cervical spinal fractures increase with age. Men presented with a higher incidence than women for all ages except the 75-84 years age group. White patients presented with the highest incidence. More than ¾ of cervical spinal fractures were attributed to fall injuries. Future research should analyze different interventions and efficacy in minimizing incidence of cervical fractures.