

Increased population density of neurosurgeons associated with decreased risk of death from traffic accidents in Poland

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Introduction: Traffic accidents (TAs) are a leading cause of disability and death in young people, in Poland the number of people killed in TAs per million inhabitants is the second highest in the European Union. The major cause of death from TAs is traumatic brain injury, for this reason neurosurgeons, who hold expertise in this area, play a major role in the treatment of TA patients. Our aim was to investigate whether neurosurgeon population density is related to reduced mortality from TAs across the districts and regions of Poland.

Methods: Retrospective analysis of databases from the Central Statistical Office, National Institute of Public Health and Ministry of Health from the years 2010–2012 and multiple regression analysis was performed.

Results: There are 502 active neurosurgeons with completed neurosurgical residency training, mean per voivodeship is 31. The lowest ratio of number of

neurosurgeons per 100 000 inhabitants was in the Opole (0.47), and highest in the Łódź (2.17) voivodeships. The mean death in TAs per 100 000 population ratio was 24.2 for men and 6.4 for women. The lowest ratio of deaths in TAs per 100 000 population was in the Silesian (7.45), and highest in the Świętokrzyski (13.3) voivodeships. The number of neurosurgeons per 100 000 inhabitants inversely correlates with death in TAs per 100 000 inhabitants.

Conclusions: Our results suggest that a higher density of neurosurgeons in the population and proximity of neurosurgical wards is associated with a significant reduction in deaths from TAs. This shows how significant factor the availability of local neurosurgeons and promoting neurosurgical education throughout the country plays in reducing an important cause of death nationally.

Key words: Traffic accidents, Polish neurosurgery, traumatic brain injury