

Exploring the implications of small-area variation in the incidence of multiple sclerosis

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Abstrak

In this study, we describe the geospatial variation in the incidence of multiple sclerosis (MS) in Manitoba, Canada, and the sociodemographic characteristics associated with MS incidence. By using administrative health data, we identified all incident cases of MS in Manitoba from 1990 to 2006 ($n = 2,290$) and geocoded them to 230 neighborhoods in the City of Winnipeg and 268 municipalities in rural Manitoba. Age-standardized incidence rates for 1990–2006 (combined) were calculated for each region. By using the spatial scan statistic, we identified high-rate clusters in southwestern (incidence rate ratio (IRR) = 1.48) and central Winnipeg (IRR = 1.54) and low-rate clusters in north-central Winnipeg (IRR = 0.52) and northern Manitoba (IRR = 0.48). Multivariable Poisson regression showed a positive association between MS incidence rates and socioeconomic status. Despite our finding that MS incidence varied geographically and by socioeconomic status, the low Gini coefficient of 0.152 for MS incidence identified in this study suggests that the causes of MS are pervasive across all population groups. Searching for local-level causes of the disease may therefore not be as productive as investigating etiological factors operating at the population level. This may require an examination of macro-level differences in environmental exposures between high- and low-incidence regions of the world.