## Increase in Parkinson's disease-related mortality among males in Northern Italy

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BACKGROUND. According to standard mortality statistics based on the underlying cause of death (UCOD), mortality from Parkinson's disease (PD) is increasing in most European countries. However, mortality trends are better investigated taking into account all the diseases reported in the death certificate (multiple causes of death approach, MCOD). METHODS. All deaths of residents in the Veneto Region (Northern Italy) aged≥45 years with any mention of PD were extracted from 2008 to 2015. The Annual Percent Change (APC) in age-standardized mortality rates was computed both for PD as the UCOD, and by MCOD. The association with common chronic comorbidities and acute complications was investigated by log-binomial regression. The frequency of the mention of PD in death certificates was investigated through linkage with an archive of patients with a previous clinical diagnosis of the disease.

RESULTS. PD was reported in 2.1% of all deaths, rising from 1.9% in 2008 to 2.4% in 2015. Among males, age-standardized rates increased over time both in analyses based on the UCOD (APC +4.1%; Confidence Interval +1.5%, +6.7%), and on MCOD (APC +2.2%; +0.2, +4.2%). Among females time trends were not significant. Mention of PD was associated with that of dementia/Alzheimer and acute infectious diseases. Among known PD patients, the disease was reported only in 60.2% of death certificates.

CONCLUSIONS. Mortality associated to PD is steeply increasing among males in Northern Italy; further investigations on time trends for PD, both through all available electronic health archives and clinical studies, should be set as a priority for epidemiological research.

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