Gac Sanit. 2026;40(S4):416

Gaceta Sanitaria

https://www.gacetasanitaria.org

108 - MAPPING TUBERCULOSIS MORTALITY RISK IN SPAIN FROM 2000 TO 2023

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Resumen

Background/Objectives: Tuberculosis (TB) remains a major global public health problem. Although the WHO European Region has achieved notable reductions on TB mortality in recent decades, it remains the world's leading cause of death from a single infectious agent. Spatial smoothing models allow the identification of spatial variations and risk areas at small geographical scales. By using this methodology, this study aims at identifying temporal trends and geographical differences on TB mortality in Spain (2000-2023) in order to generate hypothesis and to guide targeted public health interventions.

Methods: Annual TB-related deaths and population data were obtained from the National Statistics Institute. Age-adjusted mortality trends were computed and assessed using Joinpoint regression models to define the periods considered in the subsequent spatial analysis and to estimate the annual percentage changes (APC). Standardized mortality ratios (SMRs) were calculated for each geographical unit (municipality). Modified Besag-York-Mollié model was used to compute smoothed SMRs which were mapped to identify spatial patterns.

Results: A total of 7,925 TB deaths were registered in Spain between 2000 and 2023. Age-adjusted mortality rates decreased significantly over the period, from 2.14 and 0.83 to 0.46 and 0.20 per 100,000 population among males and females, respectively (Joinpoint regression identified no inflection points: APC -7.08% for males and -6.03% for females). During the full study period (2000-2023), areas with higher mortality risk were identified in northwestern municipalities-particularly in Asturias (smoothed-SMR > 1.95) -as well as in western Andalucía, with smoothed-SMRs ranging from 1.06 to 1.95. When comparing two temporal periods (2000-2010 and 2011-2023), Period 1 showed a spatial pattern consistent with the overall period. In contrast, Period 2 exhibited more moderate risk levels in northwestern Spain, reflecting a decline in Asturias, while areas with smoothed-SMR values of 1.06-1.30 shifted toward Galicia, País Vasco and northern Castilla y León.

Conclusions/Recommendations: TB mortality risk was higher in areas of northwestern and southwestern Spain. Spatial smoothing models proved useful in identifying high-risk areas. Further spatial studies incorporating variables associated with higher risk of TB-related mortality -such as diagnostic delay, treatment duration and treatment failure, comorbidities, drug resistance, HIV status, occupational risk factors, and social determinants- are needed to better understand these spatial patterns.

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