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637 - JOINT SPATIO-TEMPORAL HIERARCHICAL MODEL FOR SEXUALLY TRANSMITTED INFECTIONS IN CATALONIA

G. Escaramís, M. Montoro-Fernández, S. Moreno-Fornés, E. López-Corbeto, J. Casabona

Centre d'Estudis Epidemiològics sobre les Infeccions de Transmissió Sexual i Sida de Catalunya (CEEISCAT); CIBERESP; Subdirecció General de Vigilància i Resposta a Emergències de Salut Pública.

Resumen

Background/Objectives: In recent years, the incidence rates of sexually transmitted infections (STIs) have been rising, becoming a growing public health issue. Catalonia has had the highest STI rates in Spain, with an average annual increase of 32.4%. In 2023, the incidence rates for chlamydia, gonorrhoea, and syphilis were 196.3, 166.5, and 31.8 cases per 100,000 inhabitants, respectively. This highlights the need for a thorough epidemiological understanding and robust surveillance systems to monitor trends and implement effective prevention measures. Our objective was to develop a powerful model to describe and monitor spatio-temporal trends in order to detect changes in the transmission dynamics of STIs.

Methods: Declared cases of notifiable individual STIs –*Chlamydia*, infectious syphilis, and gonorrhoea– were collected from the STI Registry of Catalonia, fed by information from the mandatory notifiable diseases registry and the microbiological notification system. We calculated annual cumulative incidence rates for Basic Health Areas (ABS) for the period 2016-2023. To assess the deviation in disease risk within an ABS at a given time, we estimated the age- and sex-standardized incidence ratios. Given that we studied three diseases with similar etiologies, we adapted the model proposed by Gómez-Rubio et al. (2019), a Bayesian hierarchical approach for the joint analysis of spatio-temporal data. The model included common and specific spatial patterns of disease that identified similarities and differences in the distribution of the relative risks associated with each disease.

Results: The model allowed us to identify a very similar latent spatial distribution across the three STIs. Regarding temporal evolution, chlamydia and gonorrhoea followed a similar pattern with exponential increases, while syphilis showed a different temporal evolution, exhibiting a more stable and sustained trend over time. We observed that the main hotspots for STIs were primarily located in urban areas with high population density and social dynamics that may have facilitated transmission, and these hotspots remained relatively constant over time.

Conclusions/Recommendations: Identifying diseases with similar spatial and temporal patterns helped uncover shared risk factors, aiding public health efforts. Continuous monitoring of STI trends was crucial for detecting hotspots and implementing timely interventions, while further research on common risk factors could enhance prevention strategies.

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