Spatio-temporal analysis of prescriptions for pain management drugs in England.

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Abstract

An increasing trend for opioid prescribing has been observed around the world. Previous studies found significant spatial variations in opioids prescribing patterns when comparing Clinical Commissioning Groups (CCGs) within England. There is a lack of research exploring such variations at a lower geographical level. This study will explore the spatial and temporal variations in prescribing pattern for three classes of drugs used for management of chronic pain: opioids, benzodiazepines, and gabapentinoids. Furthermore, it will explore correlations between prescribing patterns and regional characteristics such as socioeconomic deprivation.

Monthly data for prescriptions for opioids, benzodiazepines and gabapentinoids at a GP level was extracted from the NHS Digital prescribing data for years 2014-2019. The volume of medications prescribed, measured using the defined daily doses (DDDs) was linked to lower layer supra output area (LOSA) - a spatial unit representing approximately 1500 inhabitants. Spatial autocorrelation will be measured for each month using Moran's I and clusters will be identified using local identifiers of spatial association (LISA). Correlation between volume of prescribing and characteristics of the region, including socioeconomic deprivation measured using the 2015 Index of Multiple Deprivation (IMD), will be calculated.

Our preliminary results show significant spatial autocorrelation between LOSAs within CCGs and nationwide. The results of this study can provide important information on the size, shape, and significance of spatial dependencies which can be used to guide further research and for hypothesis generation. This can be used to identify regions in greater need of interventions design to optimise prescribing of pain management medications.