

Abstract

HIV-HCV syndemic in California: Spatial epidemiological approach

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APHA 2023 Annual Meeting and Expo

Background: HIV-HCV syndemic describes the co-occurrence and the synergistic interaction of human immunodeficiency virus (HIV) and hepatitis C virus (HCV) epidemics in the presence of complex structural determinants that sustain them resulting into excess disease burden. The HIV-HCV syndemic disproportionately affects disadvantaged populations. Utilizing spatial analytical approaches, this study aimed at describing disease concentration of HIV and chronic HCV and the factors associated with the HIV-HCV co-occurrence at a county level in California. **Methods:** Using the most recent county-level surveillance data of 2018 on chronic HCV and HIV rate, opioid prescription, poverty, and racial composition; univariate and bivariate choropleth maps were created. Spatial autocorrelation was measured to show co-occurrence and clustering of HIV and chronic HCV. Further, spatial conditional autoregressive models were constructed to identify variables related to HIV-HCV co-occurrence. **Results:** Clustering of counties with higher rates of chronic HCV, poverty and opioid prescription was identified in the northern region of California. This was further reflected by the bivariate choropleth maps that showed several counties in the northern region having higher chronic HCV rate and opioid prescription or poverty rate. Bivariate choropleth maps showed a few counties with both high chronic HCV rate and HIV prevalence. Opioid prescription was positively associated with the rate of chronic HCV. **Conclusion:** Spatial analytical approaches can lend a strong supporting framework to decipher the HIV-HCV syndemic. These methods also allow for geographically targeted resource allocation to effectively address disease syndemics as well as the structural social deleterious factors that contribute to their occurrence.

Epidemiology Protection of the public in relation to communicable diseases including prevention or control
Public health or related research

