

## **Spatial Distribution and Cluster Analysis of Sexual Risk Behaviors and STIs Reported by Chinese Adults in Guangzhou, China: A Representative Population-Based Study**

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**Abstract :** Background: Economic and social reforms designed to open China to the world has been successful, but also appear to have rapidly laid the foundation for the reemergence of STIs since 1980s. Changes in sexual behaviors, relationships, and norms among Chinese contributed to the STIs epidemic. As the massive population moved during the last 30 years, early coital debut, multiple sexual partnerships, and unprotected sex have increased within the general population. Our objectives were to assess associations between residences location, sexual risk behaviors and sexually transmitted infections (STIs) among adults living in Guangzhou, China. Methods: Stratified cluster sampling followed a two-step process was used to select populations aged 18-59 years in Guangzhou, China. Spatial methods including Geographic Information Systems (GIS) were utilized to identify 1400 coordinates with latitude and longitude. Face-to-face household interviews were conducted to collect self-report data on sexual risk behaviors and diagnosed STIs. Kulldorff's spatial scan statistic was implemented to identify and detect spatial distribution and clusters of sexual risk behaviors and STIs. The presence and location of statistically significant clusters were mapped in the study areas using ArcGIS software. Results: In this study, 1215 of 1400 households attempted surveys, with 368 refusals, resulting in a sample of 751 completed surveys. The prevalence of self-reported sexual risk behaviors was between 5.1% and 50.0%. The self-reported lifetime prevalence of diagnosed STIs was 7.06%. Anal intercourse clustered in an area located along the border within the rural-urban continuum ( $p=0.001$ ). High rate clusters for alcohol or other drugs using before sex ( $p=0.008$ ) and migrants who lived in Guangzhou less than one year ( $p=0.007$ ) overlapped this cluster. Excess cases for sex without a condom ( $p=0.031$ ) overlapped the cluster for college students ( $p<0.001$ ). Conclusions: Short-term migrants and college students reported greater sexual risk behaviors. Programs to increase safer sex within these communities to reduce the risk of STIs are warranted in Guangzhou. Spatial analysis identified geographical clusters of sexual risk behaviors, which is critical for optimizing surveillance and targeting control measures for these locations in the future.

**Keywords :** cluster analysis, migrant, sexual risk behaviors, spatial distribution

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