NAPCRG 52nd Annual Meeting — Abstracts of Completed Research 2024.

Submission Id: 5997

Title

Urban or rural residence and symptom clustering: a population-based cluster analysis

Priority 1 (Research Category)

Population health and epidemiology

Presenters

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Abstract

Context: Where individuals' live influences health outcomes but associations between residential geography and symptom experience are under-explored. Investigating how symptoms cluster, whether rural and urban populations experience symptoms differently, and how other sociodemographic factors influence these clusters could offer valuable insights.

Objective: This study used cluster analysis to explore how twenty-five symptoms were experienced by people living in rural versus urban settings.

Setting and Population Studied: Individuals aged over 50 years residing in Scotland and the English West Midlands providing data on experience of potential cancer and general symptoms to the 'Understanding Symptom Experience FULLy' (USEFUL) study cohort.[1]

Study Design and Analysis: Cluster analysis identified clusters of ≥2 co-experienced symptoms in the study population and explore associations with key demographics, including rural/urban residence.

Results: Data were available from 6696 individuals and those reporting clusters of ≥2 co-experienced symptoms were identified. Emergent clusters included a pain cluster, a pain/breathlessness cluster, a urologic cluster, and heterogeneous cluster with eight diverse symptoms. Symptom clustering was significantly associated ($p<0.001$) with age, sex, marital status, level of education, employment status, income, number of comorbidities, general health, and deprivation. A significant association emerged between place of residence (rural/urban) and symptom cluster patterns in English ($p=0.03$) but not Scottish ($p=0.43$) or overall populations ($p =0.06$). Further analysis revealed the heterogeneous symptom cluster was strongly associated with urban residence. Urban participants grouped into this heterogeneous cluster were more deprived with lower educational attainment and income than

individuals in all other clusters. Additionally, they reported a higher unemployment, poorer self-rated health, and greater difficulty accessing care from their general practitioner's (GPs).

Conclusion: Poorer health outcomes for some conditions may not be associated with greater symptoms burden in rural settings. Indeed, urban dwellers appear to express and experience more symptoms than rural dwellers. The findings signpost future research into the interplay between symptoms, health outcomes and residential geography. The study also identifies a highly symptomatic group of underprivileged urban dwellers, about whom more should be learned.