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Does change in area-level deprivation, change health outcomes? A latent class growth analysis of population data

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Objectives

Trajectories of social mobility may be a more informative predictor of health than point-in time analyses. We sought to identify area-level deprivation trajectories within the Northern Ireland (NI) population and their associations with mortality; receipt of psychotropic medication; and Accident and Emergency (A&E) attendance.

Methods

The spine of the study was the NI population registered with a General Practitioner (GP) in 2010. The study period was split into two parts. In the first part (2010-2016), Latent Class Growth Analysis (LGCA) was used to identify distinct trajectories (classes) in area-level deprivation as measured by the NI Multiple Deprivation Measure. In the second part (2017-2021), the relationship between the latent classes and adverse health outcomes (all-cause mortality; receipt of psychotropic medication; presentations to A&E departments) was modelled using discrete time series analysis and hurdle models, adjusting for confounding variables.

Results

Using data of 1.7 million individuals, we identified seven social mobility classes: three stable, two upwardly mobile and two downwardly mobile. Upward mobility was associated with reduced risk of all outcomes compared to the consistently deprived; while downward mobility was associated with higher risk compared to the consistently non-deprived. For example, the least deprived were less likely to attend A&E and attended less frequently compared to the consistently deprived (OR 0.72: 0.72,0.73; IRR 0.71: 0.70,0.72). An approximate dose-response relationship was observed across classes, with lower 'endpoint' deprivation associated with lower risk of adverse outcomes. The exception was the 'substantial upward mobility' class, with risk of poor outcomes second highest despite improved deprivation rank (e.g. any A&E attendance (OR 1.01: 0.99,0.94); yearly rate (IRR: 0.94 (0.93,0.96))).

Conclusion

Although social mobility influences health, the effects are more nuanced than generally recognised. While continuous residence in deprived neighbourhoods is associated with poor health, upward mobility may not ameliorate this phenomenon. The residual effects of residence in deprived areas underline the importance of 'front-loading' of resources early in the life-course.



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