

The effect of neighbourhood crime and deprivation on pregnancy outcomes. A quasi-experimental study using routine administrative records

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Introduction

We know that rates of adverse pregnancy outcome such as low birthweight and preterm births vary both by socio-economic status and across geographical areas. Furthermore, more deprived neighbourhoods show higher rates of adverse outcomes. However, much of the evidence comes from cross-sectional observational studies where causality is difficult to assess.

Objectives and Approach

Neighbourhood crime and a resultant increase in maternal stress is a plausible explanation for the deprivation-birth outcome relationship. Without an experiment, isolating this pathway from other confounding effects is challenging. Because many mothers (within the Scottish maternity dataset) experience multiple pregnancies and varying exposure for the same person, we can assume a quasi-experimental allocation to exposure. We model associations as both within mother (comparing exposures between pregnancies to the same mother) and between mother (comparing different people between more and less deprived areas) partitioning the variation and effects accordingly.

Results

We find that both composite neighbourhood deprivation and neighbourhood crime specifically is associated with reduced birthweight. However, the composite neighbourhood deprivation measure is only significant when modelled as a between mother effect. Neighbourhood crime on the other hand is significantly associated with both between mother and within mother effects (though the latter is reduced compared to the former). These results suggest that much of the observed relationship with deprivation in general is therefore confounded by factors associated with the composition of individuals in these areas rather than an area deprivation effect per se. In contrast, the association with neighbourhood crime can be considered in isolation from the composition of individuals and is therefore likely to be an independent “area” effect.

Conclusion/Implications

These results are important because outcomes of pregnancy including birthweight and premature births influence health and social outcomes not just in infancy but across the life course. This study suggests policies targeting neighbourhood crime may help to reduce neighbourhood disparities in pregnancy outcomes and therefore health inequalities in general.

