Identifying aspects of neighbourhood deprivation associated with increased incidence of schizophrenia

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ABSTRACT

Background: Several studies have found an association between area deprivation and incidence of schizophrenia. However, not all studies have concurred and definitions of deprivation have varied between studies. Relative deprivation and inequality seem to be particularly important, but which aspects of deprivation or how this effect might operate is not known.

Methods: The Lambeth Early Onset case register is a database of all cases of first episode psychosis aged 16 to 35 years from the London Borough of Lambeth, a highly urban area. We identified 405 people with first onset schizophrenia who presented between 2000 and 2007. We calculated the overall incidence of first onset schizophrenia and tested for an association with area-level deprivation, using a multi-domain index of deprivation (IMD 2004). Specific analyses into associations with individual sub-domains of deprivation were then undertaken.

Results: Incidence rates, directly standardized for age and gender, were calculated for Lambeth at two geographical levels (small and large neighbourhood level). The Poisson regression model predicting incidence rate ratios for schizophrenia using overall deprivation score was statistically significant at both levels after adjusting for ethnicity, ethnic density, population density and population turnover. The incidence rate ratio for electoral ward deprivation was 1.03 (95% CI = 1.004–1.04) and for the super output area deprivation was 1.04 (95% CI = 1.02–1.06). The individual domains of crime, employment deprivation and educational deprivation were statistically significant predictors of incidence but, after adjusting for the other domains as well as age, gender, ethnicity and population density, only crime and educational deprivation, remained statistically significant. Low income, poor housing and deprived living environment did not predict incidence.

Conclusions: In a highly urban area, an association was found between area-level deprivation and incidence of schizophrenia, after controlling for age, gender, ethnicity and population density; high crime and low levels of education accounted for this. As both of these are potentially modifiable, this suggests a possible means to reduce the incidence of schizophrenia.

1. Introduction

There is considerable interest in the relationship between the social environment and psychosis(Allardyce and Boydell, 2006). This focus is supported by the now repeated observation that schizophrenia incidence varies considerably between neighbourhoods in a single area (Boydell et al., 2001; March et al., 2008). Kirkbride et al. (2007) found a wide variation in the incidence of broadly defined psychosis between electoral wards in South East London; applying Bayesian methods appropriate for modelling the spatial patterning of rare events, rate ratios were found to range between a minimum of 0.48 to a maximum of 2.33 relative to the average. There is now good evidence for the role of contextual exposures on schizophrenia rates, for example, in relation to ethnic density (Boydell et al., 2001; Kirkbride et al., 2008; Veling et al., 2008), social fragmentation (Allardyce et al., 2005) and social isolation (van Os et al., 2000). (See Fig. 1.)

Higher rates of schizophrenia have been found in deprived areas, but findings have been inconsistent (Harrison et al., 1995; Boardman et al., 1997; Koppel and McGuffin, 1999).Thornicroft et al. (1993) provided evidence that the effect might not hold in rural areas. Giggs (1973) examined the geographical distribution of all patients admitted for schizophrenia in Nottingham. An increased concentration of cases in the inner city was observed, particularly in areas with concentrated low social status, high unemployment and single-person households. The association seems to be stronger between relative deprivation and
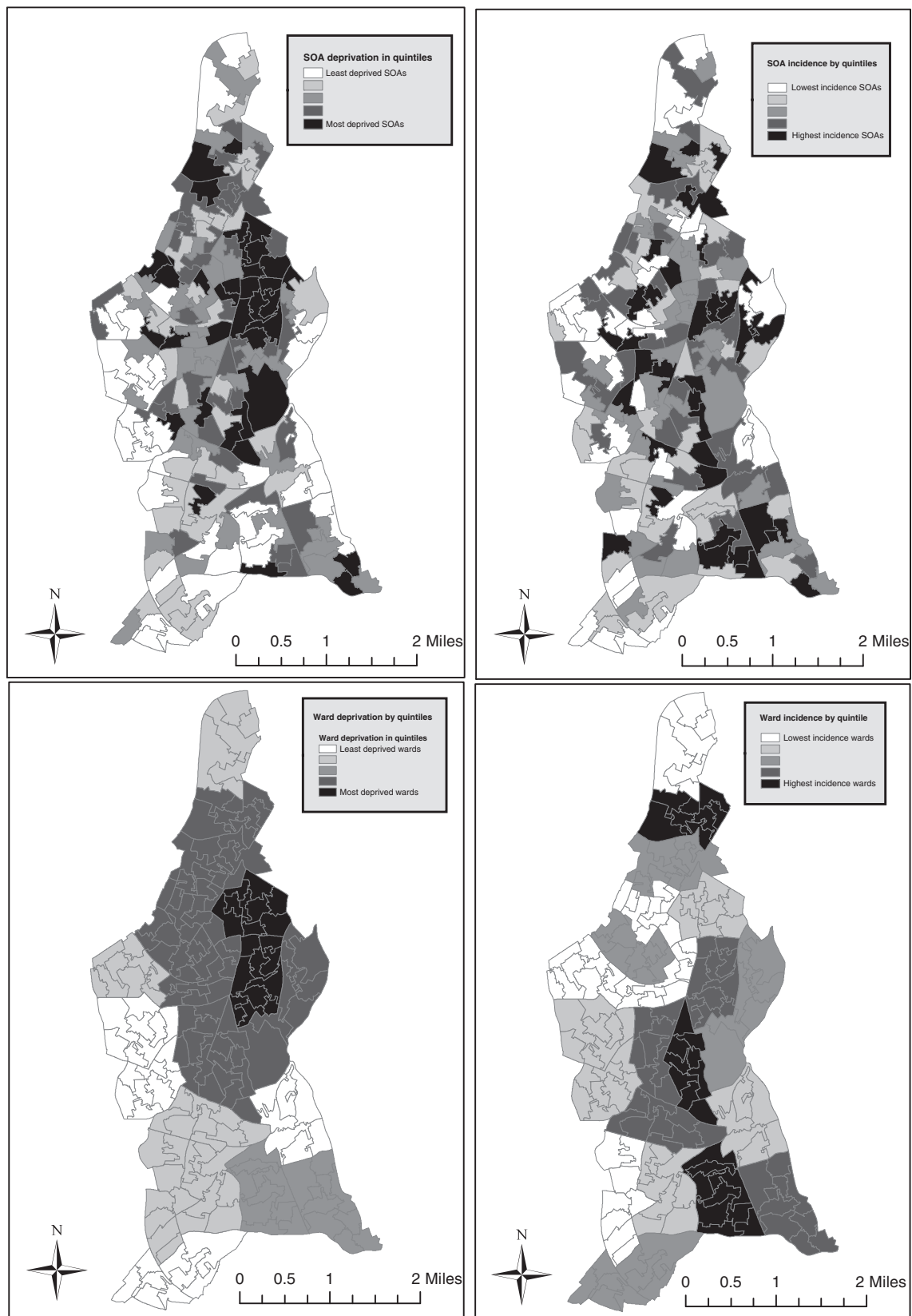
Fig. 1. Maps of Lambeth displaying ward and SOA incidence of schizophrenia and ward and SOA deprivation score.

schizophrenia incidence rather than absolute deprivation. Inequality within neighbourhoods has been shown to predict schizophrenia incidence (Boydell et al., 2004). Kirkbride et al. (2012) found that area-level relative deprivation and inequality were strongly associated with

incidence of non-affective psychosis after adjusting for individual-level socioeconomic status. This suggests a true ecological phenomenon.

Socioeconomic deprivation is a biologically plausible causal factor for psychosis (Morgan et al., 2010). However, epidemiological evidence