

People like us: ethnic group density effects on health

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Studies examining the effects of neighbourhood characteristics have reported what has been called a ‘group density’ effect on health, such that members of low status minority communities living in an area with a higher proportion of their own racial or ethnic group tend to have better health than those who live in areas with a lower proportion. In this paper we survey published research on ethnic group density and health with the aim of stimulating further research. We situate the research question in the context of contemporary social epidemiology and provide a narrative review of studies of ethnic density and health. We go on to discuss processes which may underlie ethnic density effects, and highlight gaps in the literature and opportunities for further research.

Although first recognised in studies of mental illness, ‘group density’ effects on physical health have been shown more recently. Generally, given individual material circumstances, living in a poorer area is associated with worse health. Members of ethnic minorities who live in areas where there are few like themselves are likely to be materially better off, and living in better neighbourhoods, than those who live in areas with a higher concentration. However, through the eyes of the majority community, they may be made more aware of belonging to a low status minority group, and the psychosocial effects of stigma may offset any advantage. If the psychological effects of stigma are sometimes powerful enough to override material advantage, this may have implications for our understanding of how low social status affects health more generally. As well as highlighting the importance of low social status, cultural isolation and social support to health and quality of life, this paper shows how an understanding of group density effects also has something to offer to our understanding of issues of prejudice, segregation, assimilation and integration in diverse societies.

Introduction

Are ethnic and other minorities healthier when they live in areas with a higher concentration of people from the same minority group?

A small number of studies, mostly examining the effects of neighbourhood characteristics on mental illness, have reported such findings. Contributions to such a ‘group density’ effect may include the stress of social stigma experienced by minority groups and their lack of social affiliations within the majority community. In this paper we survey published research on ethnic group density and health with the aim of stimulating further research.

We begin by placing the research question in the context of three major areas of inquiry within social epidemiology: the debate between the relative importance of material vs. psychosocial determinants of health; the literature on the contextual effects of local areas

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on health; and studies of segregation and health. We then provide a narrative review of studies of ethnic density and health, and go on to discuss racism and stigmatisation as processes which may underpin ethnic density effects. We end by highlighting gaps in the literature and opportunities for further research.

Material vs. psychosocial causes of ill health and health inequalities

Some groups of people are healthier than others. This simple statement describes a complex phenomenon that has become an important controversy in epidemiology and public health. Overwhelmingly, for almost all kinds of morbidity and mortality, groups at the bottom of the social scale are less healthy than those at the top. *Why* are poorer, less educated, lower class groups less healthy than others? Historically, and indeed today, this has been a question that has polarised researchers, policy makers, politicians and casual onlookers (Smith *et al.* 1990). Currently, the debate is largely between those who favour a direct material explanation and those who believe that psychosocial pathways provide the links between material circumstances and health (Lynch *et al.* 2000, Marmot and Wilkinson 2001). The debate is important because if health disparities are largely a consequence of people lacking material resources, then policies must be directed towards correcting those deficits. But if inequalities in health are largely due to people's feelings about their status in relation to others, then policies that encourage redistribution leading to a more egalitarian and/or communitarian society will be needed to close the health gap. As material status and psychosocial status are so intertwined, to move this debate forward we need fresh perspectives and research approaches that allow us to disentangle the two.

Health in a neighbourhood context

Another area of research with relevance to understanding health inequalities is that of neighbourhood influences on health (Catalano and Pickett 1999). The neighbourhoods in which people live may influence health through a variety of mechanisms, including such material factors as the availability and accessibility of health services, pollution, sub-standard housing, as well as such psychosocial pathways as the prevalence of prevailing attitudes towards health and health-related behaviours, stress and lack of social support (Macintyre *et al.* 1993, Macintyre *et al.* 2002). Typically, studies have used routinely collected or survey data on the health of individuals, or vital statistics, linked to data on small areas, taken from the national census (Pickett and Pearl 2001). In such studies, finding a contextual effect on health of, say, area-level income (above and beyond the compositional effects of individual-level income) *might* indicate that neighbourhood affluence and poverty are important in themselves. But it might mean that we are lacking enough data to see that there are other factors, perhaps including underlying psychosocial factors such as neighbourhood levels of trust, that are important, or other material factors such as the lack of shops selling healthy food at affordable prices. It may also mean that neighbourhood factors are picking up the effect of unmeasured individual variables; indeed, neighbourhood effects tend to diminish when more individual-level socioeconomic variables are included in models. Among psychosocial factors, the idea of social capital has gained recent prominence as a neighbourhood characteristic with an influence on health (Kawachi 1999, Lochner *et al.* 1999). In material terms, theories about 'food deserts' and lack of investment in education and health facilities have become current (Lynch *et al.* 2000, Morland *et al.* 2002).

The effects of economic and racial/ethnic segregation

Multilevel studies of neighbourhood socioeconomic status on health depend on there being a mix of both rich and poor individuals in rich and poor neighbourhoods – without that mixture we would be unable to distinguish between the effects of context and composition. And yet we know that there are strong correlations between individual and neighbourhood socioeconomic status – rich and poor people tend to live in different areas. Two studies in the US have shown that economic segregation is, in itself, detrimental to health (Waitzman and Smith 1998, Lobmayer and Wilkinson 2002). If health is worse in deprived and economically segregated neighbourhoods then racial and ethnic minority groups are going to suffer more than others because they are more likely to live in deprived and economically segregated areas (Williams and Collins 1995, 2001). Residential segregation by race and ethnicity is a persistent reality in the USA, where racial and ethnic segregation creates what Williams and Collins call ‘distinctive ecological environments’. They point out that, although there are many more poor white people than poor black people in the USA, poor whites are more likely to live among people who are not poor, while poor blacks tend to live in areas of high poverty. Reporting an analysis of the largest cities in the USA, Sampson and Wilson (1995) state that:

‘The worst urban context in which whites reside is considerably better than the average context of black communities’. (p. 41)

Research continues to accumulate showing that racial and ethnic segregation is related to poor health (see, for example, Polednak 1997, Williams and Collins 2001), as well as limitation of educational and employment opportunities (Jencks and Mayer 1990). Segregation is also linked to systematic underinvestment in ethnic minority communities, limiting the development of healthy physical and social conditions (Williams and Collins 2001).

In the UK, there has been recent debate about whether or not ethnic segregation of communities is a growing problem; it appears that it may actually be decreasing, as ethnic minority populations grow and spread (Simpson 2007). Nevertheless, the ethnic minority population of the UK continues to be more likely to live in areas with poor educational, housing and employment conditions (Platt 2007).

Group density effects may show the power of psychosocial pathways

It might seem surprising, given the evidence of health inequalities and the effects of neighbourhood deprivation and economic and racial segregation, to suggest that members of ethnic minority groups might be healthier when they live in areas with a higher concentration of same-ethnicity population. However, social status (Marmot 2004), social support and friendship (Berkman 1984), and early childhood experiences (Keating and Hertzman 1999) are known to be powerful determinants of health throughout life and it has been suggested that they all involve a generalised social anxiety (Wilkinson 2005). Knowing ourselves partly through the eyes of others, the central issue is whether we feel validated or stigmatised by our position in society and our social relationships (Wilkinson 1999). Sociologists such as Bourdieu have drawn attention to the power and ubiquity of social distinctions for human relationships (Bourdieu 1984). In their study of health in Central Harlem, Mullings and Wali found that 99% of respondents to a neighbourhood survey reported that living in a black community was a ‘positive aspect’ of where they lived (Mullings and Wali 2001). In the same study, the authors say that:

'Middle-stratum African Americans in Harlem . . . may have exchanged one set of stressors for another. They were willing to live under conditions of systematic neglect of community and higher levels of violence in exchange for the protective features offered by living in a black community, including the feelings of community, access to cultural resources, and a more limited exposure to everyday acts of racism in their neighborhoods'. (pp. 42–43)

Middle class residents of Harlem stated that working around white people all day was stressful and that when they came home again, they could relax. One man said he preferred to work around black people, even though he could have made much more money if he worked outside Harlem – he said the 'psychic cost (was) too great'.

Much past research on race, ethnicity and health has focused simply on 'race' and not on racism, socioeconomic structure and class as causes of ill health (Ahmad 1992, Sheldon and Parker 1992, McKenzie 2003). Karlsen and Nazroo have shown both that fear of racism affects health (Karlsen and Nazroo 2004) and that it is 'ethnicity as structure' – perceptions and experiences of racism – that affects health, while 'ethnicity as identity' does not (Karlsen and Nazroo 2002). In an analysis of the fourth National Survey of Ethnic Minorities, ethnic identity was measured through questions relating to people's nationality, country of origin and skin colour, their traditions (clothing/language/relationships) and participation in the community. These aspects of ethnic identity were not related to health in any ethnic group, after adjustment for age, gender and class. Structural aspects of ethnicity were measured by questions relating to people's experiences of racial harassment and perceptions of the extent of racial discrimination in Britain; these factors were related to health, with increased risk of poorer health among those who had experienced racial harassment or thought that British employers had racist attitudes. It seems that it is not *who one is* but *what it means* that matters. All those who are socially excluded or discriminated against, whether by ethnicity, class, education, occupation, gender, etc. experience their difference in the wider world when they move outside the social spaces where they feel accepted and valued (Bourdieu 1984, Halpern 1993, Charlesworth *et al.* 2004).

As well as illuminating the experience of minority status and the stigma often attached to it, what makes the study of group density effects additionally interesting is that it offers a chance to disentangle psychosocial influences on health from the effects of material factors. Members of low status ethnic minorities who live in areas where there are few like themselves are likely to be materially better off, and living in more affluent neighbourhoods, than those who live in areas with a higher concentration (Dorsett 1998, Halpern and Nazroo 2000). However, through the eyes of the majority community, they may be made more aware of belonging to a low status minority group. In areas with lower same-ethnic density, higher material standards would tend to improve health, while the psychosocial effects of stigma may offset any advantage. In areas with higher same-ethnic density, more material deprivation would tend to have an adverse effect on population health, while shared culture, social networks and social capital might exert a protective effect. If the effects of stigma are sometimes powerful enough to override material advantages, or the effects of social integration are sometimes powerful enough to override material deprivation, then this has implications for our understanding of low social status more generally.

Review of studies of group density effects

Mental health

Halpern has written a seminal review of group density effects on mental health (Halpern 1993). He described how ethnic minority groups have often been reported to have high

rates of psychiatric admissions and how two competing theories of social selection or 'drift' and social causation were proposed as explanations of these high rates of mental illness. If the selection theory holds, when members of a disadvantaged group – such as an ethnic minority – achieve socioeconomic success, they will be the least likely of that group to have poor mental health. If instead, this sub-group achieving socioeconomic success is characterised by poor mental health, then 'drift' is unlikely to explain the finding but a protective effect of group density could.

Studies of ethnic minorities and migrants in various settings are reported by Halpern (1993). In Chicago, whites had lower psychiatric admissions than blacks, except when they lived in predominantly black areas, and in these areas blacks had unexpectedly low rates of admissions (Faris and Dunham 1939, Levy and Rowitz 1973). In Canada, the same phenomenon was observed for English vs. French-speaking residents (Malzberg 1964); in Boston it was seen among Italian-Americans (Mintz and Schwartz 1964) and in New York City ethnic-specific psychiatric admission rates were negatively correlated with the proportion of that ethnic group in the neighbourhood for black, white, Puerto-Rican, Irish, German, Polish, Austro-Hungarian, Russian and Italian residents (Muhlin 1979, Rabkin 1979). In the UK, Cochrane and Bal studied hospital admissions for mental illness among foreign-born groups and found a small but non-significant effect of ethnic density within ethnic minority groups (Cochrane and Bal 1988). Halpern suggests that the absence of a stronger effect might be due to the fact that Cochrane and Bal are looking at regions, rather than the more local areas examined in the US studies – the scale within which group density effects have most salience remains an open question. Looking on a smaller scale in the UK – electoral wards within London – Boydell and colleagues found a higher incidence of schizophrenia among ethnic minorities (Caribbean, African and all minorities) in wards where they comprised the smallest proportion of the population (Boydell *et al.* 2001), while Neeleman and Wessely report that ethnic minority (African-Caribbean, Asian and all minority) suicide rates are higher in wards with fewer ethnic minority residents (Neeleman and Wessely 1999). In a study of individuals receiving emergency medical care for deliberate self-harm, Neeleman and colleagues found lower risks of self-harm for members of ethnic minorities (African-Caribbean, Asian and any minority) with an increasing percentage of ethnic minority residents in the area (Neeleman *et al.* 2001). However, they also reported that an inverted u-shape curve was a better fit to the data, so risks of self-harm were lowest in areas with the highest and lowest proportions of ethnic minorities.

Different psychiatric admission rates between ethnic minority groups may reflect admission/referral bias rather than true variations in mental health. Such bias might arise from how different groups manage mental illness within their communities and from how health practitioners diagnose and treat different groups. Halpern and Nazroo studied psychiatric symptoms in a community-based sample in the UK in a study designed to resolve this problem (Halpern and Nazroo 2000). They found that ethnic density was related to both neurotic and psychotic symptoms, after controlling for age, sex and hardship; and these results were not affected by controlling for fluency in English or acculturation. Within different ethnic groups in the study, group density was protective of mental health among Indian, Caribbean, Bangladeshi, African Asian and Chinese people, but for Pakistanis higher group densities were related to more psychiatric symptoms, although this effect was non-significant. However, in the only study of mental health symptoms conducted in a US sample, Henderson and colleagues report no effect of ethnic density on symptoms of depression among young white and black adults (Henderson *et al.* 2005). It is likely that in this sample there were insufficient numbers of white individuals living in non-white areas to detect an ethnic density effect, as the white sample lived in

areas with, on average, around 2% of black residents. But this does not explain the lack of findings in the black sample, who lived in areas with a much wider range of ethnic density (inter-quartile range for men and women approximately 10–75% black residents); the authors do not report whether they investigated curvilinear effects.

In summary, there is a growing body of evidence, fairly consistent across time, national boundaries and different ethnic groups, that ethnic group density affects mental health. Turning to physical health, the literature is much sparser but a few studies reported over the past decade provide some support for an effect of ethnic density.

Adult morbidity and mortality

Fang and colleagues studied all-cause and cardiovascular mortality in relation to residential racial segregation in New York City (Fang *et al.* 1998). They used mortality data for a seven-year period and linked deaths to residential zip-codes. Zip-codes where more than 75% of the residents were non-Hispanic white were classified as predominantly white, those with more than 75% non-Hispanic black residents were classified as predominantly black. More than 2.9 million New Yorkers were living in racially segregated areas. Both whites and blacks living in predominantly white areas had higher socioeconomic status than their counterparts living in predominantly black areas. Whites of all ages and both sexes who lived in predominantly black areas had higher mortality than those living in predominantly white areas, even after controlling for their socioeconomic status. After adjustment for socioeconomic status, death rates among younger blacks didn't differ much by the racial composition of the area they lived in, but for older blacks, mortality rates were higher in predominantly white areas, and this was particularly true for deaths from coronary heart disease.

In a study of premature heart disease mortality in Texas, Franzini and Spears examined interactions between individual race and ethnicity and the racial/ethnic composition of neighbourhoods (census tracts) in which individuals were living (Franzini and Spears 2003). In this study, being black or Hispanic was associated with 3–4 years of potential life lost to heart disease. But for both blacks and Hispanics, a higher percentage of residents of the same ethnicity in their neighbourhood was associated with a decrease in years lost to heart disease. As in the New York Study cited above, this effect was independent of individual-level socioeconomic status. The group density effect was stronger for the Hispanic population than the black population.

Smaje conducted a study of ethnic concentration in 30 residential areas (electoral wards) of London and self-rated health, using a household survey conducted in the mid-1980s (Smaje 1995). Individuals were classified as white, black or South Asian and ethnic density was measured by a concentration index, which indicated whether or not there were more or less ethnic minority residents in the area than expected, given their representation in Greater London. In this study, South Asians were more likely to report poor health than whites, but black individuals exhibited no increased risk, after adjusting for five measures of socioeconomic status and area deprivation. People who lived in areas with lower concentrations of their own ethnic group were significantly more likely to report poor health or recent acute illness, although not to report health being a major problem.

In another British study of ethnic density and self-rated health, Karlsen and colleagues used the nationally representative fourth National Survey of Ethnic Minorities from 1993 to 1994, allowing them to conduct within-group analyses for whites and those of Caribbean, Indian and Pakistani/Bangladeshi descent (Karlsen *et al.* 2002). Multi-level regression analysis was used to estimate the effects of ethnic density, area deprivation and

resident's perceptions of the areas they lived in, as well as individual socioeconomic factors. They found no statistically significant effects of ethnic density for any group, but – surprisingly – neither did they find any health effects of deprivation for Caribbeans or Pakistani/Bangladeshi, and deprivation effects for whites and Indians were not significant in models that included perceptions of the neighbourhood (which were not significant either). Two possible reasons for this lack of effect include a lack of statistical power for the multilevel models (power is driven by heterogeneity within areas), and insufficient levels of ethnic density to offer a protective effect on health. High density areas were defined as those with greater than 15% of same ethnic minority residents – it may be that ethnic density is only beneficial for health at higher levels.

Pregnancy outcomes

Three studies report on effects of ethnic density on pregnancy outcomes. There are striking, and persistent, ethnic disparities in pregnancy outcomes in the USA. African-Americans have a 2–3 times risk of adverse outcomes such as infant mortality, low birth weight and preterm delivery, compared to whites, Hispanics and Asian-Americans.

In 1997, Roberts published a study of neighbourhood social factors and low birth weight using 1990 birth certificate data for Chicago (Roberts 1997). He was able to control for individual-level sociodemographic variables, such as age, parity and education and some health-related behaviours – including prenatal care, smoking and alcohol use in pregnancy. Although black women had higher overall risks of low birth weight than white women, the percentage of black residents in their neighbourhood was inversely associated with risk. Interestingly, Collins and colleagues reported that positive 'income incongruity', that is, living in a more affluent neighbourhood than expected on the basis of individual factors, was associated with a *decreased* risk of very low birth weight in Chicago (Collins *et al.* 1997). In a study that attempted to make sense of these findings, researchers hypothesised that positive income incongruity would be protective against low birth weight only for women living in predominantly black areas and sought to identify an interaction between the effects of income incongruity and racial density on pregnancy outcomes in Chicago (Pickett *et al.* 2005). They found that the expected benefits of positive income incongruity for low birth weight and preterm delivery were evident for black women living in predominantly black areas, but of no benefit at all to black women living in mixed neighbourhoods. This finding has since been replicated in North Carolina, where communities are far less segregated (Vinikoor *et al.* 2007).

In another study, researchers attempted to disentangle the effects of neighbourhood deprivation, ethnic density and a chronic stressor (exposure to violent crime), on birth weights in Chicago (Masi *et al.* 2007). They hypothesised a group density effect – that the proportion of same minority ethnic residents in a neighbourhood would be positively correlated with birth weight but also that in very segregated neighbourhoods any ethnic density advantage would be offset by high levels of deprivation and crime. Significant protective effects of group density were found for white and Hispanic women, and these effects were stronger for birth weight and for preterm birth than for foetal growth restriction. Among black women there was a non-significant trend for higher birth weights and lower risk of preterm birth in areas with higher proportions of black residents. The effects of violent crime and deprivation on birth outcomes were not attenuated by including ethnic density effects in regression models.

In summary, the evidence for ethnic density effects on physical health is sparse but suggestive. Evidence from the USA is currently more supportive of ethnic density effects

than studies in the UK. Possible reasons for this difference include the greater ethnic densities for some US populations, a focus on 'harder' outcomes, such as mortality and low birth weight rather than self-reported health, and the histories and cultures of different ethnic groups in each country. There is clearly scope for more research in this area.

Other kinds of group density effect

If living among those of a congruent race or ethnicity can have an effect on our health, what about the impact of other kinds of shared characteristics? There is also some empirical evidence that sharing a religion, occupation or class with people living around us can also benefit health (Halpern 1993).

It was Durkheim who, in 1897, first drew attention to the higher risk of suicide for individuals living in areas where their religious affiliation was incongruent with the majority of the population (Durkheim 1952). In 1964, Rosenberg reported that religious incongruity was associated with emotional disturbance among high school students in New York, mediated by feelings of alienation and prejudice (Rosenberg 1964). Among Catholics and Protestants in Northern Ireland, Cairns found that when either were in the majority, low social class was associated with higher levels of mental health symptoms but when in the minority, it was those with high social class who exhibited the most symptoms (Cairns 1988). However, it is among religious groupings in Northern Ireland that a study reports a finding of a density effect in the opposite direction than expected. Murphy and Vega found higher rates of schizophrenia among Catholics in areas with higher Catholic densities, but this effect was found only in rural areas (Murphy and Vega 1982). Congruence by occupation has also been linked to lower rates of psychiatric admission (Wechsler and Pugh 1967). Four studies from North America suggest that mortality may be higher for poor people living in rich areas than for poor people living in poor areas (Yen and Kaplan 1999, Veugelers *et al.* 2001, Borrell *et al.* 2004, Winkleby *et al.* 2006).

Discussion

Our review of the literature pulls together some evidence of effects of ethnic density on both physical and mental health that are not explained by differences in material living standards. The review also raises questions about the underlying processes which might produce ethnic density effects and, by identifying knowledge gaps, suggests directions for future research.

Potential explanations of ethnic density effects

One possible explanation of why the health of ethnic minority groups might be better in areas with higher ethnic group density can be found in the literature on social integration and health. From Durkheim onwards researchers have shown that the relationships we have with other people matter for our health, and social integration is well established as an important determinant of population health (Berkman *et al.* 2000). Having friends, being married, belonging to a religious group or other association, and having people who will provide support are all protective for health (Berkman and Glass 2000, Stansfeld 2006). In experiments, researchers have shown that people with friends are more likely to catch a cold when exposed to the cold virus, in fact the more friends they had, the more resistant they were (Cohen 2005). Experiments have also shown that wounds heal faster if people

have good relationships with their intimate partners (Kiecolt-Glaser *et al.* 2005). As well as the social integration of individuals with each other mattering for health, there is a growing literature on social capital and health, showing that levels of social cohesion in ecological units, such as neighbourhoods or regions, are associated with individual and population health (Kawachi 1999).

Another area of research which may point to processes underlying ethnic density effects comes from studies of stigma and health. Stigma has been defined as ‘any physical or social characteristic believed to be demeaning’ (Giddens 2006). Link and Phelan identify the processes which generate stigma (Link and Phelan 2006). First, people identify and label others as different, then they stereotype those differences, and label the other group as ‘them’ rather than ‘us’. The stigmatised group then experiences discrimination and loss of status. The process may also work in the opposite direction – status differences may lead us to look for features which distinguish low status groups and then become status markers attracting discrimination. Not all ethnic minority groups are stigmatised, and any particular group may be stigmatised only in particular times and places, but as Link and Phelan point out, stigmatisation can have dramatic effects on life chances, on chronic stress and on health.

Research on ethnic density is consistent with the view that stigma may be important to health; racist stigma is an instance of the more general pattern by which low socioeconomic status attracts stigma. The stigmatising effects of minority status can be generalised to the stigmatising effects of low social status and social exclusion associated with social stratification more generally. Residential neighbourhoods are just one of many settings in which stigma operates. Members of stigmatised groups experience their inferior status at home, school and work, as well as in public spaces and when they travel between places. Broader social inequalities and resulting health inequalities become underpinned by racism (Nazroo 2003). The following description (transliterated from dialect) comes from a working-class man in England, attending his local university in a former industrial city, and portrays his discomfort in travelling from the working-class area where he feels he belongs to the middle class neighbourhood where he feels himself an outsider (Charlesworth *et al.* 2004):

‘It slowly grinds you down, mate, day in day out, going in... I drive in, there’s a certain point, a tree or a sign-post and I’m ‘right, this is where uni’ starts’, I feel me stomach tighten, and you know inside ‘it’s all down hill from here, till I come back past that point and I’m like, ‘right, this is where home starts, this is comfort zone’, I recognize it, that’s where home starts, I recognise this, ‘I’m out of the Uni’, I’m comfortable, I can cope’, that’s why I drive back, even between me lectures, just to see them points, to get back and see Woodman (pub) and think ‘right, I’m OK’, you recognize landmarks, it gives you that detachedness from uni’...’

All those who are socially excluded or discriminated against, whether by ethnicity, class, education, occupation, gender, etc. experience their inferiority in the wider world when they move outside of the social spaces where they feel accepted and valued (Bourdieu 1984, Halpern 1993). Even non-personal encounters with the media, with literature and other forms of culture can reinforce people’s awareness of their low social status.

Research shows that status inconsistency or incongruity – situations in which there is a mismatch between, for example, someone’s education and their income – is related to perceived stress and poor psychological health (House and Harkins 1975, Vernon and Buffler 1988). There is also work on the deleterious health effects of upward social mobility, where people may feel their class of origin disqualifies them from full acceptance

or membership in their achieved social class (Horan and Gray 1974, Ashford 1990, Tiffin *et al.* 2005).

A related explanation of the ethnic density effect is the impact of racism and downward prejudice on health. Exposure to structural, institutional and interpersonal racism is a well-documented, deep-rooted and widespread source of both acute and chronic stress for minority populations (Clark *et al.* 1999, Williams 1999, McKenzie 2003). In the 1990 US General Social Survey, a majority of whites agreed with the statements that 'black and Hispanic people are more likely than whites to prefer living on welfare' and 'black and Hispanic people are more likely than whites to be lazy, violence-prone, less intelligent, and less patriotic'. The empirical evidence linking racism to health is growing (Paradies 2006), particularly in the USA (Krieger 2000, Williams *et al.* 2003) but is still minimal in the UK (Karlsen and Nazroo 2004). In a longitudinal study in The Netherlands, those who reported experiencing racial discrimination were at higher risk of psychotic symptoms (Janssen *et al.* 2003).

Methodological issues and directions for future research

As well as being a fairly sparse literature, studies of ethnic density effects on health have methodological limitations which must be addressed if the field is to advance. All of the earlier studies were ecological and it is only with the development and application of multilevel modelling that researchers have been able to parse out the effects of context (ethnic density) from composition (the individual characteristics of people in areas with greater and lesser degrees of ethnic density). Multilevel studies allow researchers to avoid both the ecological and atomistic fallacies in studying people and places.

All published studies of ethnic density are cross-sectional and thus the selective processes by which members of ethnic minorities move within and between areas with different ethnic densities are not understood, nor is their impact on such studies easily theorised. As demographic data suggest that members of ethnic minorities living in areas with lower same-ethnic density are more affluent and/or live in more affluent areas, such people may be upwardly socially mobile, which has been shown to have mixed consequences for health. If more upwardly mobile people experience status inconsistency, this can have a negative impact on health, which may be underpinning the ethnic density effect (Ashford 1990). On the other hand if unhealthy people are downwardly socially mobile, then any ethnic density effect would be attenuated and the findings reported in published studies would be conservative estimates. Bhugra and Arya (2005) hypothesise that the concept of ethnic density might provide an explanation of the association between migration and mental illness. They theorise that a move from what they term a 'sociocentric' society to an 'egocentric' one would lead to more distress and more mental illness, as would the cultural incongruity faced by a migrant in an alien culture. Longitudinal studies of ethnic density and migration are needed to clarify these issues.

Other methodological issues that could be addressed in future research include systematic explorations of whether or not group density effects are a generalised phenomenon among all minority groups or only among low status groups, or only among particular ethnic minorities at specific times in specific places. More research is also needed to explore whether the underlying mechanisms reflect the positive effects of social integration in high density areas or the negative impacts of racism and/or stigma in low density areas. How far shared language/culture/traditions, etc. separate from the majority community can protect low status groups is also unknown. Also unresolved are whether or not group density effects generalise to groups defined by social class and to different health

outcomes (Yen and Kaplan 1999, Veugelers *et al.* 2001, Borrell *et al.* 2004, Winkleby *et al.* 2006). The ‘tipping point’ or degree of density needed to exert a protective effect on health remains unknown, as is the size of the area/community within which these effects are most relevant.

In conclusion, there is a growing body of evidence that ethnic group density may affect both mental and physical health, although further work is needed to clarify the scope and magnitude of effects and the underlying mechanisms. Studies of ethnic density effects on health have the potential to be a lens through which we can examine how social stratification and inequality affects us all and have the potential to be important contributions to contemporary discussions around social cohesion, integration, assimilation and multiculturalism in diverse populations.

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