Are immigrant enclaves healthy places to live? The Multi-ethnic Study of Atherosclerosis

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ABSTRACT

The growing size and changing composition of the foreign-born population in the USA highlights the importance of examining the health consequences of living in neighborhoods with higher proportions of immigrants. Using data from the Multi-ethnic Study of Atherosclerosis in four US cities, we examined whether neighborhood immigrant composition was associated with health behaviors (diet, physical activity) among Hispanic and Chinese Americans ($n = 1902$). Secondarily we tested whether neighborhoods with high proportions of immigrants exhibited better or worse neighborhood quality, and whether these dimensions of neighborhood quality were associated with healthy behaviors. Neighborhood immigrant composition was defined based on the Census 2000 tract percent of foreign-born from Latin-America, and separately, percent foreign-born from China. After adjustment for age, gender, income, education, neighborhood poverty, and acculturation, living in a tract with a higher proportion of immigrants was associated with lower consumption of high-fat foods among Hispanics and Chinese, but with being less physically active among Hispanics. Residents in neighborhoods with higher proportions of immigrants reported better healthy food availability, but also worse walkability, fewer recreational exercise resources, worse safety, lower social cohesion, and lower neighborhood-based civic engagement. Associations of neighborhood immigrant composition with diet persisted after adjustment for reported neighborhood characteristics, and associations with physical activity were attenuated. Respondent-reported neighborhood healthy food availability, walkability, availability of exercise facilities and civic participation remained associated with behaviors after adjusting for immigrant composition and other covariates. Results show that living in an immigrant enclave is not monolithically beneficial and may have different associations with different health behaviors.

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Introduction

Immigrants are a large and increasingly important segment of the US population, and today's immigrants are more ethnically diverse than ever (Grieco, 2003; Zhou, 2001). Immigrants and ethnic minorities are highly likely to live in neighborhoods with high proportions of other immigrants and/or with other residents from the same ethnic group (Logan, Zhang, & Alba, 2002; Suro & Tafoya, 2004). Immigrant enclaves (neighborhoods with high proportions of immigrants) are one feature of the American receiving context that may facilitate successful immigrant adaptation (Logan & Lewis Mumford Center, 2003; Portes & Stepick, 1993; Wilson & Portes, 1980), by offering cultural goods, social networks, and lower communication costs for non-English language speakers (Fernandez Kelly & Schauffler, 1996). Through these pathways and others, immigrant enclaves may affect health.

Neighborhoods with high proportions of immigrants may be associated with health behaviors simply due to the individual-level characteristics of residents. For example, immigrants in immigrant enclaves may be less acculturated than those in neighborhoods with fewer immigrants, and acculturation has been linked to health behaviors (Abraido-Lanza, Chao, & Florez, 2005; Gordon, 1964; Kandula, Kersey, & Lurie, 2004; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; Salant & Lauderdale, 2003; Singh & Siahpush, 2002). However, there are a number of mechanisms through which neighborhood immigrant composition may affect health independently of individual-level characteristics such as level of acculturation or socioeconomic position.

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A variety of health-relevant social features of neighborhoods may be associated with neighborhood immigrant composition. For example, neighborhood-linked social networks and social control may reinforce norms regarding healthy behaviors or sanction unhealthy ones (Zhou & Bankston, 1996). The resources flowing through social capital and social networks (Fernandez Kelly & Schauffler, 1996; Portes, 1998; Portes & Rumbaut, 2006; Zhou & Bankston, 1996) may support healthy behavior. In addition, immigrant enclaves may insulate individuals from potentially stressful discriminatory exposures (Fernandez Kelly & Schauffler, 1996; Portes & Rumbaut, 2006), which may result in the adoption of unhealthy behaviors as coping mechanisms.

Neighborhood structural context may also play a role. Certain migrant-related resources such as the presence of ethnic food stores relevant for diet, or services like gyms accessible in other languages (Portes, Kyle, & Eaton, 1992; Zhou & Bankston, 1996) may be more common in immigrant enclave neighborhoods. Other structural features such as high poverty or lack of safe walking environments, or advertising of harmful products like tobacco may also be associated with neighborhood immigrant composition (Hackbarth, Silvestri, & Cosper, 1995; Pucci, Joseph, & Siegel, 1998). Immigrants, including immigrants from racial minority groups, are likely to live in very poor neighborhoods (Logan et al., 2002; Logan & Lewis Mumford Center, 2003; Menjivar, 2000; Osypuk, Galea, McArdle, & Acevedo-Garcia, in press), and neighborhood poverty may have detrimental effects on health behaviors. On the other hand, neighborhoods characterized by high immigrant concentration may buffer co-ethnic immigrants from the deleterious effects of poverty (Patel, Eschbach, Rudkin, Peek, & Markides, 2003; Zhou & Bankston, 1996).

Using data from a large, multi-ethnic population-based study, we investigated whether neighborhood immigrant composition was associated with health behaviors (diet, physical activity) after adjustment for individual-level characteristics (including individual-level measures of acculturation) in a multi-ethnic study of middle-aged and older adults, in four major US cities. We also investigated the specific social and structural features of neighborhoods that may explain the links between immigrant enclaves and health. We exploit data that are rich in measures of health behaviors and of multiple dimensions of neighborhood context, to investigate whether immigrant neighborhoods may matter for diet and physical activity, and if so, why, and whether the associations are the same across different ethnic groups and different health behaviors. Lastly, we test whether certain neighborhood quality factors, articulated in our theoretical framework, may mediate enclave–health behavior associations including: individual-level SES, neighborhood poverty, neighborhood-based physical resources (availability of healthy foods, presence of physical activity facilities, walking environment), or neighborhood social context (social cohesion, civic participation, safety).

Methods

We used individual-level data from the Multi-ethnic Study of Atherosclerosis (MESA), a 10-year longitudinal study of risk factors for atherosclerosis (Bild et al., 2002). The MESA cohort includes 6814 men and women aged 45–84 years and free of clinical cardiovascular disease at baseline, recruited from six field centers: Baltimore, MD; Chicago, IL; Forsyth County, NC; Los Angeles, CA; New York, NY; and St Paul, MN. At each site, a probability sample of more than 1000 participants was selected through a variety of population-based approaches. This analysis includes the MESA Hispanic and Chinese samples only. Hispanic participants were recruited in New York, Los Angeles, and St Paul; and Chinese participants were recruited in Los Angeles and Chicago. The

baseline visit for the cohort (on which these analyses are based) took place between July 2000 and September 2002.

Diet quality was assessed by a 120-item food frequency questionnaire (FFQ) adapted from the Insulin Resistance Atherosclerosis Study instrument, which has comparable validity for multi-ethnic populations (Mayer-Davis, Vitolins, Carmichael et al., 1999). The FFQ was modified to include Chinese foods and culinary practices. We operationalized diet as the principal factor identified through factor analysis of diet patterns among 47 food groups (Nettleton et al., 2006). Higher levels of this factor indicate higher consumption of fats and processed meats (fats, oils, processed meats, fried potatoes, salty snacks, and desserts). This dietary outcome was chosen because recent work in nutritional epidemiology highlights the importance of investigating dietary patterns as opposed to individual nutritional items (Hu, 2002). This dietary pattern score reflects dietary variability in this sample and has been linked to cardiovascular risk in prior work (Nettleton et al., 2007). A factor score for each participant was calculated from the sum of the servings per day from all food groups, multiplied by their respective factor loadings (Nettleton et al., 2006).

Physical activity during a typical week was assessed using a detailed, semi-quantitative questionnaire adapted from the Cross-Cultural Activity Participation Study (LaMonte, Durstine, Addy, Irwin, & Ainsworth, 2001). For these analyses we focused on activities that we hypothesized would be linked to the neighborhood context including transportation, walking, dance/sport, conditioning, and leisure activities. We multiplied reported time of activity per week in each activity, by activity intensity values for the specific activity, and summed across activities to obtain metabolic equivalents (METs) (minutes per week). METs are a policy-relevant metric combining time and intensity, used in the American Heart Association physical activity guidelines (Haskell et al., 2007). Physical activity was modeled linearly as weekly METS for the five dimensions relevant to neighborhoods. Sensitivity analyses found comparable results with different categorizations of physical activity.

Acculturation was measured with nativity, language spoken, and length of residence in the US. Nativity (place of birth) was modeled as US-born (reference), foreign-born, or Puerto Rican-born (among Hispanics only), based on respondent's reported country-of-birth. Language spoken at home was categorized as English, Spanish and English (bilingual), Spanish, Chinese (Mandarin or Cantonese), Chinese and English (bilingual), or another language. Number of years in the US among the foreign-born was categorized as 0–14 years, 15–30 years, over 30 years, or missing, compared to US-born. Gender was modeled as dichotomous, and age was modeled in four categories: 45–54, 55–64, 65–74, and 75–84. Annual income was modeled in tertiles ($<\$16,000$, $\$16,000–34,999$, and $\$35,000$ or more); those missing income data were coded separately ($n = 31$). Highest year of educational attainment was modeled in three categories: less than high school degree; high school diploma, some college, and/or vocational/technical school; bachelor's degree or more.

Tract-level census data were used to create two neighborhood immigrant composition variables, specific to the countries of origin present in the MESA sample: tract percent of residents born in Latin America (including Caribbean, Central America, Mexico and South America) and tract percent of residents born in China or Chinese territories (including Mainland China, Taiwan, or Hong Kong). We explored a number of nativity-related census variables and found them to be highly correlated. The variables we chose are simpler to interpret than composite indices and appropriately capture variation across neighborhoods in the percent of ethnic-specific foreign-born residents, which underlies our definition of enclaves as previously noted. Both variables were categorized into quartiles