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Ethnic enclaves and gestational diabetes among immigrant women in New York City

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ABSTRACT

Previous research has shown that immigrants living in their own ethnic enclave are at decreased risk of poor health outcomes, but this question has not been studied in relation to gestational diabetes, an important early marker of lifecourse cardiovascular health. We ascertained gestational diabetes, census tract of residence, and individual-level covariates for Sub-Saharan African, Chinese, South Central Asian, Non-Hispanic Caribbean, Dominican, Puerto Rican, Mexican, and Central and South American migrant women using linked birth-hospital discharge data for 89,703 singleton live births in New York City for the years 2001–2002. Using 2000 census data, for each immigrant group we defined a given census tract as part of an ethnic enclave based on the population distribution for the corresponding ethnic group. We estimated odds ratios for associations between living in an ethnic enclave and risk of gestational diabetes adjusted for neighborhood deprivation, percent commercial space, education, age, parity, and insurance status, using multilevel logistic regression. Overall, we found no effect of ethnic enclave residence on gestational diabetes in most immigrant groups. Among South Central Asian and Mexican women, living in a residential ethnic enclave was associated with an increased odds of gestational diabetes. Several explanations are proposed for these findings. Mechanisms explaining an increased risk of gestational diabetes in South Central Asian and Mexican ethnic enclaves should be examined.

1. Introduction

A growing body of literature suggests that living in a neighborhood of shared ethnic ancestry, or 'ethnic enclave', has a positive influence on immigrant health (Pickett and Wilkinson, 2008). Research regarding the influence of ethnic enclaves on pregnancy health has been limited, however, by the use of broad ethnic categories and a lack of focus on immigrant women. Gestational diabetes is a substantial public health problem among immigrant women, and therefore is a particularly relevant health outcome to study in relation to ethnic enclaves. An investigation of how ethnic enclaves influence the risk of gestational diabetes among specific immigrant groups will inform our understanding of how neighborhoods influence immigrant health.

2. Background

Gestational diabetes is a significant public health problem affecting approximately 7% of pregnancies, with implications for the mother's and infant's health across the lifecourse (Trial, 2004). Gestational diabetes mellitus, defined as diabetes with onset during pregnancy, is a common but serious pregnancy complication that can result in increased morbidity to both the infant and mother, including perinatal mortality, preterm birth, cesarean section, macrosomia, and trauma during delivery (Wendland et al., 2012). Women diagnosed with gestational diabetes during pregnancy are at an increased risk of chronic diabetes and hypertension postpartum, and it is now recognized that pregnancy acts as a "stress test", providing early evidence of cardiovascular disease risk (Bellamy et al., 2009). Gestational diabetes is a growing immigrant health issue. Recent research has shown that many groups of

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immigrant women are at a higher risk of gestational diabetes than U.S.-born women, and the incidence of gestational diabetes varies substantially by ethnicity (Kieffer et al., 1999; Savitz et al., 2008; Urquia et al., 2011; Vangen et al., 2003). Diet, obesity, physical activity, and maternal age at delivery are also important risk factors for gestational diabetes (Tobias et al., 2011; Torloni et al., 2009; Zhang and Ning, 2011) and have been shown to differ by immigrant status. Because these factors show a high degree of social patterning, it is plausible that features of the social environment such as living within ethnic enclaves influence the risk of gestational diabetes.

The influence of living within ethnic enclaves on pregnancy health has received increased attention by health researchers. Some limitations of previous studies include the use of absolute ethnic concentration to define an ethnic neighborhood, broadly defined ethnic groups, and limited pregnancy outcomes. Ethnic enclave is defined as an area where "immigrant groups [which] concentrate in a distinct spatial location and organize a variety of enterprises serving their own ethnic market and/or the general population" (Portes and Jensen, 1992). Although first conceptualized in the sociology literature to investigate the economic mobility of immigrants, the concept of ethnic neighborhoods has been commonly operationalized in health literature as ethnic concentration or ethnic density, often defined as the percent of persons of the same ethnic background in a defined geographic space (Pickett and Wilkinson, 2008; Xie and Gough, 2011). A weakness with defining ethnic enclaves by categorizing ethnic concentration at the same value across varying ethnic groups is that the relevant value to define an ethnic enclave may differ among groups, depending on the population size of the group. For example, because the population of Senegalese immigrants is much smaller than the population of Dominican immigrants in New York City, the percent of persons that are Senegalese in a given neighborhood that represents an ethnic enclave may be a smaller than for Dominican immigrants. In this scenario, a neighborhood in which a small percentage of the residents are Senegalese might be the neighborhood in which immigrants from Senegal have social networks and businesses serving their own ethnic market (e.g. Le Petit Senegal in Harlem). In contrast, a neighborhood in which a much greater percentage of the residents are Dominican may define an ethnic enclave for Dominican immigrants (e.g. Washington Heights). Therefore, the relative ethnic concentration of a particular immigrant as opposed to the absolute concentration may better define an ethnic enclave (Logan et al., 2002).

Another weakness of previous research on ethnic concentration/density and pregnancy outcomes is that it has focused on broadly defined Black and Hispanic groups in the U.S., inappropriately combining groups with distinct ethnic enclaves, and not examining foreign-born women as a unique population. Finally, current literature on ethnic concentration/density has focused primarily on birth weight and preterm birth. These studies generally found either no effect or a protective effect of increasing ethnic concentration/density (Jenny et al., 2001; Mason et al., 2010; McLafferty et al., 2012; Osypuk et al., 2010; Pickett et al., 2009; Shaw et al., 2010), or did not specifically examine immigrant populations (Mason et al., 2011). No previous study, to our knowledge, has examined associations between ethnic concentration/density and gestational diabetes.

Cultural assimilation may be an important influence on immigrant perinatal health. Women who live outside of their residential ethnic enclave may be more assimilated, and therefore, more acculturated to a sedentary lifestyle and American diet. Broadly defined, assimilation is the process by which immigrants are incorporated into the cultural life of the receiving country, and acculturation is the process by which an immigrant group adopts the behaviors or beliefs of another group (Lopez-Class et al., 2011; Teske and Nelson, 1974). Spatial assimilation theory states that as ethnic minorities acculturate they leave their ethnic enclaves for more ethnically mixed neighborhoods (Massey, 1985). Less cultural assimilation predicts residence in immigrant neighborhoods (Clark and Blue, 2004; Ellis et al., 2006; Logan et al., 2002). Further, the "healthy migrant theory" posits that due to selection processes which enable healthier persons to migrate, migrants arrive in the U.S. with a health advantage (Palloni and Ewbank, 2004) that may erode over time. Time in the U.S., a proxy measure for acculturation, has been associated with increased BMI in Latina women (Akresh, 2007; Antecol and Bedard, 2006; Gordon-Larsen et al., 2003; Kaplan et al., 2004; Sundquist and Winkleby, 2000) and Asian women (Lauderdale and Rathouz, 2000; Yeh et al., 2009). A study in New York City found that Latinas living in neighborhoods with a greater percentage of Spanish-speaking households had higher diet quality (Park et al., 2011). Overall, literature on acculturation and diet in Latinos suggests an association between acculturation to the U.S. diet and poor diet quality, with the caveat that such associations are often cross-sectional in nature and fail to incorporate a transnational perspective (Martínez, 2013; Pérez-Escamilla and Putnik, 2007). Because higher BMI and poor diet, two important risk factors for gestational diabetes, are associated with increased time in the U.S., and living outside of a residential ethnic enclave is associated with increased time in the U.S., it is plausible that living in a residential ethnic enclave is associated with a reduced risk of gestational diabetes.

A second mechanism by which living in a residential ethnic enclave might be protective of perinatal health is the presence of immigrant social networks, resulting in increased social and instrumental support (Buka et al., 2003). Social networks of immigrant women are important in their accessing community services (Neufeld et al., 2002). Furthermore, a study in the United Kingdom (UK) found increased levels of social support and decreased rates of mental illness in ethnic enclaves (Halpern and Nazroo, 2000). It is unknown if greater levels of social support lead to a decreased risk of gestational diabetes, although increased social support has been associated with increased compliance with dietary recommendations in women diagnosed with gestational diabetes (Ruggiero et al., 1990).

Given previous literature suggesting that increased ethnic concentration is generally protective of health during pregnancy, and the plausibility of spatial assimilation and social and instrumental support as mechanisms, we hypothesized that residence in an ethnic enclave of shared ethnicity would be associated with a decreased risk of gestational diabetes. We tested this hypothesis among Sub-Saharan African, Chinese, South Central Asian, Non-Hispanic Caribbean, Dominican, Puerto Rican, Mexican, and Central and South American immigrant women. We chose to explore each immigrant group separately in order to capture differences in the ethnic concentration of each group and to consider the unique socio-historical context of groups when interpreting results.

3. Methods

3.1. Data sources and study sample

We used a dataset consisting of New York City birth certificate data linked to hospitalization data for the years 2001–2002 for 242,097 births. The birth data were geocoded to the mother's 2000 census tract by the New York City Department of Mental Health and Hygiene. Of 242,097 eligible singleton live births, we excluded 4675 (1.9%) with missing data on the census tract of mother's residence, and 17,920 (7.5%) whose mother's residence was outside of New York City, leaving a total of 210,926 births. Of these, 89,703 were