

Neighborhood socioeconomic status and overweight and obesity among documented and undocumented immigrants in Utah

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BACKGROUND

Overweight and obesity are risk factors for a range of health problems, including diabetes, hypertension, cardiovascular diseases, chronic inflammation, increased blood clotting, orthopedic problems, gall bladder problems, and several types of cancer. In the United States, the prevalence of overweight and obesity has been steadily rising among nearly every segment of the U.S. population and there is no sign that the rapid increase in overweight/obesity is abating. In 2003 to 2004, 70.8% of men and 61.8% of women were overweight or obese, compared to 57% seen in National Health and Nutrition Examination survey III (NHANES III) from 1988 to 1994. It has been found that only smoking exceeds overweight/obesity in its contribution to total mortality rates in the United States, that overweight/obesity is more strongly linked to chronic diseases than living in poverty, smoking, or drinking, and that the direct and indirect costs of overweight/obesity in the United States approximated 10% of the national health care budget. In view of the rapid development of weight problems in genetically stable populations, the obesity epidemic is widely viewed as primarily rooted in obesogenic environmental forces that encourage consumption of energy and discourage expenditure of energy. To alter this trend, strategies and programs for weight maintenance and weight reduction have become a high public health priority in the recent decade.

Parallel to this trend, there has been a growing recognition of the role neighborhood plays in contributing to health-related outcomes and behaviors including physical activity (PA) and weight status. Among neighborhood characteristics, neighborhood socioeconomic status (SES) has been most frequently examined in previous work. An impressive number of multi-level studies have shown that residence in low-SES neighborhoods has negative effects for a range of health-related outcomes including lifestyle factors such as PA and obesity. Results from studies specifically examining PA and weight status generally show that neighborhood SES is a significant correlate of weight status over and above individual SES and other risk factors. Presumably, neighborhood SES matters for weight status because it is closely related to every item in the energy balance equation (i.e., energy intake and expenditure) via its positive associations with availability of exercise facility, primary care resources, and access to quality food which are considered resources promoting PA, encouraging healthy diet habits, and in turn preventing excessive weight gain.

Despite these promising findings, an important limitation in the literature is that the possibility that neighborhood SES has different effects on people's weight status according to individual characteristics has not been adequately explored. Neighborhood SES may have stronger influences on weight status of more disadvantaged groups. For example, more resourceful individuals are possibly less affected by whether the neighborhood has a walkable park or well-maintained trail because they can just drive to gym 3 miles away or

buy a home equipment for exercising. Albeit intuitively appealing, this hypothesis has not been adequately tested in the obesity research.

In fact, one particularly disadvantaged group, representing a growing segment of the US population yet largely omitted from the literature of health disparities in general and the neighborhood and obesity research in specific, is undocumented immigrants. Based on the 2002 Current Population Survey, the Urban Institute estimated that there were 26% of all foreign-born living in the US, or 9.3 million, that can be designated as undocumented who either entered the US via valid visa but overstayed or entered the US without a valid visa. They are not permitted to work by law and generally not eligible for federal or state welfare benefits. Sometimes it is even debatable whether their children can attend public school. It is conceivable that these people face harsh structural constraints and life challenges on a daily basis. How do they fare in terms of health status and behavior compared to their U.S.-born or foreign-born documented co-ethnics is unknown. Indeed, we do not even know if health disparities exist among immigrants distinguished by their legal status, because we simply have little information on undocumented immigrants who are, understandably, not easily subject to measurement.

A key finding from the general migrant health literature is that immigrants might be healthier and following a more healthful lifestyle than their native co-ethnics because of reasons such as immigrant selection and more healthful cultural orientation of the original community. The routinely observed health advantages in socioeconomically disadvantaged Hispanics are conveyed in the term Hispanic epidemiologic paradox. However, this literature never distinguished documented immigrants from the undocumented. Does the most disadvantaged segment among Hispanic immigrants, namely undocumented Hispanics in the US, also exhibit this health advantage? This is essentially a question asking whether legal status plays a role in contributing to health disparities among immigrants. If such disparities are observed, the next question would be to explore what factors are underlying these patterns. Given the rapidly expanding literature that documents significant contextual effects of neighborhood SES on health, it is a reasonable hypothesis that health disparities among immigrants may be partly due to their different neighborhood contexts whose most salient marker is neighborhood SES. Indeed, undocumented immigrants are less assimilated into mainstream American society and less acculturated than their documented peers. They may thus have to live in less socioeconomically resourceful neighborhoods that tend to be less inviting to outdoor activities.

OBJECTIVES

Therefore, there are three study objectives in this study:

- 1) I will examine prevalence rates of overweight and obesity for subgroups defined by age, gender, race/ethnicity, foreign-born/US-born, and documented/undocumented legal status to see if the Hispanic Epidemiological Paradox also holds for undocumented Hispanics.
- 2) If disparities in overweight and obesity across groups are observed, I will explore whether neighborhood SES contributes to these group differences.
- 3) I will investigate whether neighborhood SES interacts with group identities in influencing overweight and obesity.

HYPOTHESES

Based on previously reported negative link between neighborhood SES and obesity, my general hypothesis is that being undocumented is associated with higher rates of overweight and obesity because compared to their documented counterparts they tend to live in lower SES neighborhoods which are likely poorly equipped to promoting PA and healthy food habits.

METHOD

My analysis will be based on a unique database, the Utah Population Database (UPDB), which allows researchers to identify undocumented immigrants in Utah. The UPDB is one of the world's richest sources of linked population-based information for demographic, genetic, epidemiological, and public health studies. It has not been used to examine overweight and obesity problems among documented and undocumented immigrants. More detail on the breadth and quality of each key data source is available on the UPDB website <http://www.hci.utah.edu/groups/ppr/>. Specifically, I will use the Utah Driver License Division (DLD) records to construct the analytical sample. The Utah Department of Public Safety has provided Utah driver license information that includes the license issue date, residential history (addresses), height and weight, Social Security number, age, gender, state/country of birth, ethnicity, and license history. The 5.9 million Utah addresses from DLD have been geo-coded to Universal Transverse Mercator (UTM) coordinates, allowing researchers to locate all individuals to US Census tracts and blocks, while preventing identification of any individual. The UPDB allows us to directly identify undocumented individuals using information on the Individual Taxpayer Identification Number under which they received a driver license (for the documented) or driver privilege card (for the undocumented). Since Utah started allowing undocumented migrants to obtain driver licenses in 1999 (changed to driver privilege cards in 2005), 94,453 records can be flagged as belonging to an undocumented immigrant. The additional information on state or country of birth from this data source will allow researchers to differentiate native and foreign born persons.

The analytical sample of this study is the Utah Driver License Division (DLD) records linked to census tract-level data. Individual-level variables include BMI, age, gender, race/ethnicity, foreign-born/US-born, and legal status (documented/undocumented). Neighborhood-level variables include census-tract level socioeconomic variables including median household income, percent of affluent households with annual income of \$75,000 or over in 2000, percent of household living below the Federal Poverty Line (normalized by family size), percent of residents with at least some college education, percent of unemployed among people in the civilian labor force aged 16 or over, and percent of single parent households. Following previous work, a scale of neighborhood SES will be constructed based on these variables.

PRELIMINARY RESULTS

Our ability to identify the undocumented grew out of Utah's 1999 decision to offer driver licenses to persons who did not have a social security number, thus did not have citizenship, but who did have an "Individual Tax Identification Number," ITIN issued by the IRS. The ITIN is a number whose first digit is "9," and this becomes our identifier of an undocumented person.

Preliminary analyses show that the 1999 to 2007 driver license data file contains 94,453 undocumented individuals. The average age for this population is 33.4. About 85% of the undocumented were born in Mexico and 66.3% of them are men. Average BMI is 25.24 for the undocumented, 24.90 for the foreign born, 24.80 for the U.S. born, and 24.82 for the total sample. From these basic statistics, it seems the undocumented immigrants in Utah tend to be younger and slightly heavier than the rest of the population.

NEXT STEP

First, I will calculate BMI and overweight/obesity prevalence rates for specific groups defined by age, gender, race/ethnicity, foreign-born/U.S. born, and legal status.

Next, after the driver license data is linked to the 2000 census data, I will construct the neighborhood SES scale and perform multi-level statistical modeling to examine the link between neighborhood SES and overweight/obesity in Utah.

Specifically, random-intercept models will be fit to examine whether neighborhood SES is linked to overweight/obesity in the total sample including both the foreign-born and the U.S. born. If disparities in overweight/obesity are observed according to racial/ethnic group and legal status, I will then explore whether neighborhood SES mediates the association between group identifies and overweight/obesity. Moreover, random-coefficient models will be fit to examine cross-level interaction effects of neighborhood SES with race/ethnicity and legal status.

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