

Immigration and Obesity Among Lower Income Blacks

Gary G. Bennett,*† Kathleen Y. Wolin,‡ Sandy Askew,*† Robert Fletcher,§ and Karen M. Emmons*†

Abstract

BENNETT, GARY G., KATHLEEN Y. WOLIN, SANDY ASKEW, ROBERT FLETCHER, AND KAREN M. EMMONS. Immigration and obesity among lower income blacks. *Obesity*. 2007;15:1391–1394.

Objective: Our objective was to examine the associations of nativity, immigrant generation, and language acculturation with obesity among lower income black adult men and women.

Research Methods and Procedures: Data from 551 black adult men and women were collected from participants in the Healthy Directions-Health Centers Study. Race/ethnicity and nativity were self-reported. Language acculturation was defined using participants' first language, preferred reading language, and language spoken at home. Mixed model logistic regression models were estimated to account for within-health center clustering.

Results: Foreign-born blacks had a lower obesity risk, compared with all U.S.-born participants, in multivariable analyses [odds ratio (OR) = 0.57, 95% confidence interval (CI), 0.38, 0.84]. Among U.S.-born participants, those with foreign-born parents were significantly less likely to be obese than individuals with U.S.-born parents (OR = 0.54; 95% CI, 0.37, 0.80). Low-moderate language acculturation also decreased the odds of being obese (OR = 0.45; 95% CI, 0.23, 0.88).

Discussion: Our findings suggest a protective effect of foreign-born status and low-moderate language acculturation on obesity risk among lower income black immigrants.

These data highlight the importance of more frequently examining nativity in obesity-related research conducted among blacks.

Key words: nativity, acculturation, immigrant, blacks

Introduction

The rising U.S. obesity prevalence (1) has disproportionately affected blacks; almost 40% of the non-Hispanic black population is obese compared with 28.7% of non-Hispanic whites. These aggregate data may mask important variations in obesity among blacks related to nativity and degree of language acculturation. The foreign-born proportion of the U.S. black population has increased markedly over the past quarter-century. At present, over 6% of blacks living in the United States are foreign-born, and immigration among blacks is projected to increase (2). Compared with other groups, black immigrants are more likely to reside in lower socioeconomic position (SEP)¹ once in the United States (3).

Most evidence suggests that immigrants' obesity prevalence is positively related to duration of U.S. residence; however, much of this work has been conducted among Latinos (4–8). Studies examining the relation between immigration and obesity among blacks have yielded mixed results (9). Further, while language acculturation is an important marker for obesity among Latinos (4,10,11), it has not yet, to our knowledge, been studied among black immigrants.

The present study examined the associations of nativity, immigrant generation, and language acculturation with obesity among lower income black adults.

Research Methods and Procedures

Healthy Directions (12) was a randomized controlled trial conducted in collaboration with a large healthcare delivery system. The study aims and sampling strategies are published in greater detail elsewhere (12,13).

Received for review March 6, 2006.

Accepted in final form December 8, 2006.

The costs of publication of this article were defrayed, in part, by the payment of page charges. This article must, therefore, be hereby marked "advertisement" in accordance with 18 U.S.C. Section 1734 solely to indicate this fact.

*Harvard School of Public Health, Department of Society, Human Development, and Health, Boston, Massachusetts; †Dana-Farber Cancer Institute, Center for Community-Based Research, Boston, Massachusetts; ‡Northwestern University, Feinberg School of Medicine, Department of Preventive Medicine, Chicago, Illinois; and §Harvard Medical School, Department of Ambulatory Care and Prevention, Boston, Massachusetts.

Address correspondence to Gary G. Bennett, Harvard School of Public Health and Dana-Farber Cancer Institute, Center for Community-Based Research, 44 Binney St., SM256, Boston, MA 02115.

E-mail: gbennett@hsph.harvard.edu

Copyright © 2007 NAASO

¹ Nonstandard abbreviations: SEP, socioeconomic position; OR, odds ratio; CI, confidence interval.

Briefly, patients residing in low income, multiethnic neighborhoods (12) were identified through geocoding and approached for participation through their health center. Identified residents were deemed eligible if they were 18 to 75 years of age, had a scheduled well-care/follow-up visit, spoke/read English or Spanish, did not have cancer at enrollment, were not employed by the health centers, were not employed by a worksite in the companion small business study, and provided informed consent. The trial successfully enrolled a sample of the multiethnic, working class population in eastern Massachusetts (14).

We attempted to recruit 8963 potentially eligible candidates; 2547 (28%) individuals were unreachable, 867 (10%) were ineligible, 3330 (37%) refused, and 2219 (25%) were enrolled (40% of those reached and eligible). These analyses are limited to 579 individuals who self-reported at baseline as non-Hispanic black/African-American. We excluded 28 participants who were missing height/weight data, leaving a final sample of 551. The institutional review board approved study procedures.

Measures

Respondents self-reported age, gender, birthplace, parents' birthplace, height, weight, occupation, and race/ethnicity. Occupational status was used because it is likely a more sensitive measure of U.S. SEP among immigrants (15), especially if the foreign-born individual was educated outside of the United States. We combined information about the respondent's employment status (working, not working) and self-reported job title into a three-category occupational status variable: blue-collar job, white-collar job, or not working. Language acculturation was determined using Marin's method (16,17), which incorporates the participant's first language, preferred reading language, and language spoken at home. Marin's coding scheme classifies individuals as low, moderately, or highly language acculturated; we combined the low and moderate categories because of small numbers. The coding scheme classifies all native English speakers as highly acculturated. Several possible response options could have classified participants as low acculturated, but most in the group were those who preferred to read in their first language and spoke only their first language at home. Participants were asked to report their height and weight; obesity was defined as BMI ≥ 30 kg/m². To characterize immigrant generation, participants were categorized as: foreign-born (first-generation); U.S.-born with 1 or 2 foreign-born parents (second-generation); or U.S.-born with U.S.-born parents (third-generation).

Statistical Analyses

We estimated mixed-model logistic regression analyses (to account for the clustering of respondents in health centers), with health center as a random effect (18). Our primary exposures, including nativity (U.S. vs. foreign-born),

Table 1. Descriptive characteristics of the study sample

	% (N)
Nativity	
Foreign-born	28.55 (157)
U.S.-born	71.45 (393)
Immigrant generation	
First-generation	28.55 (157)
Second-generation	7.82 (43)
Third-generation	63.64 (350)
Language acculturation	
Low or moderate	9.09 (48)
High	90.91 (480)
Sex	
Male	27.95 (154)
Female	72.05 (397)
Occupation	
Blue-collar	52.13 (281)
White-collar	40.45 (218)
Not working	7.42 (40)
BMI	
Obese	48.09 (265)
Normal-weight or overweight	51.91 (286)
Age (yrs) (mean \pm SD)	48.10 \pm 12.77
BMI (kg/m ²) (mean \pm SD)	30.65 \pm 7.02

SD, standard deviation. Numbers may not sum to total because of missing values.

language acculturation (low-moderate vs. high), and immigrant generation (first vs. second, third), were each considered in three separate analytic models. We present age-adjusted models, as well as multivariable models adjusted for relevant covariates, including age, sex, and occupation (to more clearly demonstrate the effect of SEP on the estimates). We also examined the sex interaction; there was no interaction of sex with nativity, generation, or language acculturation (all $p > 0.10$).

Results

Descriptive characteristics are presented in Table 1. The majority of participants were born in the United States (72%, $n = 394$), yet nearly a fourth were foreign-born. Most U.S.-born participants had parents who were also U.S.-born (89%). Overall, study participants were more likely to work in blue-collar jobs (52%) than in white-collar occupations (40%). Chi-square analyses demonstrated that the largest

Table 2. Adjusted OR (95% CI) of obesity by nativity, language acculturation, and generation

	Age and gender adjusted [OR (95% CI)]	Age, gender, and occupation adjusted [OR (95% CI)]
Nativity		
U.S.-born	Reference	Reference
Foreign-born	0.56 (0.38, 0.83)	0.57 (0.38, 0.84)
Language acculturation		
High	Reference	Reference
Low-moderate	0.42 (0.22, 0.80)	0.45 (0.23, 0.88)
Immigrant generation		
Third-generation	Reference	Reference
Second-generation	0.54 (0.36, 0.80)	0.54 (0.37, 0.80)
First-generation	0.68 (0.36, 1.31)	0.71 (0.37, 1.39)

OR, odds ratio; CI, confidence interval. Mixed-model analyses considered each of the three primary exposures in separate models, adjusted for age and gender or age, gender, and occupation, as specified.

percentage of blue-collar workers were U.S.-born (40.15%; foreign-born: 11.90%, $p = 0.003$) and of third-generation immigration status (35.87%; second-generation: 4.28%; first-generation: 11.90%). The mean age was 48 years (standard deviation = 12 years), and 48.1% ($n = 265$) were obese.

In multivariable analyses, adjusted for age, gender, and occupation, foreign-born participants were over 40% less likely to be obese compared with all U.S.-born participants [odds ratio (OR) = 0.57; 95% confidence interval (CI), 0.38, 0.84]. On examination of immigrant generation, we found that second-generation participants were one half as likely to be obese, compared with third-generation participants (OR = 0.54; 95% CI, 0.37, 0.80) (Table 2). Individuals in the low-moderate language acculturation group were one half as likely to be obese as those in the high acculturated group (OR = 0.45; 95% CI, 0.23, 0.88).

Discussion

We found that foreign-born blacks were over 40% less likely to be obese than all U.S.-born blacks. Further, among U.S.-born participants, those with foreign-born parents were significantly less likely to be obese than individuals with U.S.-born parents. Finally, we observed a decreased obesity risk among low-moderate language acculturated participants. Occupational status, an important socioeconomic indicator in this population, had little impact on our findings. Together, these data demonstrate that failure to consider heterogeneity in the U.S. black population may mask important variation in obesity prevalence. The foreign-born proportion of the U.S.-black population is rapidly increasing, and these populations are generally healthier than their

native-born counterparts; thus, it will be increasingly important to consider nativity when examining obesity-related outcomes among U.S. blacks.

Our findings extend the current literature in a number of ways. First, our study is consistent with those showing a positive relationship between obesity prevalence and duration in the United States (9,19,20). With few exceptions (20), this pattern has not been often observed among black populations (9). While Singh and Siahpush (20) (using data from 1993 to 1994 National Health Interview Survey) similarly found that foreign-born blacks had a lower obesity prevalence compared with their native-born counterparts, Goel et al. (9) showed no such association between duration of U.S. residence and obesity among blacks in the 2000 National Health Interview Survey sample. Our findings build on this previous work, by studying a low SEP sample (ostensibly at highest obesity risk) and by examining the impact of language acculturation. Obesity trends among immigrants may be attributable to healthier behaviors in countries of origin, the selective migration of healthy individuals, and/or the cultural protections afforded by supportive social networks (21). Acculturation may minimize the protective impact of these factors; indeed, we found a 2-fold greater obesity risk among those with high vs. low-moderate language acculturation levels. While it has been argued that language acculturation may matter less for black immigrants (given English penetration in many countries of origin), our language acculturation findings support the general pattern of our results.

We found that second-generation blacks had a 40% lower obesity risk than third-generation participants. It is possible that the multigenerational retention of culturally influenced

health practices may be implicated here. We posit that in Boston, whose black population is almost 30% foreign-born (3) and highly residentially segregated (particularly among those of lower SEP), the acculturative process may be delayed among second-generation immigrants. Given the small numbers of second-generation participants, however, this notion deserves further empirical attention.

A number of issues may limit interpretations drawn from our findings. Generalization of these findings may be negatively impacted by a number of factors, including the sampling strategy, response rate (which is similar to other intervention studies of similar scale), geographic location, and the fact that the sample was comprised of lower income blacks with some form of healthcare coverage, although participants may have been covered under Medicare or Medicaid plans. Also, we lacked the power to examine differences by country/region of origin. Finally, while we used a widely used measure of acculturation (16), we recognize that language acculturation captures only one dimension of the complex, multigenerational immigration experience.

In summary, obesity prevention strategies may be well served to systematically elucidate factors that protect against the development of obesity among foreign-born blacks.

Acknowledgments

Supported by NIH Grant 5P01 CA75308 and support to Dana-Farber Cancer Institute by Liberty Mutual, National Grid, and the Patterson Fellowship Fund. G.G.B. is also supported by an award from the Dana-Farber/Harvard Cancer Center. K.Y.W. is supported by a National Cancer Institute training grant (1R25 CA100600-01A1). The authors thank Jodi Saia-Witte for assistance in the preparation of this manuscript, as well as the numerous staff members who contributed to this study. In addition, this work could not have been done without the participation of the internal medicine departments of Harvard Vanguard Medical Associates.

References

1. **Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM.** Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999–2002. *JAMA.* 2004;291:2847–50.
2. **McKinnon JD, Bennett CE, U.S. Census Bureau.** *We the People: Blacks in the United States.* Washington, DC: U.S. Census Bureau; 2005.
3. **U.S. Census Bureau.** *The foreign-born population in the United States: 2003. Current Population Reports.* Washington, DC: U.S. Department of Commerce; 2004:20–51.
4. **Sundquist J, Winkleby M.** Country of birth, acculturation status and abdominal obesity in a national sample of Mexican-American women and men. *Int J Epidemiol.* 2000;29:470–7.
5. **Gordon-Larsen P, Harris KM, Ward DS, Popkin BM.** Acculturation and overweight-related behaviors among Hispanic immigrants to the United States: the National Longitudinal Study of Adolescent Health. *Soc Sci Med.* 2003;57:2023–34.
6. **Kaplan MS, Huguet N, Newsom JT, McFarland BH.** The longer you stay, the bigger you get: length of time and language use in the U.S. are associated with obesity in Puerto Rican women. *Am J Phys Anthropol.* 2004;125:1.
7. **Hubert HB, Snider J, Winkleby MA.** Acculturation and overweight-related behaviors among Hispanic immigrants to the United States: the National Longitudinal Study of Adolescent Health. *Soc Sci Med.* 2005;57:11.
8. **Himmelgreen DA, Perez-Escamilla R, Martinez D, et al.** Correlates of body mass index and waist-to-hip ratio among Mexican women in the United States: implications for intervention development. *Womens Health Issues.* 2004;14:5.
9. **Goel MS, McCarthy EP, Phillips RS, Wee CC.** Obesity among United States immigrant subgroups by duration of residence. *JAMA.* 2004;292:2860–7.
10. **Hazuda HP, Haffner SM, Stern MP, Eifler CW.** Effects of acculturation and socioeconomic status on obesity and diabetes in Mexican Americans: the San Antonio Heart Study. *Am J Epidemiol.* 1988;128:1289–301.
11. **Khan LK, Sobal J, Martorell R.** Acculturation, socioeconomic status, and obesity in Mexican Americans, Cuban Americans, and Puerto Ricans. *Int J Obes Relat Metab Disord.* 1997;21:91–6.
12. **Emmons KM, Stoddard AM, Gutheil C, Suarez EG, Lobb R, Fletcher R.** Cancer prevention for working class, multiethnic populations through health centers: the healthy directions study. *Cancer Causes Control.* 2003;14:727–37.
13. **Hunt MK, Stoddard AM, Barbeau E, Wallace L, Sorensen G.** Cancer prevention for working class, multiethnic populations through small businesses: the healthy directions study. *Cancer Causes Control.* 2003;14:749–60.
14. **Stoddard AM, Krieger N, Barbeau EM, et al.** Methods and baseline characteristics of two group-randomized trials with multiracial and multiethnic working-class samples. *Prev Chronic Dis.* 2005;2:A10.
15. **Chiswick BR.** The effect of Americanization on the earnings of foreign-born men. *J Polit Econ.* 1978;86:897–921.
16. **Marin G, Sabogal F, Marin BV, Otero-Sabogal R, Perez-Stable EJ.** Development of a short acculturation scale for Hispanics. *Hisp J Behav Sci.* 1987;9:183–205.
17. **Cuellar I, Harris LC, Jasso R.** An acculturation scale for Mexican American normal and clinical populations. *Hisp J Behav Sci.* 1980;2:199–217.
18. **Murray DM.** *Design and Analysis of Group Randomized Trials.* New York: Oxford University Press; 1998.
19. **Kaplan MS, Huguet N, Newsom JT, McFarland BH.** The association between length of residence and obesity among Hispanic immigrants. *Am J Prev Med.* 2004;27:323–6.
20. **Singh GK, Siahpush M.** Ethnic-immigrant differentials in health behaviors, morbidity, and cause-specific mortality in the United States: an analysis of two national data bases. *Hum Biol.* 2002;74:83–109.
21. **Read JG, Emerson MO, Tarlov A.** Implications of black immigrant health for U.S. racial disparities in health. *J Immigr Health.* 2005;7:205–12.