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Obesity and Immigration Among Latina Women

Kathleen Y. Wolin, Laura A. Colangelo, Brian C.-H. Chiu, and Susan M. Gapstur

K. Y. Wolin, Department of Surgery, Washington University School of Medicine, 660 S. Euclid Avenue, Campus Box 8109, St. Louis, MO 63110, USA, e-mail: wolink@wustl.edu

L. A. Colangelo · B. C.-H. Chiu · S. M. Gapstur, Department of Preventive Medicine, Feinberg School of Medicine, Northwestern University, Chicago, IL, USA

B. C.-H. Chiu · S. M. Gapstur, Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Chicago, IL, USA

Abstract

Several studies have shown a positive association between acculturation and obesity in Hispanics. We sought to examine the association in a sample of urban Hispanic women. Using data collected in the Chicago Breast Health Project, we used logistic regression to examine the association of obesity ($BMI \geq 30 \text{ kg/m}^2$) with language acculturation and years in the US in a sample of 388 Hispanic women. Women self-reported the number of years they had lived in the US (mean 17.6) as well as their preferred language across several domains, which was used to calculate a language acculturation score. Nearly all the women (98%) were born outside the US with the majority (65%) born in Mexico and the majority of women (69%) had low language acculturation, i.e., answered “only Spanish” in every domain. Over half of the women were obese (56%). In multivariable analysis, odds of obesity was twice as high among women living in the US for greater than 20 years compared to those in the US for 10 years or less (OR/year = 2.07, 95% CI 1.25–3.42). In contrast, low language acculturation was not associated with odds of obesity (OR = 1.14, 95% CI 0.70–1.86). While greater years in the US increased odds of obesity among Hispanic women, no association of obesity with language acculturation was found. These results suggest that mechanisms other than language contribute to the immigration effect.

Keywords

Hispanic; Acculturation; Immigration; Obesity; Women

Introduction

In the United States, the prevalence of obesity is increasing, and higher rates of obesity are found in Hispanics than non-Hispanic Whites [1]. The effects of culture and the acculturation process have been suggested as partial explanations for differences in health outcomes among racial/ethnic groups (as a large number of immigrants are non-White) and differences in health outcomes between immigrants and non-immigrants regardless of racial/ethnic grouping [2]. In the case of obesity, it is hypothesized that aspects of migration (i.e., changes in diet, exercise, stress, cultural norms) may adversely affect body composition.

In the context of health research, acculturation (defined as the adoption of non-Hispanic White behaviors, attitudes, and values [3]) can refer to dimensions of language usage, migration

status, generational status, duration of time spent in the United States, ethnicity of social networks, and cultural pride. Despite the fact that several multidimensional validated acculturation scales exist [4–8], many studies use a single measure of acculturation instead of a scale and this measure is typically language acculturation [7,9].

Differences in obesity by immigrant status, language acculturation, parental place of birth, or years in the current country of residence have all been examined [3,9–13]. Despite the range of constructs being measured directly or by proxy in these measures, positive associations are observed consistently between dimensions of acculturation and obesity among Hispanics [3, 9–13]. Only one previous study has examined the associations in Hispanic women [9]. This study uses data from the National Health and Nutrition Examination Survey (1988–1994), when the number of Hispanic immigrants was 3/4th the size of the population in 2000 [14]. Using data collected in the Chicago Breast Health Project (CBHP), we examined the association of obesity with two dimensions of the acculturation process, language acculturation and years in the US, in a sample of Hispanic women.

Methodology

Study Sample

The CBHP was designed as a health care delivery, health education research project. Details regarding the study have been described previously [15]. The research protocol was approved by the Institutional Review Board of Northwestern University. We certify that all applicable institutional and governmental regulations concerning the ethical use of human volunteers were followed during this research.

For CBHP, women were recruited from three community health centers in two phases. Between November 2000 and June 2002 (Phase I), a total of 504 women were referred and 325 participated. Between May 2003 and June 2004 (Phase II), 142 women were referred and 113 participated. Eligibility criteria included age 40 years and older, no personal history of breast cancer, not pregnant at the time of the mammogram, no suspicious lumps in their breasts, and no screening mammography within the last 12 months. Nineteen of the women in Phase II were also participants in Phase I; we excluded their Phase II data in this analysis. We also excluded 22 women from Phase I and 9 women from Phase II who did not self-identify as Hispanic. The final sample includes 303 women from Phase I and 85 from Phase II.

Measures

All data collection research interviewers were bilingual (Spanish/English), and questionnaires were translated using a back translation approach. The interviewer administered questionnaire included information on birth date, race/ethnicity, education, tobacco use, and occupation. In Phase I, participants also provided the average hours per day spent watching television, reading, knitting, or using a computer to assess physical inactivity. In Phase II, physical inactivity was assessed via the international physical activity questionnaire—long form (IPAQ) sitting question, available for download at the IPAQ website, <http://www.ipaq.ki.se>.

Weight was measured to the nearest 0.25 lb and height to the nearest 0.25 in. Measurements were taken in duplicate by trained interviewers and the average was used. Body mass index (BMI) was calculated as weight (kg) divided by height squared (m^2).

Women self-reported the number of years they had lived in the US, modeled continuously. Women also reported their preferred language for reading and speaking, speaking at home, thinking, and speaking with friends. Responses on a five-point Likert scale ranged from “only Spanish” to “only English.” This was used to calculate a summary language-acculturation score, which ranged from 4 to 20, based on the method of Marin et al. [4]. Based on discussions

with members of the community, we modified the Marin scale to include four of the five dimensions of the original scale (excluding language spoken as a child) and modified the scoring accordingly. The modified scale demonstrated high internal reliability ($\alpha = 0.94$). The majority of women (69%) had the lowest possible language acculturation score, reflecting an answer of “only Spanish” on every language acculturation question. Thus, we dichotomized language acculturation as low (score = 4) versus high (score > 4).

Analysis

The final analysis included 388 women from both phases of the study. Physical inactivity from both questionnaires was converted into hours/day. Women with a BMI ≥ 30 kg/m² were considered obese. Logistic regression was used to estimate the associations of language acculturation and years in the US with obesity in age- and multivariable-adjusted models.

Results

Nearly all the women (98%) were born outside the US with the majority (65%) born in Mexico. Years in the US ranged from 1 month to 71 years, with a mean of 17.6 years (Table 1). Over a third of the women had lived in the US for 10 years or less (37.8%) and over a third had lived in the US for greater than 20 years (37.2%). Language acculturation scores ranged from 4 to 20 with a mean of 5.3. The majority of women (69%) had a low language acculturation score. Few women were smokers (7.7%) and just over half of the women were obese (56%). Women spent nearly 3 h/day sitting on average, but responses ranged from 0 to 20 h/day. One third (68%) of women had less than a high school education.

In multivariable analysis, adjusting for age, education, smoking status, hours per day spent sitting, and occupational status, women who had lived in the US for more than 20 years had twice the odds of being obese as women who had lived in the US for 10 years or less (OR = 2.07, 95% CI 1.25–3.42) (Table 2). There was no difference between women who had lived in the US for 11–20 years and women in the US for 10 years or less (OR = 1.30, 95% CI 0.75–2.24). In contrast, low language acculturation was not associated with odds of obesity (OR/year = 1.14, 95% CI 0.70–1.86). We completed this analysis for women born in Mexico only and obtained similar results (data not shown).

Discussion

In this study, we found greater time living in the US increased odds of obesity among Hispanic women. In contrast, we found no association of obesity with low language acculturation perhaps indicating mechanisms other than language are contributing to the immigration effect.

In previous studies, greater time in the US was associated with higher BMI [12,16] as was greater acculturation [3,13]. As with our study, Hubert et al. [13] found a positive association between years in the US and BMI. However, in that study, stepwise regression analyses showed that years in the US were selected in the model only for men; among women, generation was a significant factor. The association of acculturation and obesity might not be linear. Sundquist et al. [9] found that, among women, the highest BMIs occurred in US born Spanish speakers followed by US born English speakers, then Mexican born with non-Hispanic Whites having the lowest BMIs. The difference between US born Spanish speakers and Mexican born women was statistically significant. More recently, Barcenas and colleagues [16] found that compared to Mexican-born adults, US-born adults had an increased risk of obesity. Using data from the National Health Interview Survey, in the sub-sample of Hispanic immigrants, Kaplan et al. [11] found the prevalence of obesity increased linearly with years in the US from 9.4% among those in the US for less than a year to 24.2% among those in the US for 15 years or greater. Finally, Singh and Siapush [10] found that compared to US-born individuals, immigrants have

a lower prevalence of obesity, and those with the shortest duration of US residence had the lowest prevalence. This analysis included all racial/ethnic groups. These findings are supported by research that shows the two main contributors to obesity, unhealthy diet and physical inactivity, are also associated with acculturation [12,17–21]. Our study, which included only urban Hispanic women, controlled for the effects of physical inactivity and found a significant association between years in the US and obesity, but no association with language acculturation. Differences between our study and previous studies in Hispanics and Hispanic women might reflect the differences between the immigrant experiences in large urban areas versus smaller communities. For example, immigrant women in urban areas may be less able to isolate themselves from other culture's norms given the population density of urban environments. In addition, the density of advertising in urban neighborhoods may expose immigrants to more messages promoting unhealthy food choices, which may also be more accessible in urban environments. However, other unmeasured differences may have contributed to the different results. Future studies should examine gender differences in the associations of language acculturation and time in the US with obesity.

Certain factors limit the interpretation of our findings. Our sample size was small, but represents a distinct, not often studied population—urban Hispanic women. Our measures should also be interpreted with caution as broader cultural norms were not assessed and language acculturation captures only one part of a multidimensional and multidirectional process. While we combined data from two phases of the study, which employed slightly different physical inactivity questions, there was no difference in results between participants in Phase I and Phase II.

In conclusion, features of the immigration and acculturation process are associated with the prevalence of obesity. Our findings suggest that factors outside of those related to speaking a different language may be driving these associations in urban Hispanic women. Thus, translating obesity prevention messages into Spanish is not sufficient to counter the immigration-associated increases in obesity in Hispanic women. In particular, simply translating the language of materials that are effective in non-Hispanic White populations does not address the cultural differences driving the association of acculturation and obesity. Research utilizing comprehensive measures of acculturation to assess dimensions of ethnic social norms and ethnic media are needed to address these issues.

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Table 1
Participant characteristics ($n = 388$), Chicago Breast Health Project

	Mean or percent	Range
US born	1.8%	
Years in the US	17.6	1 month to 71 years
≤10 years	37.8%	
11–20 years	25.0%	
> 20 years	37.2%	
Language acculturation score	5.3	4–20
Low (4)	68.6%	
High (> 4)	31.4%	
Body mass index (kg/m ²)	31.3	18.6–51.2
Age (years)	52.5	40–77
Current smoker	7.7%	
Sitting (h/day)	2.6	0–20
Education		
Less than high school	68.2%	
High school	26.1%	
College	5.7%	
Occupational status		
Homemaker	69.1%	
Other	30.9%	

Table 2
Odds of obesity based on years in the US and language acculturation, Chicago Breast Health Project ($n = 388$)

	Age adjusted		Multivariable ^a	
	OR	95% CI	OR	95% CI
Years in the US				
≤10 years	Reference		Reference	
11–20 years	1.17	0.69–1.98	1.30	0.75–2.24
>20 years	1.71	2.07–2.75	2.07	1.25–3.42
Language acculturation score				
Low (score = 4)	Reference		Reference	
High (score: 5–20)	0.91	0.59–1.41	1.14	0.70–1.86

^a Covariates included: age (continuous), smoking status (current versus past/never), hours/day of sitting, occupational status, education