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Ethnic Restaurant Nutrition Environments and Cardiovascular Health: Examining Hispanic Caribbean Restaurants in New York City

Melissa Fuster, PhD[1]; Enrique R. Pouget, PhD[1]; Margaret A. Handley, PhD, MPH[2]; Krishnendu Ray, PhD[3]; Brian Elbel, MPH, PhD[4]; Eddie N. Sakowitz, MS[1]; Kayla Halvey, MS[1]; Terry Huang, PhD, MPH, MBA[5]

Objective: To adapt and apply the Nutrition Environment Measures Survey for Restaurants (NEMS-R) to Hispanic Caribbean (HC) restaurants and examine associations between restaurant characteristics and nutrition environment measures.

Methods: We adapted the NEMS-R for HC cuisines (Cuban, Puerto Rican, Dominican) and cardiovascular health-promoting factors, and applied the instrument (NEMS-HCR) to a random sample of HC restaurants in New York City (NYC) (N=89). Multivariable linear regression was used to assess independent associations between NEMS-HCR score and restaurant characteristics (cuisine, size, type [counter-style vs sit-down] and price).

Results: None of the menus in the restaurants studied listed any main dishes as "healthy" or "light." More than half (52%) offered mostly (>75%) nonfried main dishes, and 76% offered at least one vegetarian option. The most common facilitator to healthy eating was offering reduced portion sizes (21%) and the most common barrier was having salt shakers on tables (40%). NEMS-HCR scores (100-point scale) ranged from 24.1-55.2 (mean=39.7). In multivariable analyses, scores were significantly related to cuisine (with Puerto Rican cuisine scoring lower than Cuban and Dominican cuisines), and size (with small [<22 seats] restaurants scoring lower than larger restaurants). We found a significant quadratic association with midpoint price, suggesting that scores increased with increasing price in the lowest price range, did not vary in the middle range, and decreased with increasing price in the highest range.

Conclusions: Our application of the NEMS-R to HC restaurants in NYC revealed areas for potential future interventions to improve food offerings and environmental cues to encourage healthful choices. *Ethn Dis*. 2020;30(4):583-592; doi:10.18865/ed.30.4.592

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Introduction

Hispanics have a higher burden of cardiovascular disease compared with non-Hispanic Whites,[1] with dietary factors being a leading cause of preventable death and disability.[2] The Hispanic Community Health Study/Study of Latinos shows that most fail to meet evidence-based dietary benchmarks, with compliance being lowest among Hispanic Caribbean (HC) communities.[2] While interventions seeking to address diet-related conditions focus mostly on changing individual eating behaviors, food and nutrition environments can greatly affect food choices.[3,4] Foods consumed away from home are an increasingly important part of food consumption and expenditures, accounting for 40% of food spending among US Hispanic households (44% among all US homes).[5,6] Among Hispanics, the consumption of foods away from home has been associated with decreased diet quality,[7] including increased intakes of saturated fat and sodium, negatively affecting cardiovascular health.[8,9]

Restaurants have the potential to positively influence food and nutrition environments and population health.[3] Most public health interventions and research targeting restaurants focus on chain restaurants, leaving out community-

[1] Department of Health and Nutrition Science, Brooklyn College, City University of New York, Brooklyn, NY
[2] Department of Epidemiology and Biostatistics, School of Medicine, University of California, San Francisco, CA
[3] Department of Nutrition and Food Studies, Steinhardt School of Culture, Education, and Human Development, New York University, New York, NY
[4] Department of Population Health, Grossman School of Medicine, and Wagner Graduate School of Public Service, New York University, New York, NY
[5] Center for Systems and Community Design and NYU-CUNY Prevention Research Center, Graduate School of Public Health and Health Policy, City University of New York, New York, NY

Address correspondence to Melissa Fuster, PhD; Department of Health and Nutrition Science, City University of New York, Brooklyn College, 2900 Bedford Ave, Brooklyn, NY 11210; M.FusterRivera54@brooklyn.cuny.edu

based, non-chain restaurants, such as those serving ethnic communities.[10] Addressing this gap, the present study sought to: 1) adapt and apply the Nutrition Environment Measures Survey for Restaurants (NEMS-R)[11] to HC restaurants; and 2) examine associations between restaurant characteristics and nutrition environment measures.

Methods

Setting

New York City (NYC) is a large, concentrated urban area where eating out is common practice. The city has the largest concentration of Hispanics in the United States (29%), with Puerto Ricans and Dominicans being the leading groups (30% and 28% of the NYC Hispanic population, respectively).[12]

Study Sample

We developed a sampling framework using Yelp, a popular business, crowd-sourced review site. We searched NYC restaurants classified as Puerto Rican, Cuban, and/or Dominican, following conventional definitions of the Hispanic Caribbean region,[13] yielding a total of 183 restaurants, of which half were randomly selected for the assessment, using the MS Excel randomization function.

Measures

We used the Nutrition Environment Measurement Survey for Restaurants (NEMS-R), a widely used, validated tool that scores restaurants according to the healthfulness of menu offerings and environmental support for healthy food choices.[11] The NEMS-R examines food availability (main dishes, sides, and non-alcoholic beverages), and environmental promotion of healthy or unhealthy choices through visual cues (table tents, marketing material) and pricing.

For this study, the NEMS-R was adapted for HC cuisines, accounting for dietary recommendations for cardiovascular health. The adaptation was informed by previous research documenting HC dietary patterns[7,14] and interviews with HC restaurant owners and cooks/chefs.[15] The resulting NEMS-HCR is composed of 25 items. It expanded the food availability component to assess other potentially healthful items, such as nonfried main dishes, nonfried seafood, and vegetarian options. Cooking method (fried foods) was determined based on menu item description, and supplemented with knowledge of traditional preparations, where some traditional foods (like mofongo) are fried. These additions were based on the HC cuisines' over-reliance on fried dishes and meat offerings,[14] and the cardiovascular health benefits of seafood consumption.[16] We also expanded the NEMS-R facilitators and barriers dimensions. The NEMS-HCR assessed whether salt shakers were present on tables given the role of salt intake in cardiovascular health,[16] and expanded pricing comparisons, by assessing pricing differences between comparable nonfried and fried dishes (ie, grilled chicken breast vs fried chicken breast). The resulting NEMS-HCR was first piloted using online menus to refine the scoring criteria, and to ensure that the added item values varied across restaurants.

Foods consumed away from home are an increasingly important part of food consumption and expenditures, accounting for 40% of food spending among US Hispanic households (44% among all US homes).[5,6]

Data Collection

Data were collected between June-August 2019. We followed the field procedures recommended by the NEMS-R protocol.[11] Two research assistants (RAs) were trained using the University of Pennsylvania NEMS-R online training module. Additionally, the RAs completed two practice assessments with the study principal investigator, followed by ongoing discussions of sample menus and the NEMS-R protocol.

RAs were assigned restaurants according to location, facilitating multiple assessments a day. Data collection encompassed a site observation, where RAs confirmed

restaurant data (cuisine, location), conducted a guided observation (environmental barriers and facilitators for healthy eating, and marketing materials), and collected a copy of the restaurant take-out menu for analysis. If a takeout menu was not available, the raters took a photograph of the onsite menu or used the online menu where onsite and takeout menus were not available. Following NEMS-R protocol, breakfast menus were excluded, and if separate lunch and dinner menus were available, the dinner menu was used. The assessment focused on dishes that were available every day, excluding special offerings (ie, Sunday specials). Site visits were unobtrusive, and RAs did not meet resistance from the restaurants.

Data quality was ensured throughout the data collection period. Inter-rater reliability was assessed at the beginning of the assessment, when two RAs each independently assessed 10% of the sample (n=8).[11] Analysis showed good to excellent inter-rater reliability, with percentage agreements ranging between 62.5%-100% (mean=86.2%), including the total calculated score. Only one item, whether low-fat dressing was available, had a lower percentage agreement (37.5%), which was addressed in subsequent meetings and quality checks. We had weekly research team meetings, where RAs debriefed about the assessment, sharing issues (if any) encountered during the menu assessment. Each survey underwent a quality check, where the survey was re-checked against the menu, flagging issues to resolve during team meetings. A second quality check was undertaken after data entry.

Data Analysis

Data were analyzed using SPSS (v.25, Armonk, NY). The main outcome of interest was the NEMS-HCR total score. NEMS-HCR components were scored using the NEMS-R criteria. Most items within the food availability and facilitator dimension received one point where available, except for the availability of healthy entrees and healthy main dish salads, where points ranged between 0-3, depending on the number of items available (0 if none, 1 if one choice was available, 2 if 2-4 choices were available, and 3 if five or more were available). The presence of barriers received a -1 point. The resulting NEMS-HCR had a range of -7 to 22, where higher scores denoted a healthier nutrition environment. The NEMS-HCR total score was normally distributed (skewness=-.26; kurtosis=-.61), and was converted to a 100-point scale to facilitate comparisons with previous research.

We assessed the NEMS-HCR components and sub-scores (food availability, facilitators, and barriers dimensions) against selected restaurant characteristics. Cuisine was based on the main HC cuisine sold or advertised (Cuban, Dominican or Puerto Rican). Restaurant type was defined as a dichotomous variable categorizing restaurants as counter-style (fast casual) or sit-down (waiter services). Restaurant size was based on official seating capacities or, when not available, a visual assessment (count of tables and chairs per table). The restaurants were classified as small, medium, or large, based on the tertile distribution of the number of seats. Lastly, we used the midpoint price of main dishes as the measure for restaurant price, calculated as the difference between the highest and the lowest priced main dish on each menu, divided by 2.

We analyzed the distributions of NEMS-HCR total score, components and sub-scores (healthy food availability, and facilitators and barriers to healthier eating choices), and examined the associations with selected restaurant characteristics using Student's t-tests, chi-square tests, Pearson correlations, and ANOVA with Tukey HSD post-hoc tests, where appropriate. To control for potential confounding statistically, we assessed the association between restaurant characteristics and NEMS-HCR total scores using multivariable linear regression. Predictors were restaurant cuisine, type, size and main dish midpoint price. We dichotomized the size category, combining the medium and large categories. Based on preliminary analysis that suggested that there may be a quadratic relationship between NEMS-HCR score and midpoint price, we included both linear and quadratic midpoint price terms. To minimize multicollinearity between the linear and quadratic terms, midpoint price was centered before squaring. Potential multicollinearity among all the predictors was examined using standard methods (assessing correlations among the predictors, comparing change in coefficients and their standard errors between full and

reduced models, examining tolerance and variance inflation factors).

Results

Sample Description

The study sample consisted of 89 HC restaurants. Most of the restaurants served Dominican cuisine, with an almost even split by type (counter-style vs sit-down). On average, restaurants had 53.8 main dishes, ranging from five to 172. Only two (2%) of the restaurants assessed had a salad bar, and 30 (34%) offered family combos. Contrary to typical fast food combo meals, these were family meal combos typically offering a whole rotisserie chicken, with large sides of rice and beans and a 2-liter soda. A few restaurants (10%) were cash-only.

The mean midpoint price of main dishes was $16.25 (Table 1). The lowest-priced main dishes mostly included hamburgers and sandwiches, ranging from $2.00-$25.00 (mean=$7.60), while the highest-priced main dishes were usually dishes containing seafood and/or steak (eg, lobster, seafood paella, surf n' turf), ranging from $8.00-$49.95 (mean=$24.91). Midpoint price did not significantly differ by cuisine, type or size category.

Size category significantly differed by restaurant type (X^2 = 41.3, P<.001) and cuisine (X^2 = 16.8, P<.01). Counter-style restaurants were more likely to be smaller than sit-down restaurants. Puerto Rican restaurants were more likely to be smaller than Cuban and Dominican restaurants. Most of the Puerto Rican restaurants (64%) were classified as small, whereas most Dominican restaurants (67%) were medium-sized. Cuban restaurants were mostly large (50%) or medium (38.5%).

Table 1. Sample description, N=89

Variable	% (n) or mean (range)
Main cuisine served	
Cuban	29% (26)
Dominican	55% (49)
Puerto Rican	16% (14)
Restaurant type	
Sit-down/waiter service	53% (47)
Counter-style	47% (42)
Restaurant size (mean number of seats)	47.2 (0-271)
Small (0-21 seats)	32.6% (29)
Medium/large (22-49)	33.7% (30)
Large (52-274)	33.7% (30)
Menu size (number of main dishes)	53.8 (5-172)
Main dish price (mean midpoint, range)	$16.25 ($6.88-$30.92)
Cash-only	10% (9)
Offering family combos	33.7% (30)
Salad bar	2% (2)

Nutrition Environments in Hispanic Caribbean Restaurants

The NEMS-HCR assessment provided an overview of the potentially healthful foods available in the restaurants, as well as the barriers and facilitators for healthful eating (Table 2). To provide context for the results, we compared NEMS-HCR measures by restaurant cuisine and type.

Food Availability

None of the menus in the restaurants studied listed any main dishes as "healthy" or "light," based on NEMS-R criteria. Only two restaurants offered whole grains, and only 2 offered fruit (Table 2). While almost all restaurants offered nonfried dishes, only about half offered a large proportion (>75%) of the main dishes as nonfried. Three-quarters offered at least one vegetarian option. In terms of beverages, only a few (16%) offered low-fat or non-fat milk (Table 2).

Notable differences were found by cuisine. Cuban restaurants had greater healthful food availability than Puerto Rican or Dominican restaurants. Whole grains were only found in two Cuban sit-down restaurants, where one offered brown rice and the other whole wheat bread. The availability of healthy main dish salads differed by cuisine (X^2=7.2, df=2, P<.05), with Cuban restaurants most likely to offer them (69%), followed by Dominican (39%) and Puerto Rican restaurants (35%). The proportion of nonfried main dishes offered also differed by cuisine

(F=14.0, P<.05), with Cuban restaurants (84%) having a significantly greater proportion than Dominican (69%) or Puerto Rican restaurants (57.9%), and Dominican restaurants having a significantly greater proportion than Puerto Rican restaurants.

Fewer differences were found by restaurant type. A higher percentage of sit-down restaurants offered vegetarian offerings (89.4% vs 60.5% in counter-style, X^2=12.6, df=1, P<.01), and a higher mean proportion of nonfried main dishes (76.1% vs 66.5%, t=-2.6, P<.01).

Table 2. NEMS-HCR component distribution

NEMS-HC Variable	n	%
Availability of healthful options		
Healthy main dish(es) available	0	0%
Non-fried main dishes (proportion >75%)	46	52%
Non-fried seafood main dishes (proportion >75%)	52	58%
Vegetarian main dishes	68	76%
Healthy main dish salads	42	47%
Low-fat or fat free salad dressing	14	16%
Fruit	2	2%
Non-fried, non-starch vegetable side	76	85%
Whole grain bread	1	1%
Brown rice	1	1%
Other whole grains	0	0%
Beverages: 100% juice	53	60%
Beverages: 1%/nonfat milk	4	4%
Facilitators of healthy eating		
Nutrition information on menu	0	0%
Healthy main dishes identified on menu	0	0%
Reduced-sized portions available	19	21%
Healthy requests encouraged	2	2%
Healthy less expensive than regular main dishes	0	0%
Non-fried less expensive than fried	14	16%
Nutrition information posted	0	0%
Highlighting healthy options	11	12%
Healthy eating encouraged	1	1%
Barriers to healthful eating		
Large portions encouraged	4	4%
Menu discourages special requests	0	0%
"All you can eat" or "unlimited" available	0	0%
Combination meal cheaper than sum price of individual items	2	2%
Charge for shared main dishes	0	0%
Salt shaker on table	36	40%
Unhealthy eating encouraged	8	9%
Overeating encouraged	1	1%

Barriers and Facilitators

Restaurants presented few visible facilitators or barriers to healthful eating (Table 2). The most common facilitators were offering reduced portions (21%) and making nonfried main dishes less expensive than comparable fried ones (16%). Some menus highlighted healthier options (12%), for example showing images of nonfried and seafood dishes instead of fried ones. However, none of the assessed restaurants provided nutrition information or identified healthy options on their menus (ie, having a "healthy" or "light" section). Only one restaurant had environmental encouragements for healthy eating – a counter-style Cuban restaurant with a tent promoting a vegetable platter at the entrance.

The main visible barrier found was having salt shakers on tables (40%), which was assessed in empty and occupied tables (Table 2). Encouragement of overeating was only found in one restaurant (a Dominican, counter-style restaurant). Unhealthy eating encouragement included, for example, using menu images to promote fried dishes. Large portion encouragement (n=4) was done by, for example, offering an extra pork chop for a few more dollars. These barriers were found in Dominican and Cuban restaurants.

NEMS-HCR Scores

The NEMS-HCR total score ranged from 0 to 9 (mean=4.5). On a 100-point scale, the mean score was 39.7, ranging from 24.1 to 55.2. We compared total scores by cuisine, type and size (Table 3). Scores of Puerto Rican restaurants were significantly lower than those of Cuban or Dominican restaurants (F=9.1, P<.001). Small restaurants had significantly lower total scores than medium and large restaurants (F=5.9, P<.05) (Table 3).

When examining the NEMS-HCR sub-scores, Puerto Rican restaurants scored significantly lower than Cuban and Dominican restaurants for healthful food availability (F=11.0, P<.001). Similarly, small

Table 3. Nutrition environment scores by NEMS-HCR dimension and by restaurant type and cuisine

	Total Score		NEMS-HCR Dimension Sub-scores		
Variable	**Raw**	**100-point scale**	**Healthful food availability**	**Facilitators for healthful eating**	**Barriers to healthful eating**
Possible range	(-7-22)	(0-100)	(0-15)	(0-7)	(-7-0)
All	4.5±2.1	39.7±7.2	4.5±2.0	.6±.7	-.6±.6
By cuisine					
Cuban	5.5±2.[0]	43.1±6.9	5.5±1.2	.6±1.0	-.6±.6
Dominican	4.5±1.8	39.6±6.4	4.5±1.8	.6±.6	-.6±.6
Puerto Rican	2.8±2.[0]a	33.7±6.[8]a	2.6±1.8[a]	.5±.5	-.4±.6
By type					
Counter-style	4.3±2.1	39.0±7.3	4.1±1.9[b]	.7±.8	-.4±.5 [b]
Sit-down	4.7±2.1	40.3±7.1	4.9±2.0	.5±.6	-.7±.7
By size					
Small	3.5±2.1[c]	36.7±7.1[c]	3.3±1.7[c]	.6±.7	-.4±.6
Medium	5.1±1.8	41.6±6.1	4.9±1.8	.7±.8	-.6±.6
Large	5.0±2.1	41.3±7.2	5.3±2.0	.4±.6	-.7±.7

Data shown are unadjusted means±SD.
a. ANOVA significantly different by cuisine; Puerto Rican cuisine significantly different from Cuban and Dominican cuisines via Bonferroni post-hoc test, P<.001.
b. T-test for equality of means significantly different by type (counter-style vs sit-down), P<.05.
c. ANOVA significantly different by size; small size restaurants significantly different from medium and large size restaurants via Bonferroni post-hoc test, P<.05 (total score) and P<.01 (food availability).

restaurants had significantly lower food availability scores than medium and large restaurants (F=9.1, P<.01). In addition, compared with counter-style restaurants, sit-down restaurants had significantly greater healthful food availability subscores (t=-2.0, P<.05), lower barrier sub-scores t=2.1, P<.05) (Table 3).

There was a small positive association between price and the NEMS-HCR total score (r=.10, P=.35); however, a scatterplot suggested that there may be a quadratic relationship. Midpoint price was positively correlated with the food availability score dimension (r=.26, P=.013) and negatively correlated with the facilitator dimension score (r=-.31, P=.004).

Factors Associated with NEMS-HCR Scores

Multivariable linear regression results predicting NEMS-HCR total scores are shown in Table 4. There was no evidence of multicollinearity in the model. Controlling for restaurant characteristics, total scores of Cuban and Dominican restaurants were significantly higher than those of Puerto Rican restaurants. Small restaurants had lower scores than those in the combined medium and large size category. The quadratic term for the midpoint price of main dishes was significantly negatively associated with the NEMS-HCR score (B=-1.6, P=.01), while the raw midpoint price term was positive and nonsignificant. This indicates a curvilinear relationship, with scores increasing with increasing price in the low price range (approximately $7-$15), scores not changing across the middle price range (approximately $16-$19), and scores decreasing with increasing price in the high price range (approximately $20-$31).

Discussion

To our knowledge, this study is the first to adapt the NEMS-R for use in HC restaurants, finding significant associations between NEMR-HCR scores and restaurant characteristics. The assessment revealed room for potential improvements in food availability, such as providing whole grains and fresh fruits, but also potential environmental changes to encourage and facilitate healthful choices. On the other hand, the nutrition environments in these restaurants did not include many environmental barriers to healthful eating. For example, the restaurants in the sample did not engage in the promotion of

Table 4. Multilinear regression of NEMS-HCR score (100-point scale) on restaurant characteristics, N=89

	Unstandardized Coefficients		Standardized Coefficients	
	B	Std. Error	Beta	P
(Constant)	34.4	2.7	-	<.001
Main cuisine served				
Cuban	6.9	2.3	.4	<.01
Dominican	4.6	2.0	.3	.02
Puerto Rican	(REF)	-	-	-
Restaurant type				
Take-out	1.8	1.6	.1	.26
Sit-down	(REF)	-	-	-
Restaurant size				
Small	-4.6	1.8	-.3	.01
Medium/large	(REF)	-	-	-
Midpoint price	.2	.1	.1	.18
Centered quadratic midpoint price	-1.6	.6	-.3	.01

R^2 = .28

overeating, such as supersizing and providing "all you can eat" offers.

The mean NEMS-R score of the HC restaurants included in the study fell within previously reported ranges (36–51, on a 100-point scale).[17-19] Some of these studies showed lower NEMS-R scores than found in this study (39.7). For example, an assessment of low-income urban settings in Australia revealed a mean score of 35.7[18] and a statewide assessment of restaurants in Wisconsin showed a mean score of 36.1.[17] Neckerman et al examined fast food restaurants in New York City, resulting in a mean score of 48,[19] higher than the average NEMS-R score found among the HC restaurants included in this study. Fast food restaurants, while usually associated with unhealthy dietary patterns,[20] may present factors that lead to a higher score, compared with smaller, ethnic eateries. One such factor is the provision of nutrition information, which increases the score regardless of the healthfulness of the foods provided. The provision of nutrition information is only mandatory for chain restaurants with 20 or more locations nationwide, doing business under the same name, and offering the same menu items.[21] The provision of nutrition information is not feasible for community-based (non-chain) restaurants, as compliance comes with high costs incurred for the nutrition analysis and requires recipe standardization. Policies could offset the cost of this added expense (for example, tax incentives for non-chain restaurants to include nutrition information), but this shows an important limitation of the NEMS-R, and the need for adaptations, as the one presented in this study, to capture potentially healthful strategies and offerings found in non-chain restaurants.

The significant association between HC cuisine and the NEMS-HCR score may be explained by subtle differences across these cuisines when offered in contemporary restaurants. While HC cuisines have the same staple dishes (white rice, beans, meats, plantain), they differ on the emphasis given to certain foods, such as the potentially greater emphasis on fried foods in Puerto Rican cuisine found in NYC communities.[14] However, the results may also indicate differences in how these cuisines are marketed. While we did not examine neighborhood-level information in this study, fieldwork observations indicate that it is possible that Cuban restaurants were located in areas targeting more affluent, non-Hispanic markets. Establishments outside of ethnic enclaves may provide menu adaptations to potentially market to younger and more health-conscious customers, including non-HC customers. Moreover, some restaurants offering Cuban and Dominican cuisines

included in the sample marketed themselves as "fusion" restaurants, and included elements of cuisines from Asian or other Latin American countries, often incorporating healthier, nonfried options. None of the Puerto Rican restaurants examined were marketed this way. Based on these findings, further research should examine the neighborhood and market-level factors influencing potentially different cuisine interpretations. Such understanding will lead to better tailoring of interventions to account for the different food identities that map to healthfulness in these diverse settings.

The assessment revealed room for potential improvements in food availability, such as providing whole grains and fresh fruits, but also potential environmental changes to encourage and facilitate healthful choices.

Our finding showing that smaller restaurants had lower NEMS-HCR scores than medium and larger restaurants in adjusted analysis may suggest that smaller restaurants, regardless of type, may be offering menus that are more limited, as a function of potentially limited kitchen and storage space. This may result in the offering of less fresh produce (ie, salads and non-starchy vegetable sides), influencing the score. Therefore, restaurant size should be considered when developing interventions to address barriers to healthful nutrition environments in these establishments.

Lastly, our study sought to provide insights into the association between price and the relative healthfulness of nutrition environments in restaurants. Pricing matters because of its strong association with diet quality, especially in low-income settings.[22,23] Pricing in restaurants has been mostly studied in its association with consumption, where lower prices tend to increase the sale and consumption of healthier items.[24] We found a curvilinear relationship, where scores rose up to a given price point (approximately $18), and plateaued and then decreased. This association is contrary to the general notions of healthy food being more expensive, demonstrating the complexity of examining the price-healthfulness association.[25,26] This curvilinear association needs further research, due to the relatively small number of restaurants with midpoint prices above $20, which makes predictions in this range less precise.

Our study addresses an important research gap to improve health outcomes in ethnic communities. However, we must also consider its limitations. Seasonality may potentially influence the availability and promotion of certain foods, such as salads. We conducted the assessment in the summer. The promotion of salads may be substituted with promotion of hearty soups in the cooler months. As such, our findings may not be generalizable to the food offerings and marketing techniques on an annualized basis. The assessment of healthy offerings in these establishments was limited by the lack of nutrition information. While we expanded the food availability dimension to include potentially healthy offerings (such as nonfried and vegetarian main dishes), we could not precisely assess the nutritional quality of these foods. Lastly, our assessment focused on restaurant characteristics, which are inherently connected to the neighborhood characteristics in which the restaurants are located. Some of our significant associations (such as the potential influence of cuisine served) may be at least partially explained by neighborhood socioeconomic and demographic characteristics. These limitations point to the need of future research to examine whether and how neighborhood-level factors may influence the healthfulness of nutrition environments in restaurants.

Conclusion

This study provides information that can be used to develop strategies to promote healthier eating in ethnic restaurants, and an assessment tool adapted for use in HC restaurants. The assessment identified existing healthful strategies and potential healthful options, providing a good starting point to work with these establishments to meet

them where they are. Previous research demonstrates that the restaurant sector may be open to healthful improvements, as long as these do not ultimately affect the business outcomes.[15,27] Some strategies can be low-cost, such as highlighting existing healthier options on menus or training the staff to recommend those options. More research is needed to understand how to best engage small business owners and to find convergence between public health and business outcomes. Given the significant level of food consumption in restaurant settings and importance of this on health, interventions in restaurants are critically needed and can contribute to the narrowing of health disparities in minority communities.

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Conflict of Interest

No conflicts of interest to report.

Author Contributions

Research concept and design: Fuster; Acquisition of data: Fuster, Sakowitz, Halvey; Data analysis and interpretation: Fuster, Pouget, Ray, Elbel, Huang; Manuscript draft: Fuster, Pouget, Handley, Ray, Elbel, Huang; Statistical expertise: Pouget; Acquisition of funding: Fuster; Administrative: Handley, Ray, Elbel, Sakowitz, Halvey, Huang; Supervision: Fuster

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