



Nutritional Value of Meals at Full-service Restaurant Chains

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ABSTRACT

Objective: To assess the nutritional value of meals at full-service national restaurant chains with outlets in the Philadelphia region in 2011.

Methods: Chains were eligible if nutritional information for all menu items was on company Web pages or printed menus at Philadelphia outlets. Nutrient profiles were analyzed for 2,615 items from 21 eligible chains (out of 29) and compared with United States Department of Agriculture guidelines.

Results: Adult meals (entree, side dish, and one-half appetizer) approximated 1,495 kcal, 28 g saturated fat, 3,512 mg sodium, and 11 g fiber; and rose to 2,020 kcal after including a beverage and one-half dessert. Better calorie and fat profiles were observed for entrees tagged “healthy choice” or aimed at seniors or children; however, sodium far exceeded recommended limits.

Conclusions and Implications: Foods served at full-service restaurant chains are high in calories, saturated fat, and sodium. Standard definitions are needed for “healthy choice” tags and for entrees targeted to vulnerable age groups.

Key Words: nutrition policy, nutrition labeling, energy intake, nutrients, dietary sodium, restaurants (*J Nutr Educ Behav.* 2014;46:75-81.)

INTRODUCTION

Rising trends in obesity have been attributed largely to increased caloric intake¹ and have coincided with an exponential increase in the amount of money households in developed nations spend on food away from home, currently representing over one third of calories purchased in the US.² Food prepared away from home is typically higher in calories and lower in nutrient density than foods prepared at home. Recent work characterizing the nutritional quality of foods sold at quick-service restaurants has documented high energy, fat, and sodium in those foods.³⁻⁵ Available data suggest that full-

service restaurants serve oversized portions and foods of low nutritional quality.⁵⁻⁸ Yet, very little work has been done that systematically characterizes the nutritional quality of foods sold at full-service restaurants and restaurants' “healthy choice” items, and that describes differences by restaurant price point.

An increasing number of full-service chain restaurants have chosen to tag a few menu items with “healthy choice,” yet they provide limited nutrition information about those items. Thus, it is not known whether tagged items conform to dietary guidelines.⁹ Within the full-service restaurant category, the type and range of menu offerings can vary by

restaurant price point, but how much nutritional quality varies by price point is unknown. Characterizing restaurant menu profiles by price point is relevant to the ongoing discussion about how much the price of healthier foods relative to unhealthy foods contributes to income disparities in obesity, diet quality, and related chronic diseases.¹⁰

When fully implemented, a section of the US Patient Protection and Affordable Health Care Act mandates that fast-food and full-service chains with ≥ 20 locations provide nutrition information at point of purchase.¹¹ This legislation was motivated by low consumer knowledge and awareness of the nutritional values of restaurant foods.^{12,13} In addition, labeling may spur improvements in restaurant menus as restaurant owners, managers, and chefs become more cognizant of excessive calories, fat, and sodium in their food, and/or because they anticipate negative reactions from the media and their customers.^{14,15}

Information about nutrition at full-service restaurants has lagged behind fast-food restaurants, in part because many full-service chains have not disclosed nutritional information on their Web sites and Affordable Health

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Care Act menu labeling requirements have not yet taken effect. In 2010, Philadelphia passed a point of purchase menu labeling ordinance that required calorie disclosure for all items on menu boards; it also required that chain restaurants (≥ 15 locations anywhere in the US) display information about calories, saturated fat, trans fat, sodium, and carbohydrates adjacent to all standard menu items on printed menus.¹⁶ The Philadelphia labeling ordinance provided a unique opportunity to analyze the menus of these restaurants. The current study compiled and analyzed full-service chain restaurant menus for select menu categories. In addition, it examined the prevalence of healthy choice tags and whether tagged items correspond to federal dietary guidelines. Chain restaurants were stratified by price point to assess whether nutritional quality varied by restaurant price point.

METHODS

Full-service restaurant chains in the Philadelphia region were eligible for inclusion if they displayed calories and sodium for all menu items on either their Web site or their printed menus at Philadelphia outlets between March, 2011 and May, 2011, and the majority of main dishes were single-serving entrees. Of 29 chains, 21 restaurants were eligible for inclusion (see [Supplement Figure 1](#)). Three higher-priced restaurants did not meet the criteria for displaying nutrient content, and 3 mid-priced and 2 high-priced restaurants did not meet the criteria for serving single serving entrees. Entree prices were classified based on prices displayed on printed menus at the Philadelphia outlets: lower-priced (most entrees were \$6–\$9; 23%; $n = 5$); mid-priced (most entrees were \$10–\$16; 67%; $n = 14$); and higher-priced (most entrees were \geq \$25; 10%; $n = 2$). (No restaurants had entrees priced mostly in the range of \$17–\$24.)

Nutrition data were downloaded or transcribed from restaurant Web sites and print menus. Analyses focused on the following menu sections because they were consistently reported and had the largest number of items across chains: appetizers, *a la carte* entrees (a single portion and single plate that typically included a

protein source and was the primary focus of the main course of a meal), and side dishes. Other categories were less consistently labeled but are reported here to describe added calories from these menu sections: desserts, nonalcoholic drinks, alcoholic drinks, and dessert-like drinks (milkshakes, floats, malts, and smoothies). Details on menu categories and classification are in the online [Supplement](#). The final analysis sample of menu items was 2,615. The Institutional Review Board of the Philadelphia Department of Public Health deemed this study exempt because human subjects were not recruited for this research.

Analyses

The researchers selected nutrients for analysis based on their inclusion in the US Dietary Guidelines¹⁷ and because they were consistently listed on menus: calories (all 21 menus), sodium (all 21 menus), saturated fat (20 menus), total fat (16 menus), and fiber (15 menus). To assess the prevalence of healthier menu items, offerings were designated as “healthier” using criteria based on general nutrition advice in the US Dietary Guidelines (see [Supplement Table 1](#)).¹⁷ Dietary reference values (DRV) were used for a 2,000-calorie diet for adults and 1,400 calories for children.¹⁸ This calorie level for children represents typical calorie needs for sedentary to moderately active 8-year-olds, depending on gender and body size, and has been used by others.^{17,19} No guidelines exist for appropriate nutrient levels for full-service restaurant menu items. Thus, this study had to define its own criteria using thresholds that resembled those used by others^{8,19} and were based on US dietary patterns for dinner meals. In the US, full-service restaurants are frequented mostly for dinner, and dinner meals typically account for a larger share of a day's intake than other meal times.^{20,21} The authors selected $\leq 40\%$ of the DRV to indicate maximum appropriate nutrient levels for *a la carte* entrees (excluding sides/add-ons and excluding a beverage) and $\leq 10\%$ of the DRV for adult side dishes ([Supplement Table 1](#) provides details).

Data were normally distributed (evaluated via plots, qualitative comparison of means and medians, and

skewness statistic). Means and standard deviations were used to characterize the distribution of nutrient content by menu category and menu price. To avoid overweighting restaurants that listed a disproportionate number of menu items per category, summary nutrient values were first calculated for each restaurant by category and then values were averaged across restaurants. To provide information about sodium that can be compared across menu sections and between this study and other studies, the authors calculated the absolute value of sodium and a standardized measure, sodium density (for each menu item, density was defined as milligrams of sodium per 1,000 calories^{4,22}).

Generalized linear regression was used with a random intercept for each restaurant chain to account for correlated values with chains (random intercept models).^{23,24} These models were used assess (1) how much the nutrient content of entrees varied within each restaurant (indicating a high variety of options on the menu) vs between restaurants (indicating a high variety across restaurant establishments); and (2) whether there were differences in calories and nutrients for lower-, mid-, and higher-priced restaurants. For these models, a random intercept was used for each restaurant chain; calories and nutrients were outcome variables; and independent variables were number of items offered per restaurant, price point (high, medium, and low), and calories (when the outcome was not calories). All analyses were done using SAS 9.2 (SAS Institute, Cary, NC, 2009; proc mixed used for regression analyses).

RESULTS

Nutrients and Prevalence of Healthier Menu Items

Mean calorie content of both *a la carte* entrees and appetizers was approximately 800 kcal ([Table 1](#), [Supplement Figure 1](#)) and did not meet the healthier criteria for calories about 50% of the time ([Table 2](#); see criteria in [Supplement Table 1](#)). Approximately 30% of *a la carte* entrees and appetizers exceeded the DRV for saturated fat and sodium; only 20% of

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