Customer Responses to Mandatory Menu Labeling at Full-Service Restaurants

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Background: In 2010, Philadelphia enacted a menu-labeling law requiring full-service restaurant chains to list values for calories, sodium, fat, and carbohydrates for each item on all printed menus.

Purpose: The goal of the study was to determine whether purchase decisions at full-service restaurants varied depending on the presence of labeling.

Methods: In August 2011, this cross-sectional study collected 648 customer surveys and transaction receipts at seven restaurant outlets of one large full-service restaurant chain. Two outlets had menu labeling (case sites); five outlets did not (control sites). Outcomes included differences in calories and nutrients purchased and customers' reported use of nutrition information when ordering. Data were analyzed in 2012.

Results: Mean age was 37 years; 60% were female; 50% were black/African-American and reported incomes ≥$60,000. Customers purchased food with approximately 1600 kcal (food plus beverage, 1800 kcal); 3200 mg sodium; and 35 g saturated fat. After adjustment for confounders, customers at labeled restaurants purchased food with 151 fewer kilocalories (95% CI=−270, −33); 224 mg less sodium (95% CI=−457, +8); and 3.7 g less saturated fat (95% CI=−7.4, −0.1) compared to customers at unlabeled restaurants (or 155 less kilocalories from food plus beverage, 95% CI=−284, −27). Those reporting that nutrition information affected their order purchased 400 fewer food calories, 370 mg less sodium, and 10 g less saturated fat.

Conclusions: Mandatory menu labeling was associated with better food choices among a segment of the public dining at full-service restaurants. Consumer education on the availability and use of nutrition information may extend the impact of menu labeling.
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Introduction

Over the past 25 years, U.S. obesity prevalence has doubled,[1] and Americans are consuming more meals away from home.[2] Nutrition labeling on menus aims to help consumers make healthier dining decisions. In 2008, the New York City Board of Health implemented regulations mandating that restaurant chains include calorie information on menus.[3] Many other U.S. localities have since implemented similar policies, and the U.S. Patient Protection and Affordable Care Act (ACA) will require menu labeling at all restaurant chains with 20 or more locations nationally.[4]

Consumer surveys suggest widespread support for nutrition labeling on restaurant menus, but research to date has observed mixed or limited consumer response in fast-food settings.[5] For example, one large study found that purchased calories decreased (approximately 100 kcal) among those who self-reported using the labels,[6] but another study found no difference.[7] Overall, when sampled customers were viewed as a whole, differences in fast-food calories purchased before and after mandatory labeling were not significant[6–8] or were of small magnitude (i.e., 38 calories[9] or even less[10]).

To date, the only field-based study of menu labeling at full-service restaurants used sales data and customer surveys to examine purchases at six independent

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restaurants in Pierce County WA before and after the restaurants voluntarily posted calories, sodium, fat, and carbohydrates for most items on printed menus.[11] High proportions of patrons reported seeing the labels and using the information when deciding what to order. However, self-reports did not align with sales data, which showed little difference in average calories purchased for entrées (15 calories). More field-based studies of full-service restaurants are needed, particularly at restaurant chains, which currently dominate the full-service restaurant industry[12] and may soon be subject to mandatory menu labeling.[4]

In January 2010, Philadelphia PA enacted a menu-labeling ordinance requiring restaurant chains to post calorie information on menu boards and to list calories, sodium, saturated fat, trans fats, and carbohydrates for each item on all printed menus.[13] This study examined customer behavior in response to nutrition information disclosure on menus at a full-service restaurant chain. The chain had restaurants in Philadelphia where menus were labeled (cases) and restaurants outside Philadelphia where menus were not labeled (controls). The hypothesis was that relative to customers at control sites, customers at case sites would purchase foods that were lower in calories, sodium, carbohydrates, and fats.

Methods

Restaurant Selection and Participant Recruitment

At the time of this study, seven full-service restaurant chains in Philadelphia displayed calories, sodium, saturated fat, trans fat, and carbohydrates on their menus. Of those, one large, midpriced national chain had a sufficient number of outlets inside and outside Philadelphia and menus that clearly displayed nutrition information (see details below). The chain was among the top 20 in the U.S. in 2010, reporting more than $1 billion in sales nationwide.[14] A convenience sample of the chain's outlets was recruited: the two outlets in Philadelphia (case sites, "labeled restaurants") and five outlets within a 130-mile radius from the center of Philadelphia that agreed to participate in the evaluation (located in Delaware, Maryland, and New Jersey; control sites, "unlabeled restaurants"). In Philadelphia and in the surrounding areas, the chain's outlets were in commercial centers or strip malls. Customer demographics were collected to assess comparability of customers at case and control sites, as described below.

Menus at the outlets inside and outside Philadelphia were identical except that menus in Philadelphia displayed labels next to all food-item descriptions and prices: calories and nutrients were abbreviated alongside their corresponding value and unit of measurement (e.g., "1030 cals./9g sat. fat/1g trans fat/95g carbs/2300mg sod"). At the chain's Philadelphia outlets, alcoholic beverages were labeled, but only 40% of non-alcoholic drinks were labeled (i.e., calories for brand-name soft drinks were not displayed on the menu). Menus at the outlets inside and outside Philadelphia displayed the chain company's "healthier choice" tags, indicating a lower-calorie option (on less than 15% of menu items). Dietary reference values were not displayed on menus despite being required by Philadelphia's menu-labeling regulations. Menus and labels did not change during the data collection period.

Transaction receipts and surveys were collected in August 2011, from customers exiting the restaurants between 6PM and 9PM on Sundays and Tuesday–Thursday. These days/hours were selected to maximize customer volume and minimize heterogeneity of customer demographics and food/beverage orders.[15] Details of data collection methods are reported in Appendix A (available online at www.ajpmonline.org). Approximately 50% of dining parties exiting the restaurants participated in the survey, which aligns with other restaurant intercept survey response rates.[6]

Survey

The customer questionnaire used items from previous surveys,[8,16–19] including whether respondents saw nutrition information in general and for each component listed on all menu items, and whether calorie and sodium information affected what was ordered. Because customers at unlabeled restaurants may have seen the chain's "healthy choice" calorie tag, they were allowed to respond that they saw information for "some of the items." The questionnaire also asked about demographic characteristics (Table 1) and whether a health professional had recommended limiting any of the listed nutrients. Study staff members were trained to record the participant's approximate body size using a body silhouette chart[20–22] (see Appendix A, available online at www.ajpmonline.org). Customers participated anonymously, providing verbal consent. The IRB of the Philadelphia Department of Public Health approved this study.

Analytic Sample

A priori power analyses for the main study questions suggested that 300 customers were required in each group. To compensate for nonresponse, the study over-enrolled by 20%. Ultimately, 721 customers completed the survey; 73 were excluded because of missing information on the primary analysis variables or covariates, leaving 648 for analyses. The only difference found between included versus excluded customers was that a lower proportion of women were included compared to those surveyed (60% vs 76%).

Data Processing and Analysis

Customer receipts and the restaurant chain's calorie and nutrient information were entered into a database. Descriptive statistics were used to examine comparability of customer characteristics and nutrition values between (1) customers at labeled and unlabeled sites and (2) customers at the labeled sites who said they used nutrition information when ordering ("labeling users") versus other customers.

Eight linear regression models were used to separately examine mean differences between purchases at labeled and unlabeled restaurants for: (1) total food and beverage calories; (2) food calories; (3) sodium; (4) carbohydrates; (5) saturated fat; (6) calories from all beverages; (7) calories from alcoholic beverages; and (8) calories from non-alcoholic beverages.