Menu Labeling Regulations and Calories Purchased at Chain Restaurants

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Background: The federal menu labeling law will require chain restaurants to post caloric information on menus, but the impact of labeling is uncertain.

Purpose: The goal of the current study was to examine the effect of menu labeling on calories purchased, and secondarily, to assess self-reported awareness and use of labels.

Design: Single-community pre–post–post cross-sectional study. Data were collected in 2008–2010 and analyzed in 2011–2012.

Setting/participants: 50 sites from 10 chain restaurants in King County, Washington, selected through stratified, two-stage cluster random sampling. A total of 7325 customers participated. Eligibility criteria were: being an English speaker, aged $\geq$14 years, and having an itemized receipt. The study population was 59% male, 76% white non-Hispanic, and 53% aged $<$40 years.

Intervention: A regulation requiring chain restaurants to post calorie information on menus or menu boards was implemented.

Main outcome measures: Mean number of calories purchased.

Results: No significant changes occurred between baseline and 4–6 months postregulation. Mean calories per purchase decreased from 908.5 to 870.4 at 18 months post-implementation (38 kcal, 95% CI=−76.9, 0.8, p=0.06) in food chains and from 154.3 to 132.1 (22 kcal, 95% CI=−35.8, −8.5, p=0.002) in coffee chains. Calories decreased in taco and coffee chains, but not in burger and sandwich establishments. They decreased more among women than men in coffee chains. Awareness of labels increased from 18.8% to 61.7% in food chains and from 4.4% to 30.0% in coffee chains (both $p<0.001$). Among customers seeing calorie information, the proportion using it (about one third) did not change substantially over time. After implementation, food chain customers using information purchased on average fewer calories compared to those seeing but not using (difference=143.2 kcal, $p<0.001$) and those not seeing (difference=135.5 kcal, $p<0.001$) such information.

Conclusions: Mean calories per purchase decreased 18 months after implementation of menu labeling in some restaurant chains and among women but not men.

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Introduction

Americans consume 400 additional daily calories relative to the year 1970, contributing to a high obesity prevalence.[1] Requiring chain restaurants to post calorie information on menus may help reduce caloric intake.[2,3] Menu labeling regulations have been adopted in 21 U.S. jurisdictions[4] and will soon be required nationwide at large chain restaurants.[5]

Studies[6,7] of menu labeling regulations consistently demonstrate increased customer awareness and use of calorie

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information. Evidence from most survey and experimental studies[8–15] suggests that provision of nutrition information on menus leads to healthier purchases. Real-world evaluations of restaurant menu labeling regulations soon after implementation have yielded mixed results regarding the impact on calories purchased, but these studies[6,7,16–19] were conducted within 1 year after menu labeling was implemented.

In the current study, a longer-term evaluation was conducted of menu labeling in King County to test the hypotheses that customer awareness and use of calorie information would be higher and the number of calories purchased would be lower 6 and 18 months after implementation. An evaluation also was made of whether the impact varied across restaurant neighborhood SES, restaurant type, demographic characteristics of customers, and customer awareness of menu labels.

Methods

In King County, chain restaurants with 15 or more sites nationally were required to post calorie information on their menus or menu boards by January 1, 2009.[20]

Study Design

The study was a single-community pre–post–post cross-sectional natural experiment that included the same regulated fast-food and coffee restaurants at three time points from Fall 2008 through Spring 2010: baseline (1–3 months prior to regulation implementation); Post 1 (4–6 months after); and Post 2 (16–18 months after).

Restaurant and Participant Selection

A restaurant was eligible if it was from one of the ten most common regulated chains in the county. Pizza restaurants were excluded because most customers order by telephone and do not see the menu board. To ensure that larger chains (e.g., Starbucks and Subway) did not dominate the sample and that the sample included restaurants in low-income/diverse areas (census tracts with at least 35% of residents below 200% of the federal poverty level and 30% people of color), chains were first sorted into three groups based on the number of locations in the county. Then restaurants were sampled randomly in each group with probability proportionate to the number of establishments such that one third of the sample was from each group, and 25 restaurants were from each of the two income/diversity areas (Figure 1).

Customers were eligible if they were English-speaking, aged $\geq$14 years, and had an itemized receipt. If a participant made a purchase for another person(s) aged $<$19 years, both were included. Fifty customers were recruited at each restaurant.

Data Collection

Interviewers visited restaurants every day of the week, generally during hours of greatest customer volume (between 11AM and 4PM for food chains and between 9AM and 2PM for coffee chains).[14] Interviewers asked all customers entering the restaurant if they would save their receipts and participate in an exit survey. Interviewers collected receipts and administered a brief survey to eligible participants prior to exit. The survey queried about awareness and use of menu labels, knowledge of daily caloric needs, demographics, and details of items purchased (including beverage flavor and customizations such as cheese). Each participant received $2 for participation. Interviewers recorded the number of walk-in customers, eligibles, and refusals, in order to allow calculation of a participation rate. The University of Washington IRB approved the study.

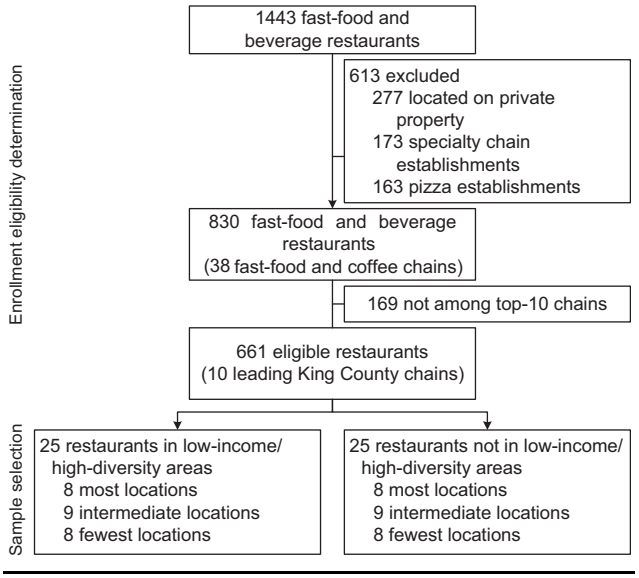

Figure 1. Restaurant sampling flow chart

Note: The 10 most common fast-food chains represent 80% of burger, sandwich, taco, and coffee chain sites on public property in King County WA. The ten chains were sorted into three groups (most to fewest) based on the number of sites in the county. Chains with the most sites (i.e., Starbucks and Subway) represented 48% of eligible restaurants. Chains with a moderate number of locations (i.e., Tully's, Jack in the Box, McDonald's, and Quizno's) represented 26% of eligible restaurants. Chains with the fewest locations (i.e., Burger King, Taco Time, Taco del Mar, and Taco Bell) represented 26% of eligible restaurants. Restaurants were randomly sampled with probability proportionate to number of sites such that one third of the sample was from each group and 25 restaurants were included from each of the two income/diversity levels. The sampling strategy resulted in a diverse set of chains not dominated by chains with the most locations in the county.

Measures and Analysis

The main outcome measure was the mean of calories purchased by participants, accounting for customizations. The menu item caloric content was ascertained from information published by each chain at the time of each data collection wave. When food receipts had insufficient details to assign calorie values, the most frequent/main nondiet version for the item within that category was used. Secondary outcomes were seeing calorie information in the restaurant and using calorie information when making a purchase. Food and coffee chains were analyzed separately because of the difference between them in availability of calorie information and mean calories per purchase. At coffee chains, analysis was limited to barista-prepared beverages, as food and bottled beverages were not listed on menu boards and so were not subject to the regulation.