



Study of consumer perception of healthy menus at restaurants



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ABSTRACT

To improve food-away-from-home nutritional quality, not only must healthy food options be available but also consumers must respond by making those choices. However, this is not always possible, as consumers believe healthy foods are less tasty. A new concept of gastronomy focused not only on sensations but also on nutrition and health is necessary. The aim of this research is to evaluate whether offering a healthy menu based on nutritional claims would be an interesting option for restaurants as well as to check the impact of proposed nutritional improvements on consumer's acceptability of menus. 300 customers of a specific restaurant located in Valencia city center (Spain) participated. They answered a questionnaire about different quality parameters before and after changes on the menu had been done. Results indicated that changes introduced on the menus did not result in a minor consumer's acceptability of them. Consumers only perceived changes in food size after nutritional intervention but quality of the food remained the same. In view of these results, the proposed intervention can be considered a good alternative for a healthy diet, even if interventions don't have a long-term impact. Further investigations are necessary to prove if the proposed changes are sustained.

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1. Introduction

To improve food-away-from-home nutritional quality, not only healthy food options must be offered by foodservice industry. Consumers have to respond by making those choices during their meal experience. However, when considering the foodservice industry and eating out the focus, particularly with the profusion of 'celebrity chefs', choices are often restricted to the food itself. Yet, eating out is not simply the ingestion of nutrients but there are a myriad of other factors, which need to be taken into consideration in the understanding and enjoyment of the meal experience (Edwards, 2013).

Many different approaches have been used to study contextual influences on food acceptability, intake and choice behavior, such as laboratory and field experiments, different kinds of surveys, dietary recall, observations, depth interviews and interventions (Jaeger & Rose, 2008). It is known that food choice and acceptability are primarily based on whether sensory properties are liked or disliked. Nutritional benefits remain as a secondary concern (Chung & Vickers, 2007; Goldner, Lescano, & Armada, 2013; Verbeke, 2006). Consumers often have negative perceptions of the taste of healthy food items. For example, young consumers

particularly have negative perceptions about the taste of lower fat food items (Shannon, Story, Fulkerson, & French, 2002). Unfortunately, food away-from-home is generally energy dense and high in total and saturated fat (Allder, 2008; Rosenheck, 2008; Smith et al., 2009; Wootan & Osborn, 2006), proteins and sugar, while they are lower in vitamins, carbohydrates and fiber content. These nutrients also play an important role in the sensory perception of many foods and greatly contribute to food hedonics, which can partly explain why consumption is often over the recommended limits (Deglaire et al., 2012).

Science-based cooking is closely associated with the design of stimulating and novel dishes that make guests feel an explosion of sensations. Chefs are expected to use high quality foods and thorough preparation techniques. But food science not only involves sensorial properties and cooking technology; also nutrition and health must be considered. From a nutritional point of view, science-based cooking may contribute to provide certain nutrients and other food components, which could confer better healthy profile to the selected dishes and menus. Chefs may also consider nutritional aspects when designing their dishes (Navarro, Serrano, Lasab, Aduzib, & Ayoa, 2012).

The objective of this study was to evaluate customer's acceptability on menus with a reduction on salt, fat, proteins, total energy content and portion size. Changes done interfered as less as possible in the cooking method of the restaurant.

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2. Materials and methods

2.1. Menu design

Dishes design was made by the working team (headoffice, chefs and kitchen helpers) of the selected restaurant. A nutritionist was responsible for the analyses of the dishes designed by them. After the nutritional composition analysis, changes in selected ingredients, cooking methods or portion sizes were done in order to improve the nutritional profiles of those plates. Modifications applied never affected the quality of the menu. The selection of the final recipes and menus was made based on diner demands, sensory preferences and precepts of the Mediterranean diet.

2.2. Nutritional composition of menus

Estimated energy, macronutrients and selected micronutrients for each menu (1 starter, 1 main course and 1 dessert) were analyzed using the software DIAL 2.12 (Alce Ingeniería, Madrid, Spain) according to the USDA National Nutrient Database (<http://ndb.nal.usda.gov/>) and the Dietary Guideline of Spanish population (EFSA, 2009; FAO/WHO, 2008; SENC, 2011) using recommended nutrient intakes as standard references.

2.3. Survey design

Customers were invited to answer the survey after they finished their lunches, before and after changes of the menu. The questionnaire applied was that used for the “Q” touristic quality certification developed by the Spanish Institute for Quality Tourism (www.ict.es). This Institute, a private agency, independent, non-profit making and recognized throughout the national level, was specially created for tourism businesses. The questions help the restaurant improve its service. Core aspects of the questionnaire include: (1) product quality, (2) presentation of the dishes, (3) portion size, (4) variety of the menu, and (5) value for money. Each of the items is rate of 1–10.

2.4. Study design

The study was performed from February 2012 to January 2013. A total amount of 300 random consumers were surveyed. First part of the study was carried out from February to May 2012. In this period of time, 105 participants answered the evaluation questionnaire before any menu changed (step 1). Then, the second part of the study was conducted from August 2012 to January 2013, where 195 customers answered the questionnaire after the menu had been modified (step 2). In order to make proposed modifications acceptable by consumers, it is necessary that the quality of menus (sensory attributes, portion size, quality of the raw materials, etc.) must not be affected and also the product demand should not decrease.

As reasoned, consumer’s food decision is primarily determined by product tastiness. Food healthiness is often associated with reduced sensory quality. To account for that distinct process, we applied the holistic approach suggested by Hoppert, Mai, Zahn, Hoffmann, and Rohm (2012) who have shown that these processes can counteract one another. For that reason, this study examines the conflicts perceptions of food properties without the knowledge of the consumers. Recipe and menu changes are not given to them. The same questionnaires were given to the consumers to check if they could notice any difference between menus, before and after the changes.

The overall-study is specifically focused to improve healthy cuisine in restaurants and to determinate the acceptability of healthier menus. It is noteworthy to mention that other factors

have to be modeled when targeting other stages of food consumption process (e.g., product quality, presentation of the dishes, portion size, variety of the menu and value for money).

Nutritional improvements were focused on: portion size, total fat content, protein content, and salt amounts (regular vs. reduced). Any of these improvements had been set with the manager’s agreement in order not to affect the quality of the service.

2.5. Pretest

To assess whether the manipulation of the stylized dishes was successful, a sensory pre-test with 15 restaurant employees was conducted. The goal of the pre-test was to examine the discriminant validity of the three items in which changes had been applied (fat, salt content and portion size) and their impact on consumer’s preferences. The results were perceived as manageable.

2.6. Statistical analyses

Data were divided in two different groups: in step 1-participants answered the questionnaire before the menus changed and in step 2-participants answered the questionnaire after the menu changed. Data was analyzed with Statgraphics XV version 15.2.06 (STSC, Rockville, USA). ANOVA with LSD post-hoc analysis was used to compare if there are any differences between results derived from the completed questionnaire at Step 1 and 2.

3. Results

3.1. Nutritional improvements in menus

During the study four menus were analyzed for nutritional composition including 11 starters, 10 main courses and 4 desserts, with a total of 25 different dishes and 153 combinations (Table 1). “Paella” is a traditional Spanish main course containing rice, meat and vegetables (Valencian “paella” has chicken and rabbit) and “Fideua” is a traditional Spanish dish made with short lengths of dry pasta.

Taking into account the healthy features of some of these plates, which are considered healthy due to the low salt, protein, fat and energy content, together with the impossibility of modifying the receipt from others, only 9 dishes could be changed among the total 25 courses available in the restaurant menu (Valencian “paella”, marinere rice, black moist rice, “paella” with pork ribs, dry “fideua” of duck, most rice of rabbit, most rice of cod, seafood peeled “fideua”, puff pastry). The nutritional composition of the menu dishes before and after changes you can see in Table 2.

3.1.1. Fat

“Valencian Paella” was the only recipe that had 40 ml of added fat (olive oil). In agreement with the nutritionist, specific improvements were decided regarding the method of cooking. Usually, meat and vegetables used in this recipe are fried twice. As chef explained, this method is employed with the aim of reducing the time of cooking when customers order their meal. In this sense, proposed changes were as follows. First, the meat was baked (placed) into the oven (precooking), avoiding additional fats, and later, it was fried at the time of order. Regarding vegetables, they have an important impact on the paella’s flavor, so they are fried just once at the time of order. The fact of frying meat and vegetables only once leads to the preparation of healthier food, decreasing the fat content added due to the olive oil about 10 ml and not increasing the waiting time for customers.

Another recipe that was also high in fat content was “Puff pastry” because it contains bacon, butter and olive oil. Some tests were

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