How to analyse and develop healthy menus in foodservice

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Abstract

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In addition to playing a pivotal role in assessing customer satisfaction, menus play an important role in the foodservice production process. Additionally, the type and quality of foods offered on menus may have a direct correlation with health promotion. To verify the nutritional quality of menus, a qualitative assessment method – the Qualitative Evaluation of Menu Components (QEMC) – is being proposed. The method is derived from the Standard QEMC and offers variations such as the Buffet QEMC and the Portugal QEMC. Menu items can be improved during the planning stage when using this assessment, which allows for corrections prior to production. These changes can lead to a healthier and more attractive menu from the sensory point of view, fulfilling the role of relieving hunger and feeding with quality, thus promoting health through the foods offered.

Introduction

Chronic diseases such as cardiovascular diseases, diabetes, obesity, cancer and respiratory diseases are major concerns throughout the world, accounting for 46% of all deaths and disabilities. About 75% of cardiovascular diseases are the result of high cholesterol, high blood pressure, low fruit and vegetable intake, inactive lifestyle and tobacco usage; therefore, a change in dietary habits, and increase in physical activity and tobacco control, have a major impact on reducing the rates of these chronic diseases, often in a relatively short time. Up to 80% of all coronary disease cases, 90% of type 2 diabetes cases, and one-third of all cancers can be avoided by changing to a healthier diet, increasing physical activity and stopping smoking (WHO 2006).

Nutritional science has, over the years, proved the benefits of healthy eating for the prevention or treatment of disease, and recent studies also have confirmed this premise (Kearney *et al.* 2005; Koffman *et al.* 2005; Lackland 2005; Szapary 2005). Because of the importance of nutrition in preventing numerous diseases, changes in lifestyle and eating habits have become ever more necessary. The dietician's role in this process centres on the relationship between people, food and eating habits, with the intent being to improve, maintain or recover the health status of individuals and the community through adequate feeding in its culinary, nutritional, sensory, cultural and food safety aspects – and with prevention as a guide for the development of their interventions.

Concurrently, there has been a substantial increase in meals consumed away from home, and in the number of foodservice offerings, with more places offering different types of foods. This reinforces concerns about the quality and nutritional

value of meals offered to the population (Garcia 2003).

Therefore, it is important to have tools that evaluate the quality of foods available to the community in various areas of foodservice. The methods used most frequently to analyse the nutritional quality of menus are quantitative. The need to extrapolate these evaluations may be justified by the fact that the composition and chemical adequacy of foods alone are not sufficiently attractive to lead people to consume them (Ornellas 2000).

Although the benefits of healthy eating have been proved, food choice is a multifaceted process that involves several variables. This is because it is more complex than simply eating to satisfy hunger (Furst *et al.* 1996; Jomori 2006). The increasing pace of urban life and the need for people to commute to work or study, combined with the difficulty of returning home to prepare meals because of insufficient time, has resulted in an increasing number of people eating away from home and changing meal times from special moments into routine acts (Middleton 2000; Garcia 2003; Poulain 2004).

In this context, there is a different attitude in people who eat away from home, as this act released them from caring about food choices and allowed them to ignore recommendations on healthy eating. A study found that 61% of adults ignore healthy eating when dinning out because they associate the experience with hedonism and pleasure (Middleton 2000). People do not consciously think about health while eating, particularly when eating out, which reinforces that care is needed regarding what is offered by food establishments (Middleton 2000).

Considering these aspects, trying to change the disturbing world picture of people's health emphasizes the importance of the act of eating. As stated previous, the dietician's role in foodservice can result in the offer of a nutritionally and sensorially adequate meal through a rising education process (Catakis *et al.* 1995). The objective of this study was to demonstrate a tool that enables dieticians and other foodservice managers to analyse the nutritional quality of meals being offered to customers, through a qualitative assessment of menu components. Qualitative Evaluation of Menu Components

(QEMC) aims to help the professional prepare a menu that is more adequate from a nutritional and sensorial perspective within scientifically recommended health parameters, to enable the professional to act during the planning and theoretical construction of the menu, and to aid and assist in its transformation into a meal.

Materials and methods

Up to now, three versions of QEMC have been proposed. The Standard QEMC method, developed in Brazil, became the primary method and has been recommended for large-scale foodservice operations with limited option menus and control of food portions (Veiros 2002; Veiros & Proença 2003).

This led to the development of variations such as the Buffet QEMC, developed within Brazilian standards, aimed at buffet-style restaurants that offer customers a variety of options and freedom of choice regarding menu components and amounts and types of foods (Proença *et al.* 2005). The Portugal QEMC, a QEMC characteristic of foodservice operations in Portugal, is being developed (Veiros *et al.* 2005).

The highlights of the method are the wide range of possible assessments and the qualitative manner in which items are considered, combined in the end by a numeric score. Percentages obtained through the method help in the assessment; however, they do not represent static recommendations, as they are a simple reference that should be analysed under foodservice operation's conditions and objectives. As will be described, analytical criteria were established based on pertinent literature, for each proposal being developed.

The Standard QEMC (Veiros 2002; Veiros & Proença 2003) assists in the perception of balancing aspects such as menu food items, colours and food preparation techniques. It helps in global menu assessment and the consideration of menu components in light of the following criteria:
• cooking techniques used for menu components, in order to analyse the various methods of food preparation and alert individuals to the monotony and repetition of these techniques;
• the identification of fried foods, isolated or associated with desserts, to determine risks associated with the higher consumption of foods

prepared in this manner, and to associate them with an excessive intake of fats and refined carbohydrates;

• the availability of fatty meat cuts together with sweet desserts, an important realisation particularly when frying is not the chosen method of meat preparation;

• the colours of menu components and foods included in the menu, indicating colour combinations of the food platter, which characterise the importance of the visual aspect of foods;

• the presence of sulphur-rich foods, which should be limited in the same meal to prevent the abdominal discomfort of customers, usually caused by ingesting foods containing sulphur;

• the identification of items associated with healthy eating, such as fruits and vegetables, by providing vitamins, minerals and fibre;

• the contrast between recommended and non/seldom recommended items, such as fatty meat cuts when frying is not the chosen cooking method, the option of lean white meats undermined by a nutritionally unhealthy cooking technique and the option of a sweet dessert, particularly when it represents the only choice.

Applying the Standard QEMC is carried out in four steps:

Step 1: A menu analysis is undertaken – first on a daily basis, then by weekly and monthly assessments.

Step 2: A daily analysis of menu components is undertaken, focusing on cooking methods; salad colours and colour combinations of menu components; frequency of sulphur-rich menu components; availability of fresh green leafy salads, commercially prepared preserved salads and fruits as dessert items; availability of sweet desserts; daily menu rating as low or high fat; and assessment of fat content of menu components, particularly meats and cooking techniques (frying).

Step 3: The weekly analysis gathers the daily assessments in relation to frequency of: (i) fried foods; (ii) repetition of menu components and/or cooking methods; (iii) fruit as dessert; (iv) ready-to-eat commercial desserts or instant dessert components (Jello, puddings); (v) sweet desserts and fried food on the same menu; (vi) fatty meat cuts besides fried meat preparations; (vii) unattractive menu colour coordination,

due to monotonous colours within menu components; (viii) availability of two or more sulphur-rich menu components, excluding legumes that are offered daily; (ix) availability of fresh leafy green salads and preserved salads as options and (x) repetition of cooking techniques whenever there are two or more meat options.

Step 4: The monthly analysis gathers the weekly information, and the data are tabulated to allow per cent analysis in relation to the total number of days that the menus are researched. Following data analysis and per cent distribution, the monthly analysis characterizes the menu in general, facilitating visualization of the structure of the planned menu and any necessary alterations.

The Buffet QEMC (Proença *et al.* 2005) is developed according to the Brazilian model, and is applicable to any type of buffet. It is independent from the existing options, as the variety and number of menu components offered to the consumers are the main method variables. To enable analysis, the menu components being evaluated are divided into groups according to their characteristics, such as meats, accompaniments, salads and desserts. The analysis covers food type and variety, cooking methods, food colours (to enable a preview of the general aspect of the menu components on the distribution line), sauces and the nutritional quality of menu components.

Following this analysis, the evaluation indicators and per cent distribution will characterize the menu. Contrary to the Standard QEMC, the Buffet QEMC analyses a system containing a large number of menu components for the customer's free choice; therefore, the assessments cannot be very strict. In this context, the method first utilises the division into groups, followed by topics from each group, with percentage indicators leading to a result that can be analysed according to criteria defined for each location in view of their needs and expectations.

• Meats: includes all types of meats, such as beef; poultry; pork; fish; heart, liver, tongue, tripe and other organ meats; and all kinds of sausages.

• Accompaniments (AC): subdivided into AC1 and AC2. AC1 includes rice, pasta, roots and tubers; therefore, it is a higher-energy group than AC2, and is placed at the base of the Brazilian food pyramid. AC2 includes cooked vegetables, which are a source of vitamins, minerals and

fibre, and is placed at the second level of the Brazilian food pyramid.

• Salads: includes all types of vegetables and fruits offered as salads.

• Desserts: includes all kinds of sweet desserts or fruits that are offered for consumption at the end of a meal.

Using a grid for the daily assessment of the menu, one can list menu components, types of food, cooking techniques, colour, sauce (presence and type) and observations. Such items are common to all groups with specific characteristics. After finishing the evaluation of the above topics, the weekly assessment indicates other issues that need to be analysed and considered before completing the weekly evaluation and progressing towards the monthly analysis.

In the weekly assessment of the meat group, the total number of meat-based menu components offered that week is tallied and identified according to the different types described above. Percentages of the following variables also are defined: fatty meat cuts; white meats; non-fried white meats; meats that are boiled, stewed, broiled, roasted and grilled (recommended from a nutritional viewpoint); fried and deep-fried breaded meats (controlled from a nutritional viewpoint); and poultry and fish prepared without skin. The various cooking methods also are analysed in the weekly assessment. Attention is drawn to the fact that even recommended methods can be rendered unhealthy by changes in the cooking process.

In the weekly assessment of the accompaniment group, the total weekly number is determined and divided by the two subgroups AC1 and AC2. Percentages of the following also are defined: offer of AC1 and AC2; fried AC1 and AC2; deep-fried and breaded AC1 and AC2; whole foods such as brown rice, pastas, seeds and grains; menu items high in saturated fat, *trans*-fatty acids or cholesterol, such as bacon, butter, margarine and cookies, in amounts identified by customers; sulphur-containing foods; boiled, stewed, broiled, roasted and sautéed foods. The weekly tally is finalized taking into account combinations of colours and sauces and other items.

In the weekly assessment of the salad group, the total number of salads offered during the week is verified. Percentages of the following also

are defined: fresh green leafy salads; salads with mayonnaise; composed salads (salads with two kinds of vegetables) with sauce; mixed salads (three or more vegetables); plain fruit; preserved fruits; sulphur-containing foods; salads repeated daily; frequency of salads with non-habitual ingredients. The following also are verified during the weekly assessment: cutting and cooking methods; types of dressings offered, such as olive oil, lemon juice, balsamic vinegar; and herbs that spur improved flavour and nutritional quality.

In the weekly assessment of the dessert group, the total number of different types of desserts is determined. Some percentages also are defined: sweet desserts; fruit-based or fruit-added desserts; plain fresh fruit with peel; laminated fresh fruit; canned fruit; fruit preserve or paste; crystallized fruit; light desserts; dietetic desserts; desserts rich in cholesterol, *trans*-fatty acids and/or saturated fats like those with large amounts of yolks, cream, whipped cream, butter, margarine, chocolate, cookies and coconut, among others.

Upon completion of the weekly assessments of all the groups, information should be gathered in monthly evaluations to obtain a global view of the menu. Only then should necessary changes be made.

Results and discussion

An example of the application of the Standard QEMC results as a final assessment is shown in Table 1. This evaluation was performed in a food-service operation from the work sector (e.g. industry) with a menu composed of several items, three or four of which were salad types – one preserved, one cooked and one fresh green leafy. There could have been days where four types of salads were available, with the fourth option being either cooked or preserved. Other daily items include rice and beans and another accompaniment dish such as pasta, vegetables, tubers or soufflés, to name a few. The meat dish usually had only one option, with a second choice being offered only when fish was included on the menu or when the meat offered was one with a low acceptance rate. Desserts had only one option, rotating between fruits and sweet desserts. Consumption of all menu items, with the exception of meat and dessert, was unrestricted, and cus-

Table 1 Foodservice menus analysis, method Standard QEMC

	Menu days	Fruits[a]	Green salad[a]	Similar colours[b]	Rich in sulphur[c]	Dessert[d]	Fried food[d]	Fatty meat[d]	Dessert+ fried food[d]
Months (days)									
March	22	8	19	17	13	14	11	4	4
April	20	7	16	12	12	13	12	3	4
May	24	8	22	18	17	16	15	2	5
June	19	6	17	11	13	13	6	4	2
July	24	8	16	13	16	16	10	4	2
Total (days)	109	37	90	71	71	72	54	17	23
% rate		33.9	82.6	65.1	65.1	66.1	49.5	15.6	21.1

The letter (a) indicates the inclusion of foods with a positive health connotation, with the lower percentages indicating that the item requires attention. The letter (b) indicates the visual impact of the menu; in this case, monotonous colours. The higher the score, the higher the colour similarity; subsequently, the higher the necessity for change are needed. The letter (c) is the evaluation of the physical sensations following the ingestion of these foods on the menu. The higher the score, the more attention needed in selecting foods for the daily menus. Higher scores for the letter (d) indicate the need for to monitored these items more closely because, sooner or later, they may lead to hazardous health consequences.
QEMC, Qualitative Evaluation of Menu Components.

tomers could help themselves to their desired amounts.

Thus, by applying the Standard QEMC, it is noted that this menu may have an elevated calorie content as indicated by the high percentages associated with fried foods (49.5%), sweet desserts (66.1%) and sweet desserts together with fried foods (21.1%). It was noted that in this foodservice operation, the deep fryer was used intensely to cook meats and accompaniments, probably due to the reduced number of ovens.

It is important in this location to take into account the different impact of deep frying when applied to meats and accompaniments, as meats are limited to one portion and accompaniments are *ad libitum*. Therefore, deep-fried accompaniments may signify a higher fat intake than fried meats, heightening concerns when both types of fried foods are offered on the same day. The evaluation also revealed the coincidence of fried foods and sweet desserts on the same day.

As a work-sector foodservice operation is where employees consume their main meal of the day, the menu structure may have a larger impact on their health. The employees also may be inclined to eat similarly at home, reinforcing the importance of the problems raised previously.

Regarding desserts, the interpretation of the data demonstrated a small percentage of fruits, only 33.9%, as desserts on the menu. This per-

centage includes sporadic offerings of fruits high in calorie and fat, such as avocados, which are offered as a purée. Foodservice dieticians reveal that customers' preferences lean towards sweet desserts, such as flans and gelatine, with a daily percentage of 66.1%. These types of desserts also are preferred because they can be prepared and distributed more easily than fruits, which need to be selected, disinfected and are usually more expensive.

In spite of the low offering of fruits, it is noted that leafy vegetables are a part of the menu on 82.6% of the days, revealing possible concerns in promoting the intake of vitamins, minerals and fibre. This measure is easy to adopt, because leafy vegetables are available as minimally processed foods.

Another item considered was plate presentation and the visual importance of the foods being offered. This may interfere with the choice of foods and with customer satisfaction, as customers could visualize the macro- and micronutrients they may be ingesting when approaching the buffet to fill their plate. Instead, they may be more interested in the colours, preferred cooking methods and presentation of the food, which may or may not stimulate their will to ingest certain types of foods.

Another item analysed on the menu was sulphur-containing foods, which appeared on

65% of the days. This aspect was analysed because the increasing number of customers who complained to the dieticians about abdominal discomfort following meals. According to the dieticians, this sensation was related to a rapid ingestion and inadequate chewing of foods, combined with the consumption of large amounts of sugar-rich beverages. Application of the Standard QEMC demonstrated a high percentage of sulphur-containing foods that, combined with other factors, can cause abdominal discomfort. Besides meat and beans, salads (depending on the vegetable served) also can increase the sulphur content of a meal.

With what has been described, it becomes apparent that the menu prepared by the foodservice dieticians should be utilized to transform their knowledge about foods into a healthier and more attractive method for feeding people for whom they are responsible – customers and workers. It is possible to visualise the quality of the menu through data interpretation and by correcting some mistakes or improving certain aspects that may not meet the standards of the professional in charge, which may go undetected at first glance.

The assessments using the Standard QEMC, which were meant to be applied to a captive audience such as industrial workers, may influence the health status due to the frequent consumption of meals at the local foodservice operation. For example, in the Standard QEMC, if there was a high percentage of fried foods, days with monotonous colours and a small percentage of leafy salads and fruits being offered, this could be corrected when planning the menu.

If the nutritional quality of food does not agree with what has been established as being nutritionally adequate and healthy, it may interfere negatively on the health status of individuals and create incorrect eating habits when learning about healthy eating could have been the alternative.

The assessment of the Buffet QEMC does not pertain to concerns regarding the food quality of a specific captive audience; instead, it aims to help verify healthier food selections in foodservice operations and show people that there are healthy and tasty foods that are not dangerous when consumed frequently. A varied, attractive and quality menu can increase demand and customer loyalty.

Qualitative assessments allow for immediate intervention that could reduce flaws in planning and the inclusion of certain foods that, when offered with other choices, may not be a good option. Additionally, the professional can verify whether the menu complies with health maintenance parameters, disease prevention and healthy eating.

Conclusion

Correct nutrition intervention by a foodservice operation that has increased and diversified its market can play an important role in the health and well-being of customers. For many consumers, the food eaten at their place of work or study is their most representative meal of the day. If it is nutritionally adequate, it can represent the foundation of a healthy diet and have a positive influence on the consumer's health. More importantly, besides providing adequate nourishment, the meal can lay the foundation for customers to establish good eating habits. Therefore, feeding clients and the subsequent direct impact on their health becomes increasingly important for the dietician and evident to foodservice companies and society in general.

One of the contributions that the QEMC method makes is based on the fact that there is a real need for dieticians to redirect their work towards managing nutritional quality and reinforcing their role as healthcare workers in any arena, including foodservice.

The dietetic professional who works in foodservice management plays an important role as an educator with both employees and customers. The food offered becomes a type of permanent and attractive educational material, even if it is presented in an educational manner that is not recognized or perceived by people.

Acknowledgements

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