



E-menus—Managing choice options in hospital foodservice



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ARTICLE INFO

Article history:

Received 17 July 2015

Received in revised form

12 November 2015

Accepted 17 November 2015

Available online 21 December 2015

Keywords:

Food service

E-menus

Consumer behaviour

Menu information

ABSTRACT

This study examined an initiative in which e-menus and touch screen technology were piloted in a large UK hospital, with the aim of improving food service and satisfaction. Current practice often means that patients may receive the wrong meals, resulting in dissatisfaction and plate waste.

An alternative approach is for patients to use electronic menus (e-menus) to make their order, using touch screen technology on the TVs, which in many hospitals are provided at every bedside. A pre-test, post-test questionnaire, which elicited scaled responses and written comments ($n = 90$) was administered to a comparable group of patients. Results from both types of data suggested that most patients used e-menus effectively, although for older patients, it was more challenging. However the biggest difference in the effectiveness of the new technology was between the wards, which also showed substantial differences in service standards. It is concluded that e-menus are an effective way of imparting information about the food, and that they tend to produce greater satisfaction in recipients. However, the results suggest that more training of foodservice staff will be required in order to make the most of initiatives of this kind.

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1. Introduction

Although hospital food and foodservice are known to have a positive effect on patients' physical and psychological wellbeing (Hartwell and Edwards, 2003a,b; Johns et al., 2013) catering provision in hospitals has a poor reputation and has been a source of complaints for many years, especially in terms of food palatability and menu variety (Hartwell et al., 2007). Poor palatability is mostly due to loss of temperature and deteriorating organoleptic quality resulting from delays in service after preparation or regeneration (Hartwell et al., 2007), which may be caused by long transport runs from distant kitchens (Wilson et al., 1997; Kipps and Middleton, 1990), by the exigencies of medical rounds, or by ward conditions (Johns et al., 2013; Jessri et al., 2011). A contributory factor is poor liaison between foodservice and medical staff (British Association for Parenteral and Enteral Nutrition, BAPEN, 2007).

Hospital food service provision worldwide is increasingly subject to constraints of budget and competition (Wanstall et al., 2000) and in many places faces increasing demands to operate as a profit centre rather than as a cost centre (Santoro, 1999). Cost saving initiatives in the USA includes self-operated food kiosks and home meal replacement programmes for hospital staff (Wanstall et al.,

2000). Garner (2004) notes instances in the UK where hospital caterers have offered their facilities as a venue, or catered private outside events. In some hospitals nursing staff are allowed to buy oversupplied meals from the bulk trolley at a reduced price (Gledhill, 2000). Nottingham City Hospital operates a 50 bed hotel for visiting relatives of patients and convalescents who do not need a clinical bed, as a commercial enterprise (Garner, 2004). Hospital food service managers have sought to make their operations more competitive by adding brand names to menus, remodelling dining spaces and expanding the customer base to include the local community, using side entrances from the street (Lapp, 1997). Another approach has been to remodel hospital food service along the lines of hotel room service (Anon, 1999a; Malone, 2001).

The hospital food service industry is increasingly turning to technology in its efforts to improve patients' meal experience, for instance by developing new ways to cook, store and serve the food (Edwards, 2000; Hartwell and Edwards, 2003a,b; Edwards and Hartwell, 2006; Hartwell et al., 2007). Technology can also influence how, where and when food is ordered and eaten. For instance it has been used in the USA to model hospital food provision on hotel room service, allowing patients to order anything including snacks from the menu whenever the kitchen is open, providing their order meets dietary restrictions. In these initiatives, food service personnel were issued with hand held palm computers (Jackson, 2000) or radio headsets like those used in fast food restaurants (Lavecchia, 1998). It was possible to deliver food within

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30–45 min of the order being placed and the hospitals reported a 20% increase in patient satisfaction scores. Room service was rated better than regular ward service in terms of the timeliness of meals, temperature and quality of the food, and the variety of menu choices (Stein, 2000; McLymont et al., 2003). The extra cost was considered to be recoverable through annual savings on factors such as food waste. Notwithstanding, the use of technology within the menu ordering process is slow to emerge and may also be used to communicate meal orders, replacing the pre-printed forms currently used in many hospitals. Typically such forms are completed by patients on the previous day, and if a patient is transferred or discharged, the newcomer to that bed receives the previous incumbent's meal. Ward staff often consolidate patients' requests into bulk orders, and when they are rushed they may place a bulk order for the ward without consulting patients (Johns et al., 2013). Consolidated orders are typically communicated telephonically or in written form to food preparation staff in the kitchen in the UK (Johns et al., 2013) and elsewhere (Jessri et al., 2011). The result of these practices is that patients may receive the wrong meals, resulting in dissatisfaction and plate waste (Heffernan and Moloney, 2000; Edwards and Nash, 1997).

An alternative approach is for patients to use electronic menus (e-menus) to make their order, using touch screen technology on the TVs, which in many hospitals are provided at every bedside (Hartwell and Edwards, 2009a,b). Interactive electronic menus can be denoted by the term "e-menu", originally coined by Tucker (2008) for selection menus on e-commerce sites, and other virtual applications. In principle such systems can be linked directly into the food production system to ensure that every order is individually and correctly placed. Ofei et al. (2014) note that electronic ordering can respond directly to the patient's needs, reducing the number of wrong orders, enhancing food intake and cutting the amount of plate waste. The TV display also makes it possible to provide more information about the food than can be provided on a paper menu. Increasing the amount of menu information is beneficial for recipient satisfaction because it assists choice and enhances food intake (Vanderlee and Hammond, 2014).

Increasing the amount of menu information displayed also assists hospital catering practice. Although there is no current European legal obligation to provide information about nutrition, ingredients or provenance on menus, there is a growing demand for information relating to catered food. For instance consumers are increasingly interested in the health characteristics of foods, including ingredients and nutritional composition (Hoefkens et al., 2012). Provenance is growing in importance due to concerns about food miles, and the ethics of production (Rose, 2014; Butcher, 2014). In addition, European legal obligations, for instance to indicate potential allergens (Food Standards Agency, 2014) will further increase the amount of information that caterers need to provide about their food. These pressures challenge operators to enhance the amount of menu information that can be provided. E-menus permit all these types of information, as well as pictures of the dishes, to be presented at the point of food selection. The research discussed in this paper sets out to evaluate the use of e-menus in an actual hospital-based initiative.

Apart from a study by Beldona et al. (2014) which relates only to tablet technology in commercial restaurant environments, there has been no research that has rigorously evaluated e-menus in a hospital situation. The study discussed here sets out to evaluate a bedside menu system based upon touch screen technology in a UK National Health Service (NHS) hospital. This e-menu system allowed patients to preview dishes and make selections just hours before meals were served, instead of completing a paper order form a day in advance. The e-menus showed pictures of the meals and gave a comprehensive description, with details of ingredients and where they were sourced as well as nutrition and allergen

information. This move to touch-screen menus was among the first in the UK healthcare food service industry and sought to provide patients with a greater level of choice and assurance about their catered food. Hence the aim of the study was to evaluate an initiative in which e-menus and touch screen technology were piloted in a large UK hospital.

2. Methods

The study took place in a NHS hospital located in the South of England, which was an early adopter and trialled an electronic menu system during the early part of 2011. The hospital used had 42 catering staff who prepared the meals for all the wards providing over 3000 patient meals per day. In addition, they supplied the day wards with cold lunches and snacks and provided meals for two public restaurants used by staff, visitors and some ambulant patients. The hospital used 4 sets of seasonal menus throughout the year on a two-weekly cycle. Under normal ward practice, patients ordered their food 24 h before the corresponding mealtime by filling in printed forms, and these individual food orders were consolidated by ward staff and telephoned to the kitchen as a bulk order for the following day. Bulk orders were then entered into a computer system for the kitchen to action. With the new initiative patients ordered directly using the bedside TV screen with the order being transmitted directly to the catering department. Senior management granted permission to evaluate patients' attitudes to e-menus, provided that the validated existing foodservice evaluation questionnaire formed the basis of the study. Managers of the facilities department also gave their support for the research.

The questionnaire used was based on the food service satisfaction questionnaire regularly administered by the facilities department. This hospital participated in evaluations of plated versus bulk trolley food service during the 2000s and the satisfaction questionnaire was a legacy from that study. At the time of the study the version used in the hospital consisted of ten questions about different aspects of the food and service with space for open ended comment if required. Item wordings can be seen in Table 1, discussed below. Upon factor analysis the original questionnaire gave two groups of items relating to the meal experience overall and to challenges, the latter factor containing the two negative items Q10 and Q12 and the two items relating to the provenance of the food Q8, Q9. Cronbach's alpha values for the whole item set and for the two factors were .561, .815 and .585, respectively.

To this original instrument were added four extra questions, numbered 1, 2, 3 and 13 in the table, relating to patients' experience of the TV ordering. These extra questions were agreed with the hospital facility department and catering manager and then piloted with a small sample of patients. The final questionnaire contained three factors, the two original ones, plus a factor devoted to ease of use of the menu, which contained items 1, 2 and 3. Item 13 appeared in the meal experience factor with items from the original questionnaire. Cronbach's alpha values for all items and for the two factors were .691, .853, .817 and .585, respectively.

A sample of 90 post-operative patients who had undergone elective surgery, had recovered well and were thought strong enough to provide information about the hospital meals were identified with the help of ward managers. Those chosen from the 10 wards piloting e-menus were in the convalescence stage of their recovery, and all met the following criteria. They were over 18 years of age, with no notable physical, cognitive or emotional conditions which might influence their food consumption, and with their appetite unaffected by their medical condition or medication. Their first language was English, they had eaten food on the ward for a minimum of 48 h previously and they had an anticipated minimum stay of 5 days. These individuals were approached on the wards before

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