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What do patients value in the hospital meal experience?

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ABSTRACT

A number of previous studies have reported on the aspects of hospital food service that patients value, but usually as a secondary finding, and not generally based upon patient-centred approaches. This study employed a questionnaire produced *ab initio* from interviews with patients and hospital staff, the data from which were subjected to factor and cluster analysis, in order to identify and prioritise the factors that contribute to the meal experience empirically. The most important factors, food and service were as identified by other authors. In decreasing order of importance were social, personal and situational factors. The results confirm that improving the quality of the food and the efficiency with which it reaches the patients remain the most important objectives of hospital food service.

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1. Introduction

Inadequate nutrition of patients is common in all types of hospitals, all types of wards, and among all diagnostic categories and ages (BAPEN, 2007). It has been shown to increase the incidence of post-operative complications and the need for drugs and other interventions (Feldblum et al., 2009) and as a result it may lengthen the typical stay in hospital by 50% (European Nutrition for Health Alliance, 2008). Causes of inadequate nutrition in hospitals include the quality and appearance of the food and the eating environment, factors that contribute to the whole meal experience. Parallel with concerns about malnutrition, consumer expectations of hospitals have been increasing, so that the provision of food and the meal experience are becoming increasingly important within the range of medical and support services offered by hospitals (Andersson, Elg, Persenius, & Idvall, 2013; Russell, Wallace, & Kertey, 2011; Spencer & Walshe, 2009). One part of managing and maintaining hospital food service standards involves assessing patients' satisfaction, and various studies have been conducted in different countries (Belanger & Dubé, 1996; Fallon, Curt, Hannan-Jones, & Bauer, 2007; Hwang, Eves, & Desombre, 2003; Jessri et al., 2011; Sahin, Demir, Cehik, & Teke, 2006). These vary in scope and have stated aim has always been to gain insight on patients' service experience.

Patients' satisfaction with food service in hospitals is commonly assessed using questionnaires. This approach is exemplified by a Canadian group led by Dubé and Belanger, who in the late 1990s developed a questionnaire for assessing acute patients' satisfaction with hospital meals (Belanger & Dubé, 1996; Dubé, Trudeau, & Belanger, 1994). Significantly, their study considered emotional aspects of the meal experience, but the questionnaire itself was based upon previous literature, rather than on a related, qualitative study. Statistical analysis of the survey results of Dubé et al. (1994) identified the seven factors shown in Table 1. The authors note that *food quality* was the best predictor of patient satisfaction, followed by *customization and attitude of the staff who deliver menus*. An Australian group led by Capra (Capra, Wright, Sardie, Bauer, & Askew, 2005; Wright, Capra, & Alhakbari, 2003) developed an Acute Care Hospital Foodservice Patient Satisfaction Questionnaire (ACHFPSQ), which has reportedly been used elsewhere in Australia (Fallon et al., 2007) and also in Italy (Messina et al., 2013). The questionnaire items were derived from the academic literature, were evaluated against other instruments, and were subjected to statistical treatments such as factor and reliability analysis. The five-factor structure reported by Capra's group is also shown in Table 1.

Other researchers using quantitative methods to assess patients' satisfaction with hospital meals have placed less focus on producing a generalisable questionnaire. Stanga et al. (2003) used a multiple response format with both open and closed questions. Sahin et al. (2006) used a ten-item questionnaire somewhat similar to that of Capra et al. (2005), which asked patients to rate their

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A hospital dining experience questionnaire was produced as follows. Preparation and delivery of three breakfast, three lunch and three dinner services to patients on two acute orthopaedic wards were observed and extensive notes taken. A purposive sample of 30 patients was chosen for the interview and questionnaire survey using consenting inpatients drawn from a list provided by clinical leaders of the two wards. Those chosen 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. Semi-structured interviews conducted at the patients' bedside aimed to identify the factors influencing patients' enjoyment of their meals, together with issues that patients felt would enhance their mealtime experience in hospital. Additional interviews were conducted with 18 stakeholders, including staff, clinical managers and medical staff, ward hostesses, and relevant administrators. Interview transcripts were analysed thematically using NVIVO software, validating issues that arose by reference between samples, regular reviews of the raw data and comparison with the findings of previous research.

A 37 item draft questionnaire was drawn up using these qualitative findings and administered by a researcher to a pilot group of 70 patients attending pre admission clinics. Following this pilot the original 5 point Likert response set was replaced with a 7 point scale, to achieve greater variance and less skewed data (Dawes, 2007). In addition, certain questions were reworded or removed, and negatively worded questions were spaced evenly to reduce respondent confusion (De Vellis, 2003). Overall, however, changes were kept to a minimum, partly to avoid the need for further ethical clearance, and partly because the pilot already indicated a high Cronbach's alpha (.86). A member of the local NHS Research and Development Support Unit who was experienced in the design of questionnaires for the evaluation of clinical services provided support throughout the development of the questionnaire.

The final draft of the questionnaire consisted of three parts, eliciting demographic data (age, gender and previous experience of hospital food); attitude responses (scaled 1–5) to 17 specific aspects of hospital food and service and to the experience as a whole, and; 8 dining preferences, also scaled 1–5.

It was administered to a purposive sample of 325 orthopaedic ward patients selected as discussed above. The hospital was an acute Care Hospital with 26 wards including medical, elective surgery, maternity and intensive care. Data were collected from the orthopaedic wards as these patients tended to stay longer and their medical condition would not interfere with food consumption. Thus they were much more likely to match the required criteria than patients on the other wards. For these reasons, orthopaedic patients tended to be more capable of independent judgement, and indeed were often highly critical, as evidenced by past surveys conducted by the catering manager. It was considered that orthopaedic patients would have greater experience of, and would be more able to comment upon the food service system from the point of view of patients as a whole. The wards selected were also the last

2.2. Administration and analysis

There were 120 responses from males and 176 from females (40.5% and 59.5% respectively). The mean age was 69.1, with the minimum 25 and the maximum 94. Respondents who had eaten hospital food on another occasion within the previous year numbered 207 (69.9% and 68 (23.0%) had not eaten it for a year or more. Only two individuals (.7%) said they had never eaten hospital food before.

Cronbach's alpha was .835 for the attitude responses, .499 for the dining preferences and .765 for the attitudes and dining preferences combined. Exploratory factor analysis produced a seven-factor structure. However, the seventh factor consisted of the single preference item "Eat my meals in bed". Eating in bed has been shown not to influence patients' satisfaction with food service (Edwards & Hartwell, 2004) and this item was accordingly dropped. When this was done, the Cronbach's alpha value of the remaining preference items rose to .555, and for the preferences and attitudes combined it rose to .766. The resulting six factor structure is shown in Table 2.

There was cross-loading between factors 1 and 2, on items "Tasty food" and "Meals served at the right temperature" suggesting that respondents associated these qualities with the way the food was served, as well as regarding them as properties of the food itself. That the item "Smells and odours [do not] spoil enjoyment" loaded significantly on factor 6 (staff) suggests that somehow this aspect was associated by patients with staff behaviour, probably through the way the ward operated. Cronbach's alpha values for factors 5 (*social*) and 6 (*staff*) were .498 and .409 respectively, and thus below the value (.500) usually regarded as acceptable for factor membership. However, these factors were produced whether the factors were extracted by PCA or least-squares, and whether orthogonal or oblique rotation was employed, and they were therefore considered robust enough to be retained in the analysis. The six factors were examined for demographic differences using *t*-test and one-way ANOVA. Males scored higher than females on *overall experience* and on all factors except *situation*, but the difference was only significant ($p > 0.05$) on *food* and *ward*. There were no significant differences (one way ANOVA; $p > 0.05$) among the five age groups on *overall experience* or on any of the factors, although older individuals tended to have a more positive view. The "previous experience" groups showed significant differences (one way ANOVA; $p > 0.05$) on factors *food* and *situation*. These five groups were amalgamated to give two roughly equal sized groups having greater and lesser experience of hospital meals, and these showed differences (independent samples *t*-test; $p > 0.05$) on *overall experience*, and *service*, as well as on *food* and *situation*. Among these, the less experienced respondents tended to be more

Table 2
Factor structure obtained for whole sample using PCA and Varimax rotation.

	1	2	3	4	5	6
Food	.761	.294	-.018	-.022	.142	.136
Well presented and appetising meals						
Poor variety	.724	-.025	-.149	-.027	-.027	.188
Not nutritious and well balanced	.714	-.044	-.137	-.153	-.153	.086
Tasty meals	.688	.010	.401	.077	.077	.145
Meals served at right temperature	.588	.433	.147	-.009	.006	.009
Right portion size	.445	.304	.117	-.109	.030	-.294
Time to enjoy meals	.102	.026	.706	.103	.123	.123
Meals at appropriate times	.088	.653	.227	-.181	-.040	.030
Served appropriate meals	.289	.650	-.040	-.066	.002	.133
Friendly pleasant meal service	.086	.532	.145	-.114	.220	-.090
Noise not spoil enjoyment	.145	.031	-.101	-.025	-.026	-.026
Ward temperature spoil enjoyment	.070	.074	.725	-.046	.151	-.116
Distractions not spoil enjoyment	.130	.127	.707	.011	-.083	.127
Smells and odours not spoil enjoyment	.195	.189	.514	-.036	.146	.464
Meals served using quality tableware	-.101	-.073	.696	.062	.008	.008
Hospital restaurant	-.099	.022	.695	-.073	-.195	-.195
On the hospital ward	.006	-.047	.644	-.355	-.031	-.031
Have soft background music being played whilst I am eating	-.074	-.191	.578	.081	.296	.296
By my bedside	.048	.048	-.154	-.081	.013	.013
Will enjoy eating alone	.324	.042	.608	-.019	-.262	-.262
Separate dining room provided on the ward	.026	.114	.557	.113	.189	.189
Inefficient service	.303	.186	-.031	.051	-.161	-.161
Unhelpful and Unsupportive staff	.175	.157	.492	-.320	.159	.492
Cronbach's alpha	.822	.653	.729	.635	.498	.409

Bold indicates main factor loading; bold/italics indicates minor loading.

positive on overall experience, food and service. On social, staff and ward, the more experienced respondents tended to be more positive, although differences here were not statistically significant (p < 0.05).

In order to assess their respective influence, the factors were regressed against patients' overall experience of meals at the hospital, producing the coefficients shown in Table 3. (Cluster membership, which is included in this table, is discussed below.)

In order to identify differences between the preferences and needs of groups of individuals, the cases were clustered on the basis of the six factors using the k-means method. Five solutions with between two to six clusters were explored. The three-cluster system showed greater discrimination than the two-cluster, but those with four or more clusters had more than four overlaps between factors and were therefore rejected. Factor means for the three-cluster system are shown in Fig. 1.

Cluster 1 (N = 62) was characterised by higher mean scores than Cluster 2 on overall experience, and on all factors except situation. Cluster 2 (N = 41) had relatively low mean scores for overall experience and for all factors. Cluster 3 (N = 107) had high values comparable to Cluster 1 for all means apart from situation, where it scored very low. There was a significant preponderance of males in Clusters 1 and 3 (Chi square p = 0.0003), but there were no significant trends among the clusters in terms of age or previous experience of hospital meals.

Since no other relationship could be determined, it was assumed that the means in Fig. 1 represented different individual

Table 3
Result of regression for the six factors against overall experience.

	β	t	p
Food	.597	8.938	.000
Service	.205	3.696	.000
Social	.065	1.332	.184
Cluster membership	.057	.751	.454
Situation	.031	.644	.52
Staff	.012	.205	.838
Ward	-.071	-1.326	.186
(Constant)			-1.906

Preparation of the questionnaire used in this study took the fullest possible account of the patients' point of view. It involved observations and interviews with patients and it was refined using a patient centred pilot study. The demographic characteristics of the sample suggest that it was representative of the population. The robustness of the factor structure obtained from this instrument may be questioned in terms of reliability measures such as Cronbach's alpha (values only .498 and .409 for factors 5 and 6 respectively), but was supported by the persistence of the factors and their intuitive nature. At face value, the regression results suggest that the factors contributing to the hospital meal experience may be represented by a model such as that shown in Fig. 2.

4. Discussion

This model emphasises food quality and service quality as the main contributors to the experience, listing the others in the order of their regression β values. However, the t and p values (see Table 3) indicate that for all factors with β values less than .205 (i.e. below that of service) the proportion of variance explained by the regression, and hence the certainty of their placing was below 5% statistical significance. Therefore the order shown in Fig. 2 for items above service is speculative at best. Nevertheless it represents all the relevant factors and at the same time agrees with the findings of other authors (see Table 1), to the extent that it lists food quality (or its elements) as the most important contributor, followed by service (or its elements).

The notion of service in hospital dining is clearly complex. In the present study, food tastiness and temperature loaded highly on the factor Food, but also had relatively high loadings on Service (see Table 2). Other authors have reported both tangible (timeliness, reliability, crockery) and interpersonal aspects as "service" (Dube et al., 1994; Hwang et al., 2003; Sahin et al., 2006; Stanga et al.,

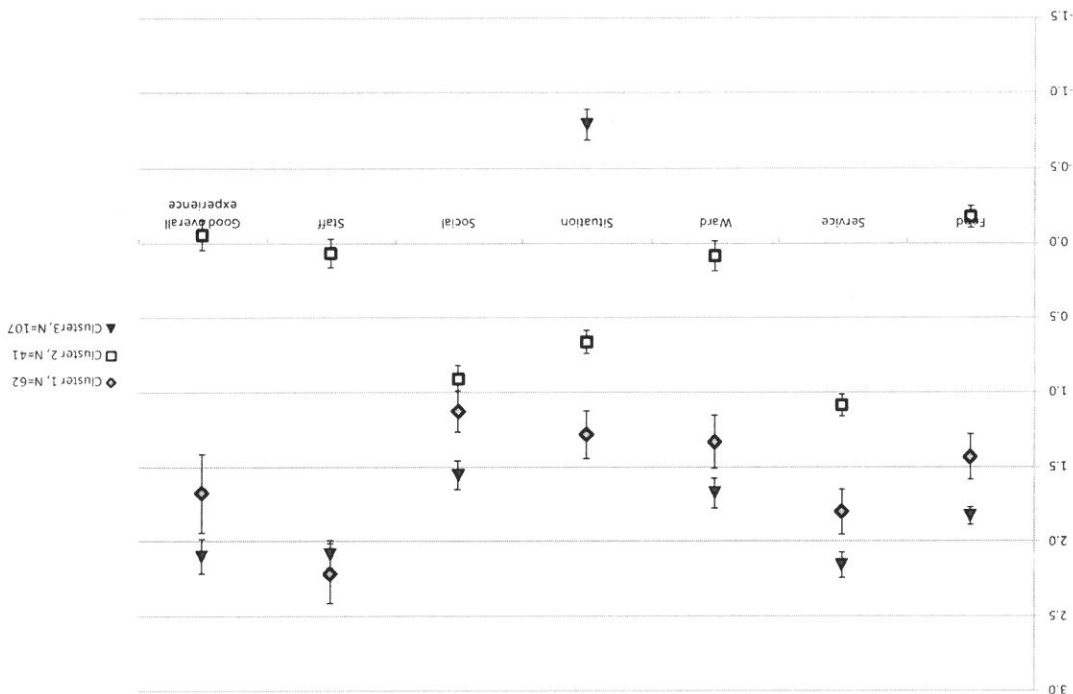


Fig. 1. Factor means for the three-cluster system.

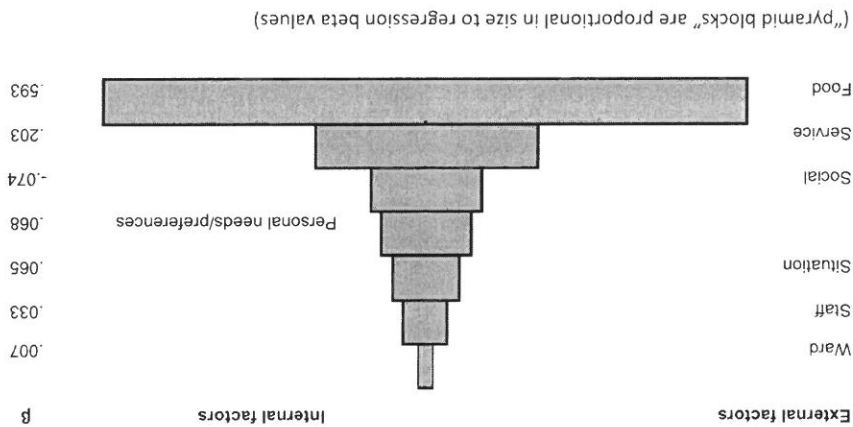


Fig. 2. Influence of external and internal factors upon overall hospital meal experience.

satisfaction with food service include their gender, their personal preferences, specific diseases and medication (Cardello, Bell, & Kramer, 1996), their ethnic backgrounds (Jessi et al., 2011), their physical state (which may affect their perception of the food, or their ability to feed themselves) (Corish & Kennedy, 2000) and their age (Johns et al. 2010; Stephen, Beigg, Elliott, Macdonald, & Allison, 1997). The present study sought an empirical grouping that might encompass at least some of these individual aspects, and this was eventually identified as the three-cluster system shown in Fig. 1, based upon the measured attitudes and preferences. The clusters differentiated between genders, but not between age or experience groups, even though these groupings were shown to influence the factors. It might be possible to identify a more robust measure of individual preference, as a stronger predictor of overall satisfaction. However, to date this has been the only study to attempt such a measurement.

Individual characteristics of patients likely to influence environment. shed a clearer light on the nature of service in the hospital participant-driven-photo-elicitation (Justesen et al., 2014) might consumer-related discourse. Possibly a different approach, such as difficult to see how this term may be avoided, given its ubiquity in this study as in research published by other authors. However, it is service, it was probably as ill-fitted to patients' actual experience in a palatable condition. Although the present study used the word timely service in ensuring that food arrives at the patient's bedside stretched nursing staff. Johns et al. (2013) report the importance of food service sometimes placed further stresses on already speak with non-medical food service staff and acutely aware that delays caused by slow service but grateful of opportunities to strains of ordering and eating at specific times. They were sensitive (2003), Johns et al. (2010) found that patients resented the con-

5. Conclusion

This was the first study to attempt evaluation of patients' satisfaction with hospital food service on a holistic and patient-focused basis. It demonstrated from first principles that food quality, followed by service quality were the most important predictors of customer satisfaction, thereby confirming findings of some previous authors. After this, the social environment, the personal characteristics of the patient and the immediate eating environment were the most important factors. However only food and service contributed sufficiently to the total variance to produce a statistically significant relationship, so that the order of the latter factors cannot be guaranteed. Nevertheless, from a practical point of view, the results suggest that improving the quality of the food and the timeliness with which it is provided remain the most important objectives of hospital food service. They therefore emphasise the significance of efficient production and transport of hospital food highlighted by other authors (Jesri et al., 2011; Johns et al., 2013; Walton et al., 2013).

A major problem with this kind of quantification is ambiguity of questionnaire items. The present study sought rigorously to avoid this by deriving and purifying the questions with the direct help of patients in the hospital. The fact that this was not completely successful suggests that words such as 'service' are used in multiple senses, even when referring to a single recognisable issue such as the provision of food to hospital patients. It is possible that a new vocabulary needs to be developed, and to become commonly accepted by patients, before this particular line of research can be moved forward. Nevertheless there must be approaches which can be used profitably in the study of the hospital meal experience. Two priors that have already been tested are profile accumulation technique (Johns et al., 2010) and participant-driven-photo-elicitation (Justesen et al., 2014), discussed above. It seems likely that augmented with observation and interview techniques, these may make it possible to establish the relative importance of the different factors.

Notwithstanding the ambiguity of terms and the consequent lack of definition of some of the terms identified here as contributing to patients' experience of meals in hospital, the priorities for food service practice are clear. The relationship between the timeliness of food production and service and the quality of food reaching the patients has been pointed out by various authors (Hartwell & Edwards, 2003; Johns et al., 2013; Jesri et al., 2011). This article has further highlighted the urgent need for hospital service managers to address the factors that continue to impede the rapid transfer of food from kitchens to wards, to the detriment of its service managers to address the factors that continue to impede the or interpretation of data; drafting and revision of the manuscript and approval of the final version.

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