

A comparison of two measures of hospital foodservice satisfaction

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Abstract

There are few published papers on patient satisfaction with food or nutrition services in either acute or chronic health care settings. The aim of this study was to evaluate two questionnaires for measuring patient satisfaction with hospital foodservice, the "Parkside Inpatient Questionnaire" and the "Wesley Hospital Foodservice Patient Satisfaction Questionnaire". Data were collected from 540 patients at a Queensland Public Hospital. Results indicated the Wesley Hospital Foodservice Patient Satisfaction Questionnaire obtained more positive patient feedback and was more reliable at measuring patient satisfaction ($\alpha = 0.89$) than the Parkside Inpatient Questionnaire ($\alpha = 0.75$), thus it is a more effective foodservice quality management tool.

The importance of patient foodservice satisfaction

The health care industry is becoming increasingly focussed on quality improvement to meet patients' heightened demands for service excellence (Drain 2001). Patient satisfaction measurement is viewed as important in outcomes research and quality improvement efforts, as it provides a formal opportunity for feedback and demonstrates to patients that their opinions are valued by health professionals. Administrators and auditors of health care services are continuously seeking patient-reported outcomes to obtain indications of quality of care and the organisation of services. Meeting and exceeding patient expectations is essential for the provision of quality services. Food and the manner in which it is served often influences patient satisfaction with the entire hospital experience (Gregoire 1994). Establishing predictors of hospital foodservice satisfaction will assist in styling food and its service to meet patient expectations, thus influencing overall patient satisfaction with the hospital stay. A valid and reliable questionnaire is the first step towards understanding the link between patient satisfaction and expectations.

The questionnaires

The Parkside Inpatient Questionnaire (PIQ) contains items rated on a five-point Likert scale from "very poor" to "very good", focussing on the patient's experience during their hospital stay. The section used as part of this study comprised overall ratings for foodservice and additional ratings for courtesy of foodservice staff, flavour and temperature of the food, menu choice and timeliness of meal delivery. Responses were scored from 1 to 5, with 1 representing the least positive response and 5 representing the most positive response.

The Wesley Hospital Foodservice Patient Satisfaction Questionnaire (WHFPSQ) has 18 items rated on a five-point Likert scale from "always" to "never", an overall rating from "very good" to "very poor" and is specific to hospital foodservice. For comparative purposes, the scoring system for the WHFPSQ was made consistent with the PIQ, that is, 1 representing the least positive and 5 the most positive response for any individual item.

Combinations of statements on the WHFPSQ give ratings for four factors: “food quality”, “meal service quality”, “staffing/service issues” and “physical environment”. Statements relating to the temperature of hot foods and choice of meal size do not contribute to any of the four factors and are analysed separately (see Figure 1).

Figure 1: statements comprising factors for the Wesley Hospital Foodservice Patient Satisfaction Questionnaire

FOOD QUALITY
<ul style="list-style-type: none"> • The meals taste nice • The meals have excellent and distinct flavours • I like the way the vegetables are cooked • The menu has enough variety for me to choose meals that I want to • The hospital food has been as good as I expected • The meat is tough and dry • I am able to choose a healthy meal in hospital
MEAL SERVICE QUALITY
<ul style="list-style-type: none"> • The cold drinks are just the right temperature • The hot drinks are just the right temperature • The cold foods are the right temperature
STAFF/SERVICE ISSUES
<ul style="list-style-type: none"> • The staff who take away my finished meal tray are friendly and polite • The staff who deliver my menus are helpful • The staff who deliver my meals are neat and clean
PHYSICAL ENVIRONMENT
<ul style="list-style-type: none"> • The hospital smells stop me from enjoying my meals • I am disturbed by the noise of finished meal trays being removed • The crockery and cutlery are chipped and/or stained
SEPARATE FACTORS
<ul style="list-style-type: none"> • I like to be able to choose different sized meals • The hot foods are just the right temperature

Method

All patients admitted to the medical, surgical, orthopaedic, rehabilitation and maternity units of a Queensland Public Hospital (total occupancy approximately 250 per day) during 2-week time periods in December 1998 to January 1999, May to June 1999, and December 2000 to January 2001 were eligible for the study. Patients were sampled post-discharge under a simple random sampling scheme generated from hospital mailing lists and were excluded if they had been discharged from paediatric wards or the acute psychiatric unit. The PIQ and WHFPSQ were applied simultaneously. This allowed collection of results from both questionnaires from the same patient at the same time. No attempts were made to screen patients according to their apparent or perceived ability to complete the questionnaire.

The response rate was calculated for the entire survey distribution and for specific wards by recording which survey numbers were returned. The number of unanswered questionnaires returned was recorded to improve accuracy. Data were analysed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 10 (2000, Chicago). The data were skewed towards the positive end of the scale. Theoretically, these data should be analysed using median values only. However, as a tool for measuring outcomes in foodservice, mean values are more useful. Both are presented (see Table 1). Spearman's correlation was used to test for significant correlations between the overall satisfaction measure on the PIQ and the WHFPSQ and for associations of

overall satisfaction with age. Mann-Whitney tests were used to compare median overall satisfaction scores between the PIQ and the WHFPSQ, and for comparisons of median overall satisfaction by gender. Kruskal-Wallis tests were used for comparing median overall satisfaction scores for length of stay, general medical classification and diet type. Two-tailed t-tests were used to compare means between two groups, while one-way analysis of variance (ANOVA) was used to compare means across three or more groups. Statistical significance was reported at the conventional $p < 0.05$ level (two-tailed). The reliability of both questionnaires and the “food quality”, “meal service quality”, “staff/service issues” and “physical environment” factors of the WHFPSQ were assessed by Cronbach’s alpha-coefficient. Internal consistency estimates of 0.70 were considered acceptable (Nunnally 1994). Combinations of statements from the PIQ were analysed to determine the reliability of measuring “food quality” and “meal service quality” compared with the WHFPSQ (see Figure 2).

Figure 2: method of computing “food quality” and “meal service quality” for the Parkside Inpatient Questionnaire

FOOD QUALITY =	[FLAVOUR + CHOICE] / 2
MEAL SERVICE QUALITY =	[TEMPERATURE + TIMELINESS] / 2

Results and discussion

An overall response rate of 59% (540/920) was achieved. It could not be determined whether respondents were similar to non-respondents in terms of age, race or gender, reflecting the potential for sample composition bias if those who responded were characteristically different from those who refused. For this study, the relationship between the scores from the two surveys was of interest, rather than the scores themselves and so this potential bias was not considered to be of consequence. Data were not being used to describe the actual foodservice, thus such a representative sample is less important.

Results for overall foodservice satisfaction for both questionnaires were skewed towards the positive end of the distribution and the age of the sample was skewed towards older age groups, according to significant Kolmogorov-Smirnov tests. The median age for this population was 49 years (range 15-96 years) with 230 males (42.6%) and 304 females (56.3%). The overall rating provided by the PIQ was significantly correlated with age (0.17, $p < 0.01$), as was that from the WHFPSQ (0.20, $p < 0.01$), even though the magnitude of correlations was low. Frequency analysis showed results for males and females differed more with the WHFPSQ (means of 4.11 and 3.91 respectively) than with the PIQ (means of 3.86 and 3.80 respectively). In both cases, males rated overall satisfaction higher than females. This association was significant for the WHFPSQ ($p < 0.05$), but not the PIQ. A summary of study population characteristics and satisfaction results from the WHFPSQ and the PIQ for each patient group is presented in Table 1.

There was a significant correlation of 0.68 between the WHFPSQ and PIQ ($p < 0.01$) for measurement of overall foodservice satisfaction, indicating the tools had similar reliability. A one-sample, two-tailed t-test of mean overall foodservice satisfaction results showed the WHFPSQ (4.00) rated significantly better than the PIQ (3.83) ($p < 0.001$), as higher values represented higher overall satisfaction. This confirms that the WHFPSQ obtains more positive results than the PIQ.

There was no significant difference between satisfaction of patients based on length of stay. However, there was a large amount of missing data for this variable as length of stay was added to the questionnaires one third of the way through the study. The Kruskal-Wallis tests showed significant differences in overall satisfaction were detected between different hospital wards and diet types when using the WHFPSQ, but not the PIQ ($p < 0.05$). Patients in the surgical unit and the maternity unit were the least satisfied overall. Mean satisfaction scores in table 1 showed that the less than 29 years age group rated overall satisfaction lower than all other age groups and that older respondents aged 57-70 years and 71 or more years rated overall satisfaction higher with both questionnaires, indicating foodservice satisfaction scores increased with age. These results were statistically significant for both the WHFPSQ and the PIQ ($p < 0.05$).

For all 18 items on the WHFPSQ, most results were in the “very good” category, but for the PIQ, this only occurred with one of the five questions, staff courtesy (47.2% excellent). For “flavour”, only 12.6% of patients rated it “excellent” on the PIQ. Conversely, 31.5% of patients answered “always” for “the meals have excellent and distinct flavours” and 38.9% said the meals “always” taste nice on the WHFPSQ. One reason for the more positive ratings using the WHFPSQ may be the wording of the WHFPSQ statements, as patients may feel more comfortable in rating a foodservice characteristic as “always” instead of “excellent”.

The temperature of the food and beverages were rated lower on the PIQ (13.5% excellent, 53% good) than the WHFPSQ. The WHFPSQ contains statements relating to the appropriate temperature of hot drinks (55% always), cold drinks (61% always), hot foods (47% always) and cold foods (60% always) (see Figure 1 for exact wording of the statements). Dividing components such as temperature into food/beverage categories may help patients to think more clearly about their experience, thus giving a more positive result.

Table 1: median and mean overall patient foodservice satisfaction by sociodemographic and contextual characteristics

Characteristics	Total N	%	Median overall satisfaction Wesley Hospital Foodservice Patient Satisfaction Questionnaire (min,max)	Median overall satisfaction Parkside Inpatient Questionnaire (min, max)	Mean overall satisfaction Wesley Hospital Foodservice Patient Satisfaction Questionnaire (sd)	Mean overall satisfaction Parkside Inpatient Questionnaire (sd)
AGE						
Less than 29 years	104	19.3	4.0 (3, 5)	4.0 (0, 5)	3.70 (1.18)	3.63 (1.09)
29-41 years	105	19.4	4.0 (2, 5)	4.0 (2, 5)	3.95 (1.00)	3.88 (0.90)
42-56 years	105	19.4	4.5 (1, 5)	4.0 (0, 5)	3.86 (1.25)	3.67 (1.07)
57-70 years	108	20.0	5.0 (1, 5)	4.0 (0, 5)	4.31 (1.05)	3.97 (0.95)
71 or more years	104	19.3	4.0 (2, 5)	4.0 (2, 5)	4.23 (0.99)	4.08 (0.82)
Missing data	14	2.6				
GENDER						
Female	304	56.3	4.0 (1, 5)	4.0 (0, 5)	3.91(1.14)	3.80 (1.01)
Male	230	42.6	4.0 (1, 5)	4.0 (0, 5)	4.11(1.10)	3.86 (0.97)
Missing data	6	1.1				
GENERAL MEDICAL CLASSIFICATION						
General medical	71	13.1	4.0 (1, 5)	4.0 (1, 5)	3.94 (1.30)	3.77 (1.13)
Surgical	99	18.3	4.0 (1, 5)	4.0 (1, 5)	3.98 (1.15)	3.82 (0.88)
Orthopaedic	50	9.3	4.0 (1, 5)	4.0 (0, 5)	3.60 (1.29)	3.64 (1.03)
Rehabilitation	7	1.3	5.0 (4, 5)	5.0 (3, 5)	4.86 (0.38)	4.43 (0.79)
Maternity	110	20.4	4.0 (1, 5)	4.0 (1, 5)	3.93 (1.04)	3.83 (0.92)
ICU/CCU	11	2.0	4.0 (2, 5)	4.0 (2, 5)	4.10 (0.88)	4.00 (0.77)
Other	31	5.7	5.0 (5, 5)	5.0 (5, 5)	4.27 (1.05)	4.00 (0.89)
Missing data	161	29.8				
LENGTH OF STAY						
Greater than 24 hours	265	49.1	4.0 (1, 5)	4.0 (1, 5)	3.97 (1.16)	3.84 (0.94)
Less than 24 hours	71	13.1	4.0 (1, 5)	4.0 (0, 5)	4.12 (0.92)	3.71 (1.21)
Unsure	5	0.9	4.0 (2, 4)	3.0 (1, 5)	3.33 (1.15)	3.00 (1.58)
Missing data	198	36.7				
TYPE OF DIET						
Full	393	72.8	4.0 (1, 5)	4.0 (0, 5)	4.01 (1.09)	3.83 (0.99)
Low fat or Diabetic	64	11.9	5.0 (1, 5)	4.0 (1, 5)	4.13 (1.20)	4.02 (0.81)
Soft or puree	31	5.7	5.0 (2, 5)	4.0 (2, 5)	4.24 (0.95)	3.97 (0.60)
Other	40	7.4	4.0 (1, 5)	4.0 (0, 5)	3.59 (1.24)	3.50 (1.32)
Missing data	12	2.2				
TOTAL DATA						
WHFPSQ	517	95.7	4.0 (1, 5)	NA	4.00 (1.12)	NA
Missing	23	4.3	NA	NA	NA	NA
PIQ	534	98.9	NA	4.0 (0, 5)	NA	3.83 (0.99)
Missing data	6	1.1	NA	NA	NA	NA

Measures used to determine “meal service quality” from the PIQ (see Figure 2) were significantly correlated with the WHFPSQ measure of “meal service quality” (0.48, $p < 0.01$), but results differed significantly. Median “meal service quality” from the WHFPSQ was 4.5 (mean 4.6), while the PIQ was 4.0 (mean 4.22), indicating a more positive response using the WHFPSQ. The reliability of the PIQ “meal service quality” ($\alpha = 0.71$) was lower than the WHFPSQ ($\alpha = 0.73$). This indicates the WHFPSQ is a more reliable indicator of “meal service quality”, but both are acceptable according to the internal consistency estimate of 0.70 suggested by Nunnally (1994).

Measures used to determine “food quality” from the PIQ were significantly correlated with those from the WHFPSQ (0.65, $p < 0.01$). The reliability of the PIQ “food quality” ($\alpha = 0.52$) was lower than the WHFPSQ ($\alpha = 0.88$). The higher reliability of the WHFPSQ parameter may result from its derivation from a larger number of items not available in the PIQ. The reliability of the PIQ “food quality” measure does not meet the recommended internal consistency estimate of 0.70 (Nunnally 1994). It is therefore not as reliable at determining food quality, which has been noted in published literature as the most important influence on patient foodservice satisfaction (Lau, Gregoire 1998; Williams, Virtue, Adkins 1998; Dube, Trudeau, Belanger 1994).

Because there are insufficient items in the PIQ that focus on “physical environment” or “staff/service issues” the two questionnaires could not be compared. Reliability of the foodservice component of the PIQ for measuring overall foodservice satisfaction ($\alpha = 0.75$) was lower than the reliability of the WHFPSQ for measuring overall foodservice satisfaction ($\alpha = 0.89$), although both are acceptable according to the recommended internal consistency estimate of 0.70 (Nunnally 1994).

Conclusions

Results from this study suggest that the WHFPSQ provides a more positive, more reliable measure of food quality, meal service quality and overall foodservice satisfaction than the PIQ. Since the WHFPSQ differentiates the foodservice into several detailed components, it is considered more effective at identifying specific areas where quality interventions may be required. This allows systematic, strategic measures to be implemented to improve foodservice quality and to continually assess new foodservice innovations. The general nature of the PIQ does not identify such specific areas of the foodservice for improvement and monitoring, thus is less effective as a foodservice quality management tool. These findings have important implications for the measurement of patient satisfaction with hospital foodservices in the endeavour to maintain patient-focussed service excellence.

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