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# Development of a patient satisfaction survey with inpatient clinical nutrition services

Maree Ferguson, Sandra Capra, Judy Bauer and Merrilyn Banks

**Abstract** Although patient satisfaction has been an integral part of quality health care for a number of decades, there are few published papers on patient satisfaction with nutrition services. The aim of this study was to develop and evaluate a simple, reliable and valid tool to measure patient satisfaction with inpatient clinical nutrition services. Statements that were considered to represent specific attributes of clinical nutrition services were developed from the literature and professional opinion. Factor analysis was used to determine the dimensions of patient satisfaction with clinical nutrition services. Dimensions of patient satisfaction with clinical nutrition services included staff interpersonal skills, nutrition supplements, perceived health benefits of nutrition care, and staff presentation skills. The final satisfaction survey consisted of 15 statements relating to these dimensions and one statement relating to overall satisfaction with clinical nutrition services. Response options were based on a five-point Likert scale from 'strongly agree' to 'strongly disagree', except for the overall satisfaction statement where the scale ranged from 'very good' to 'very poor'. The reliability and validity of the satisfaction survey was established for the general hospital population. Patient satisfaction can be used to measure the effectiveness of clinical nutrition services. (*Aust J Nutr Diet* 2001;58:157-163)

Key words: patient satisfaction, dietetic, nutrition support, outcomes

## Introduction

Patient satisfaction has been an integral part of quality health care for a number of decades (1). In recent years there has been interest in patient satisfaction as an independent outcome of health care (1).

Dietitians can use patient satisfaction data to demonstrate that clinical nutrition services are beneficial from a patient's perspective. This can be true even if a patient's clinical status deteriorates after following recommended dietary modifications, as may occur in patients with chronic renal failure or certain cancers. Even in the absence of clinical improvement, patients often appreciate that a dietitian cares to help them with their eating problems. Instruments that measure patient satisfaction may offer a complementary approach to assessing clinical outcomes (2). Dietitians can use patient satisfaction as a tangible, measurable outcome with which to evaluate services and to market the profession.

A review of the literature revealed that numerous surveys had been developed to measure satisfaction with service industries, health organisations, hospital food services and medical services. However, there are few published papers on patient satisfaction with clinical nutrition services. A summary of papers that were available for measuring patient satisfaction with nutrition services are shown in Table 1. Assessment of dietetic services is usually done by peer review and audit rather than by patient satisfaction surveys. Research suggests that service providers may not always be in tune with their clients' expectations and perceptions (3). Therefore, it is

important to get the perspective of the consumer on dietetic services. This is essential to ensure an accurate evaluation of whether the clinical nutrition service meets the patients' expectations. If patient expectations are not met the measurable outcome of perceived quality of service will be lower.

Schwartz (4) developed a scale to measure client satisfaction with ambulatory nutritional care. The tool had good reliability with the  $\alpha$ -coefficients ranging from 0.65 to 0.80 for the subscales and 0.90 for the total scale. However, construct validity was not established as factor analysis failed to support the existence of four dimensions of patient satisfaction. The authors recommended further work on the tool prior to its use as an evaluation tool.

DeLuco and Cremer (5) investigated consumers' perceptions of the quality of hospital food and dietary services in telephone interviews. The survey investigated consumers' perceptions and not satisfaction and, as such, the individuals surveyed may or may not have experienced hospital food and dietary services. The reliability and construct validity of this tool was not evaluated. The DeLuco and Cremer (5) survey consists of only four items, and therefore is unlikely to be able to measure the multiple dimensions of satisfaction with nutrition services.

Hauchecorne and colleagues (2) noted the limited availability of tools to assess clients' perceptions of the impact of nutrition counselling on their health and well-being. This prompted them to develop a self-administered instrument to assess clients' perceptions about their nutrition counselling experience in the ambulatory care or acute care setting. The instrument was based on the value-added ambulatory encounter framework developed by Bopp (6). The instrument had a test-retest reliability of 0.65 and an expert panel of five dietitians concluded that the instrument was a useful evaluation tool (construct validity). The internal consistency and criterion validity of this tool was not examined. This instrument was tested on

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**School of Public Health, Queensland University of Technology, Brisbane, Queensland**

M. Ferguson, PhD, RD, LD, GradDipNutrDiet, BAppSc, PhD scholar (currently Clinical Project Leader, Ross Products Division, Abbott Laboratories, Columbus, Ohio, USA)

S. Capra, PhD, MSocSc, GradDipNutrDiet, BSc(Hons), Associate Professor

**Nutrition Services Department, The Wesley Hospital, Brisbane, Queensland**

J. Bauer, MHLthSc, GradDipNutrDiet, BSc, Manager

**Food and Nutrition Services Department, Redcliffe Hospital, Redcliffe, Queensland**

M. Banks, MHLthSc, GradDipNutrDiet, DipEd, BSc, Manager

**Correspondence:** S. Capra, School of Public Health, Queensland University of Technology, Victoria Park Road, Kelvin Grove, Qld 4059. Email: s.capra@qut.edu.au

a small number of oncology patients, and it is unknown whether this tool is applicable to the general patient population.

Trudeau and Dube (3) developed a patient satisfaction survey after identifying the moderators and determinants of patient satisfaction with diet counselling. The  $\alpha$ -coefficients for reliability ranged from 0.82 to 0.93 for the individual components and reached 0.96 for the total scale. The tool was developed in patients with a length of stay of five or more days. The construct validity of this tool as a measure of patient satisfaction with clinical nutrition services in a general hospital population has not been established.

Gazibarich (7) modified the SERVPERF (service performance) instrument (8), a popular service quality measurement instrument, for use with dietetic outpatients. This tool has not yet been used to measure patient satisfaction with dietetic services, and therefore its reliability and construct validity are unknown.

Although the patient satisfaction measurement tools outlined above have possibly established content validity, none have demonstrated their reliability and construct validity in a wide range of hospital inpatients. It was concluded that there was no reliable and valid patient satisfaction survey with inpatient clinical nutrition services available. The current research was therefore undertaken to determine the dimensions of patient satisfaction with inpatient clinical nutrition services. The second aim was to develop a simple, reliable, valid tool

with which to measure satisfaction of a wide range of hospital inpatients with clinical nutrition services.

## Methods

### Dimension and item generation

Statements that were considered to represent specific attributes of clinical nutrition services were developed through reference to the very limited published literature on patient satisfaction with clinical nutrition services and to the wider patient satisfaction literature, for example satisfaction with food services and medical care (3,5,7,10,11). Hence, building on the existing satisfaction literature, additional statements were developed through consultation with professional practitioners. Seven potential dimensions of satisfaction were identified: technical competence, facilitation skills, presentation skills; interpersonal skills; nutrition supplements; education material; and perceived benefits of the nutrition service. A pool of 61 statements, representative of the seven dimensions, was developed. These are shown in Table 2. Some statements were worded negatively to control for acquiescence, which is the tendency for respondents to agree with any statement regardless of the content.

Continuous response rather than dichotomous response options were chosen. This allowed for discrimination between levels of satisfaction, potentially reducing measurement error and the artificially high levels of reported satisfaction obtained with dichotomous response

**Table 1. Summary of published patient satisfaction surveys with nutrition services**

Author, year, location	Patient population	Item generation	Items (n)	Response scale	Dimensions	Demonstrated reliability	Demonstrated validity
Schwartz, 1988, Canada (4)	149 adult patients receiving ambulatory nutrition care	Literature and professional opinion	30	5-point agreement scale	Art of care technical, professional competence Clinical characteristics continuity, outcome of care	Internal consistency 0.90	No
DeLuco and Cremer, 1990, USA (5)	223 adults living in an urban county	Professional opinion	4	4-point agreement scale	Helpful Informative Visible Available	No	No
Hauchecorne et al., 1994, Canada (2)	33 oncology patients	Based on value-added ambulatory encounter framework (6) and professional opinion	15	5-point agreement scale	Improved physical well-being Fulfilment of interpersonal psychological need Reduction of uncertainty Personal control Convenience Time conservation	Test-retest reliability 0.65	Construct validity—expert panel
Trudeau and Dube, 1995, Canada (3)	49 patients with length of stay $\geq$ 5 days and received diet counselling	Literature	12	7-point graphic agreement and satisfaction scales 5-point semantic emotional scales	Knowledge Cognitive communication skills Affective communication skills Facilitation skills	Internal consistency 0.96	No
Gazibarich, 1996, Australia (7)	Dietetic outpatients	Based on SERVPERF (8)	19	7-point agreement scales	Tangibles Reliability Responsiveness Assurance Empathy	No	No

options (9). The response options were based on a five-point Likert scale. Subjects were asked to indicate how strongly they would agree (strongly disagree, disagree, neutral, agree, strongly agree) with the statements that represent various specific attributes of clinical nutrition services. Responses were scored from 1 to 5, with 1 representing the least positive response and 5 representing the most positive response.

Subjects were also asked to indicate their level of overall satisfaction with clinical nutrition services, using a five-point Likert scale that ranged from very good through to very poor. Responses were scored from 1 to 5, with 1 representing the most positive response and 5 representing the least positive response. Responses were treated as ordinal data for the statistical analysis.

### Pretesting of items

The survey was pretested among hospital subjects selected according to the same eligibility criteria as those indicated below for the main study. Six versions of the survey were tested. Modifications in the wording of statements and in the instrument format were made as a result of the respondents' comments. Eleven statements were removed from the survey during the pretesting phase as a result of subjects' comments. These included statements regarding educational material that were removed as few subjects actually received such material.

Pretesting ensured that the final survey was easy to understand and complete. Fifty statements were retained including the overall satisfaction statement (see Table 2). Content validity was established through review by a

**Table 2. Original set of 61 statements representing specific attributes of clinical nutrition services**

The nutrition care I received has improved my general health <sup>(a)</sup>	It wasn't easy for me to follow the nutrition staff's advice
The nutrition care I received improved the results of my medical treatment <sup>(a)</sup>	The nutrition staff are helpful
The nutrition care I received helped my body to heal <sup>(a)</sup>	The nutrition staff are helpful in providing food/drinks which I like to eat <sup>(c) (f)</sup>
The nutrition care I received helped me to recover faster <sup>(a)</sup>	The nutrition staff were able to answer my questions <sup>(d)</sup>
The nutrition care I received made my hospital stay go better <sup>(a)</sup>	The nutrition staff allowed me to participate in planning my diet while in hospital <sup>(d)</sup>
The nutrition care I received gave me greater endurance and stamina <sup>(a)</sup>	The nutrition staff involved my family in my nutrition care
The nutrition care I received improved my attitude and how I feel about myself <sup>(a)</sup>	The nutrition staff changed my selections without telling me
The nutrition care I received made me maintain or gain weight	The nutrition staff are well presented
The nutrition care I received has helped me to deal more effectively with my problems	The nutrition staff are polite and courteous
The nutrition care I received has given me more energy	The nutrition staff are friendly
The high protein energy drinks have been as good as I expected <sup>(b)</sup>	The nutrition staff worked as a team
The high protein energy drinks are just the right temperature <sup>(b)</sup>	The nutrition staff worked with medical, nursing and other staff as a team
The high protein energy drinks taste nice <sup>(b)</sup>	The nutrition staff explained the reason for my special diet
The high protein energy drinks are nutritious <sup>(c)</sup>	The nutrition staff were knowledgeable about the foods I could eat
The high protein energy drinks are satisfying	The nutrition staff listen carefully to what I had to say
The high protein energy drinks look appetising	The nutrition staff spend plenty of time with me
The high protein energy drinks smell delicious <sup>(c)</sup>	The nutrition staff are attentive to my needs
The size of the high protein energy drinks is just right	The nutrition staff do not give you individual attention <sup>(e)</sup>
The time I receive my high protein energy drinks is just right	I really felt understood by the nutrition staff
I always receive my high protein energy drinks	The nutrition staff have come up with a good plan for helping me
The high protein energy drinks are left within my reach <sup>(c)</sup>	I found the written information very useful <sup>(f)</sup>
I am able to drink all of my high protein energy drinks <sup>(f)</sup>	The written information was of a high standard <sup>(f)</sup>
I am often too ill to drink my high protein energy drinks	The written information gave me lots of helpful hints <sup>(f)</sup>
The high protein energy drinks make me feel sick	The written information gave me plenty of ideas <sup>(f)</sup>
The high protein energy drinks are too sweet	I found the written information very easy to understand <sup>(f)</sup>
I want to eat and drink but I just am not able to <sup>(f)</sup>	The written information was easy to read <sup>(f)</sup>
I am sick of receiving the high protein energy drinks <sup>(f)</sup>	The written information made sense <sup>(f)</sup>
I am able to choose a nourishing meal in hospital <sup>(b)</sup>	The written information was well presented <sup>(f)</sup>
It was difficult for me to do exactly what the nutrition staff recommended	I feel that the nutrition care I received has been helpful <sup>(a)</sup>
I intended to follow the nutrition staff's advice	The nutrition care I received met my expectations
	I would recommend the nutrition service to other patients <sup>(a)</sup>

(a) Gallagher-Allred, Coble Voss, Gussler, 1995 (10).

(b) Askew, 1996 (11).

(c) De Luco and Cremer, 1990 (5).

(d) Trudeau and Dubé, 1995 (3).

(e) Gazibarich, 1996 (7).

(f) Items removed following the pretesting phase.

panel of experts. The words 'nutrition staff' were later replaced by 'nutrition assistants and/or dietitians' for better subject understanding as this was the terminology in use at the study site.

### Sample population

All patients admitted to an acute hospital during a four-week study period who were receiving care from clinical nutrition services (nutrition assistants and/or dietitians) were eligible for inclusion in the study. A convenience sample of 145 subjects was obtained. The demographic characteristics of these subjects are shown in Table 3.

### Final survey

The final survey consisted of 50 statements including the overall satisfaction statement as mentioned above. A section on demographic information was included at the end

**Table 3. Demographic characteristics of the sample population (n = 145)**

Characteristic	Subjects n (%)
<b>Age range (years)</b>	
18–30	11 (7.6)
31–44	12 (8.3)
45–59	34 (23.4)
60–69	28 (19.3)
70 or above	43 (29.7)
Missing data	17 (11.7)
<b>Gender</b>	
Male	61 (42.1)
Female	69 (47.6)
Missing data	15 (10.3)
<b>Ward</b>	
Cardiac	20 (13.8)
Gastrointestinal	9 (6.2)
Urology or renal	7 (4.8)
General medical	6 (4.1)
Gynaecology	4 (2.8)
Orthopaedic	4 (2.8)
Respiratory	3 (2.1)
Oncology	2 (1.4)
Bone marrow transplant	2 (1.4)
Plastic surgery	2 (1.4)
Missing data	86 (59.3)
<b>Type of diet</b>	
Normal	19 (13.1)
Modified fat	25 (17.2)
Modified carbohydrate	25 (17.2)
Low protein	13 (9.0)
Low fibre	6 (4.1)
High protein and/or energy	19 (13.1)
Clear fluids	7 (4.8)
Free fluids	3 (2.1)
Vegetarian	10 (6.9)
Modified texture	18 (12.4)

of the survey. Subjects were asked to indicate their gender, age, type of diet, ward in which they spent most of their hospital stay, and number of days they had been in hospital. Subjects were also provided with space to write comments about the clinical nutrition services.

### Data collection

A list of patients receiving clinical nutrition services was obtained on a daily basis for four weeks. Patients on this list were approached during their hospital stay to participate in the survey. Surveys to be completed were left with the subjects and were collected no later than the following day. To reduce any response bias, subjects were informed that the researcher was from the university rather than the hospital or nutrition department.

### Data analysis

Data analysis was conducted using Statistical Package for Social Sciences (SPSS Inc, Chicago, SPSS for Windows, version 6.0, 1993). A level of significance of  $P = 0.05$  was used. Descriptive statistics were used to describe the demographic information. Two-sample analysis was used to determine if the study population was representative of the total population with respect to age and gender.

### Factor analysis

Factor analysis followed by orthogonal rotation (varimax) was used to determine whether the 49 statements (not including the overall satisfaction statement) representing specific nutrition service attributes could be grouped systematically. Recommended practices in the use of factor analysis were followed (12). Statements loading equally on more than one factor or dimension were eliminated from the analysis. Only statements with a factor loading greater than 0.75 were considered meaningful for the analysis. Factor analysis determines the independent subsets of highly correlated statements that reflect the underlying dimensions of patient satisfaction with clinical nutrition services (12). The component statements of the factors or dimensions obtained were incorporated into the final patient satisfaction survey with clinical nutrition services. Factor scores were then derived by calculating the mean rating of the statements that comprised each factor or dimension.

### Reliability

The reliability (therefore internal consistency) of each dimension was assessed by Cronbach's  $\alpha$ -coefficient. As recommended by Nunnally (13), internal consistency estimates of 0.70 or greater were considered acceptable.

### Validity

Pearson correlation coefficients were used to estimate the association between the various scales and dimensions. It was hypothesised that scales that were conceptually related (for example staff interpersonal skills and presentation skills) would correlate substantially with each other (Pearson's correlation  $r \geq 0.40$ ). Conversely, those scales with less in common, for example nutrition supplements and staff presentation skills, would exhibit lower correlations ( $r < 0.40$ ).

This research was approved by the ethics committees of The Wesley Hospital and Queensland University of Technology.

## Results

### Dimensions of satisfaction and the final satisfaction survey

Factor analysis was used to ascertain if subject ratings for the nutrition service attributes could be grouped into a smaller and more meaningful number of factors or dimensions. The study population included 145 subjects. However, only 55 (38%) subjects were receiving nutrition supplements and therefore completed all sections of the survey. These 55 cases were used for this analysis. Table 4 presents the correlations (or factor loadings) between each attribute and each dimension of nutrition service. Each nutrition service attribute was assigned to the factor with which it was most highly correlated. A label was given to each factor or dimension according to the interpretation of the nutrition service attributes.

A four-factor solution was generated, accounting for 83.3% of the variance. The four factors or dimensions and component attributes are as follows:

Factor 1. Staff interpersonal skills, accounting for 42.3% of the total variance:

1. The nutrition assistants and dietitians listened carefully to what I had to say;
2. The nutrition assistants and dietitians were attentive to my needs;
3. I felt understood by the nutrition assistants and dietitians; and,
4. The nutrition assistants and dietitians came up with a good plan for helping me.

Factor 2. Nutrition supplements, accounting for 19.1% of the total variance:

1. The high protein energy drinks were just the right temperature;
2. The high protein energy drinks tasted nice;
3. The high protein energy drinks looked appetising; and,
4. The high protein energy drinks smelt delicious.

Factor 3. Perceived health benefits of nutrition care, accounting for 12.1% of the total variance:

1. The care I received from the nutrition assistants and dietitians has improved my general health;
2. The care I received from the nutrition assistants and dietitians improved the results of my medical treatment;
3. The care I received from the nutrition assistants and dietitians helped me to recover faster; and
4. The care I received from the nutrition assistants and dietitians helped my body to heal.

Factor 4. Staff presentation skills, accounting for 9.7% of the total variance:

1. The nutrition assistants and dietitians were well presented;
2. The nutrition assistants and dietitians were polite and courteous; and,

3. The nutrition assistants and dietitians were friendly.

Therefore the final satisfaction survey consisted of 15 statements relating to specific nutrition service attributes and one statement concerning patients' overall satisfaction with the nutrition service that was retained.

### Reliability

The satisfaction survey displayed good reliability. The  $\alpha$ -coefficients ranged from 0.91 to 0.96 for the individual dimensions of satisfaction and 0.90 for the total survey. The  $\alpha$ -coefficient for the health status dimension was 0.91, for the nutrition supplement dimension 0.91, for

**Table 4. Correlations between each attribute and dimension of clinical nutrition services<sup>(a)</sup>**

Nutrition service attributes	Dimensions of nutrition services <sup>(b)</sup>			
	1	2	3	4
I felt understood by the nutrition assistants and dietitians	<b>0.92<sup>(c)</sup></b>	0.04	0.10	0.13
The nutrition assistants and dietitians were attentive to my needs	<b>0.87</b>	0.10	0.23	0.25
The nutrition assistants and dietitians listened carefully to what I had to say	<b>0.91</b>	0.02	0.12	0.24
The nutrition assistants and dietitians came up with a good plan for helping me	<b>0.87</b>	0.07	0.15	0.19
The high protein energy drinks looked appetising	0.01	<b>0.91</b>	0.19	0.10
The high protein energy drinks tasted nice	-0.04	<b>0.88</b>	0.15	0.12
The high protein energy drinks smelt delicious	0.22	<b>0.86</b>	0.15	-0.05
The high protein energy drinks were just the right temperature	0.04	<b>0.77</b>	0.20	0.29
The care I received from the nutrition assistants and dietitians helped my body to heal	0.23	0.33	<b>0.77</b>	0.19
The care I received from the nutrition assistants and dietitians has improved my general health	0.02	0.10	<b>0.88</b>	0.14
The care I received from the nutrition assistants and dietitians improved the results of my medical treatment	0.17	0.10	<b>0.91</b>	0.01
The care I received from the nutrition assistants and dietitians helped me to recover faster	0.27	0.33	<b>0.75</b>	0.11
The nutrition assistants and dietitians were polite and courteous	0.25	0.13	0.15	<b>0.91</b>
The nutrition assistants and dietitians were well presented	0.21	0.08	0.17	<b>0.82</b>
The nutrition assistants and dietitians were friendly	0.26	0.17	0.03	<b>0.89</b>

(a) Obtained by factor analysis with orthogonal rotation (varimax)  $n = 55$ .

(b) 1, staff interpersonal skills; 2, nutrition supplements; 3, perceived health benefits of nutrition care; 4, staff presentation skills.

(c) Bold numbers identify attributes that are highly correlated with a given dimension.

staff interpersonal skills was 0.92 and for staff technical skills was 0.96.

### Validity

Table 5 presents the correlations among the four dimensions of patient satisfaction with nutrition counselling. The strongest inter-dimension correlation was found between staff presentation and staff interpersonal skills. The weakest inter-dimension correlation was found between nutrition supplements and interpersonal skills.

### Discussion

The patient satisfaction survey developed meets the objective of the study which was to develop a simple, reliable and valid tool with which to measure satisfaction with inpatient clinical nutrition services. The survey developed improves upon those in the literature in that its reliability, validity and suitability for use with a wide range of hospital inpatients has been established.

This research identified the key determinants of patient satisfaction with clinical nutrition services which provided the basis for a patient satisfaction survey with clinical nutrition services. The factor analysis revealed that about 83.3% of patient satisfaction with clinical nutrition services is determined by four identified dimensions: staff presentation skills, staff interpersonal skills, nutrition supplements and perceived health benefits. Staff interpersonal skills emerged as the most important dimension of patient satisfaction with clinical nutrition services, accounting for 42.3% of the variance. Patients placed more emphasis on staff interpersonal skills (e.g. listening, attentiveness) than items which health professionals usually focus on (e.g. quality of information, relationship of nutrition to health). Therefore dietitians should pay particular attention to interpersonal and communication skills.

Trudeau and Dube (3) identified facilitation skills and knowledge as the key determinants of patient satisfaction with nutrition counselling accounting for 91% of the total variance. Knowledge was not a significant determinant in this study, possibly because some subjects may not have received nutrition education. Many subjects received a modified diet menu and/or nutrition supplements, but did not receive intensive nutrition education. Facilitation skills are incorporated into staff interpersonal skills in this study.

Evaluation of nutrition supplements has not been included in any previous patient satisfaction survey with clinical nutrition services. Nutrition supplements are part of the clinical nutrition services rather than the food serv-

ice at the current study site. Therefore, it was felt that the delivery of nutrition supplements should be evaluated as a component of satisfaction with clinical nutrition services. In fact, nutrition supplements accounted for 20% of the variance in explaining patient satisfaction with clinical nutrition services. However 38% of patients actually received nutrition supplements and therefore, in practice, this component would be completed only by patients receiving nutrition supplements.

Perceived health benefits of receiving care from nutrition staff represent another component which has not been extensively used in patient satisfaction surveys with clinical nutrition services. Hauchecorne et al. (2) were the only researchers to incorporate this aspect of patient satisfaction. They asked questions on whether the patient felt better emotionally and physically as a result of talking with a dietitian. This is an important component of patient satisfaction because it indicates whether the patient felt any improvement in his or her condition or any health benefits as a result of receiving clinical nutrition services (14).

### Psychometric properties

Scale reliability of the patient satisfaction survey was good with  $\alpha$ -coefficients ranging from 0.91 to 0.96 and 0.90 for the total survey. These results were better than that of Trudeau and Dube (3) who obtained a range of 0.75 to 0.82 and Schwartz (4) who obtained a range of 0.65 to 0.80 for the internal consistency of their dimensions of satisfaction.

Construct validity has been established using the factor analysis technique as outlined above. Factor analysis confirmed four underlying dimensions of patient satisfaction with clinical nutrition services. Item-dimension correlations (0.75 to 0.92) in factor analysis were much higher than that reported by Schwartz (4) (0.20 to 0.67). All items met the criterion for item-convergent validity. Inter-domain correlations indicated strong relationships ( $r \geq 0.60$ ) between relatively few dimensions which is in contrast to that found by Schwartz (4). However, fewer strong relationships indicates that, although related, the dimensions are assessing distinct components of patient satisfaction with clinical nutrition services.

Further studies need to establish criterion validity of the satisfaction survey. However, this is difficult as it is impossible to truly describe satisfaction with clinical nutrition services. This is reflected in the lack of a 'gold standard' tool for measuring patient satisfaction with clinical nutrition services. Test-retest reliability of this survey also needs to be established. Further studies could also establish the reliability and validity of the patient satisfaction survey in other hospital settings. In addition, benchmark or desirable patient satisfaction scores could be determined.

### Limitations

It is difficult to measure patient satisfaction with clinical nutrition services. Unlike other health professionals, such as physiotherapists who help people to walk and speech therapists who help people to eat and talk, there may be no immediate tangible benefits of receiving nutrition services. Therefore patients may not be able to identify or

**Table 5. Interdimension correlations for patient satisfaction survey with clinical nutrition services. The values are Pearson's r**

	<i>Perceived health benefits</i>	<i>Nutrition supplements</i>	<i>Interpersonal skills</i>
Nutrition supplements	0.47 <sup>a</sup>		
Interpersonal skills	0.54 <sup>a</sup>	0.17	
Presentation skills	0.39 <sup>a</sup>	0.29 <sup>a</sup>	0.70 <sup>a</sup>

(a)  $P < 0.05$

quantify the outcome or benefit of having received nutrition services.

In addition, satisfaction may be influenced by many factors including knowledge, past experiences with clinical nutrition services, perceived need for nutrition care, and the quality of the food service. For example, nutrition may not be a priority for a malnourished patient, and other factors such as recovering from surgery may be more important. Methods for collecting patient satisfaction data will influence the feedback obtained by patients, for example inpatient versus post discharge completion.

### Implementation and application

The patient satisfaction survey possesses satisfactory psychometric properties and is quick to complete (approximately five minutes). Due to its generic nature the survey may be applicable to most clinical nutrition services departments. The four individual domains of the patient satisfaction survey can be used in combination to measure patient satisfaction with clinical nutrition services. The nutrition supplement domain may be completed only if applicable. In some settings, other dimensions may be critical and may need to be added as site-specific domains (such as quality of educational materials, quality of special diet meals, and quality of group nutrition counselling sessions). These additional domains could be formulated by the dietitian in conjunction with the patient. Patient focus groups could generate satisfaction issues or elements that are important to the patients themselves.

Patient satisfaction is just one method of measuring clinical effectiveness. Other outcome measures include clinical outcomes (e.g. weight gain, improved blood glucose levels) cost outcomes (e.g. decreased length of stay, decreased infection rate), and patient outcomes (e.g. increased quality of life).

The tool could be used to investigate whether inpatient clinical nutrition services are effective and whether nutrition services make a difference. The satisfaction survey could be used to identify areas of clinical nutrition services that need improvement. The satisfaction tool may be particularly valuable in nutrition outcomes research when improvements in objective data, such as length of stay and

complication rates, as a result of nutrition intervention are not likely to occur.

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