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**Meal and food preferences of nutritionally at risk inpatients admitted to two
Australian tertiary teaching hospitals**

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Key words: food preferences, hospital inpatients, menu planning, length of stay, energy intake, protein energy malnutrition prevention.

Abstract

Objective: To determine preferences for meals and snack of long-stay patients and hospitalised patients with increased energy and protein requirements.

Design, subjects and setting: Using consistent methodology across two tertiary teaching hospitals, a convenience sample of adult public hospital inpatients with increased energy and protein requirements or longer stays (seven days or more) were interviewed regarding meal and snack preferences.

Analysis: Descriptive reporting of sample representativeness, preferred foods and frequency of meals and between meal snacks.

Results: Of 134 respondents, 55% reported a decreased appetite and 28% rated their appetite as “poor”. Most felt like eating either nothing (42%) or soup (15%) when unwell. The most desired foods were hot meal items including eggs (31%), meat dishes (20%) and soup (69%). Of items not routinely available, soft drink (7.6%) and alcohol (6.7%) were most commonly desired during admission. Almost half (49%) reported difficulty opening packaged food and a majority (81%) indicated finger foods were easy to eat.

Conclusions: Appetites during admission were frequently lower than usual.

Responses encourage consideration of eggs, meat dishes and soups for long-stayers or those with high energy, high protein needs. Easy to consume but not routinely offered, between meal items, such as soup, juice, cake, soft drink or *Milo*TM could be explored further to enhance oral intakes

Introduction

Improving intakes amongst hospitalised patients at risk of malnutrition is a goal for dietetic and food services. Food preferences can be influenced by the state of health, gender, the food patterns of early life, ethnicity and food beliefs (1-3). An understanding and incorporation of patient preferences is critical to improve nutritional intake and hence positively influence nutritional status. The prevalence of malnutrition in Australian hospitals is reported to be between 12-42% (4-6) and a significant proportion of hospital beds (50%) is occupied by patients staying for extended periods of time (14 days or more) (7) . Whether well nourished or not on admission, nutritional status has been shown to decline during admission (8, 9).

In order to optimise oral nutrition intakes in hospital, this study aimed to determine what patients with increased requirements and long-stay patients preferred for meals and snacks, and the preferred meal types and times while admitted to hospital.

Method

With both hospitals using the same methodology, the study to measure food preferences at home and in hospital was repeated in two metropolitan public tertiary teaching hospitals in diverse patient populations during September 2004. Food services were provided in-house at both hospitals. Patients were drawn from a convenience sample of adult public hospital patients with increased energy and protein requirements (identified through poor oral intake or Subjective Global Assessment) as well as long-stay patients admitted for seven days or more. Patients were excluded if obstetric, too ill or if required extensive infection control, short stay, cognitively impaired, under 18 years of age, or with limited language ability. Consent was given verbally or through a completed Queensland Health consent form prior to participation.

The survey was introduced to patients as a food service quality improvement project to determine patient food preferences while in hospital. Patients were told the project was not a review of the current hospital menu, but would inform possible future changes (Table 1). Survey participation was not dependent upon patients having eaten any meals or snacks since their admission.

The 20-30 minute survey included demographic questions (age, gender, days in hospital) and current appetite compared with home appetite. A semi structured questioning style was used to ascertain: the importance and how often they would like a hot meal for breakfast, lunch or dinner; foods they thought they *should* receive

while in hospital (not what they *did* receive); foods they ate when not well at home. Food preferences (varieties of soups, sandwiches and desserts), meal size options, and the ease of consuming food provided (such as ease of opening packaged foods) while in hospital were also sought. Questions regarding the food and drinks offered between meals, any other food or drink they would have liked to be offered and the food they desired most but was unavailable while in hospital were also asked. Finally, food packages observed at the bedside were also recorded to provide an additional indication of preferences.

Analysis

The respondents' demographic variables of age, gender and country of birth were categorised, with counts and percentages compared with Australian Bureau of Statistic data to determine representiveness. Food item preferences were reported descriptively as percentages. Because this was a quality improvement study, no age or gender information were recorded regarding those who were not approached or who declined participation.

Results

The respondents' (n=134) gender and country of birth were similar to Australian census data for Queensland (10). A greater proportion of respondents was aged 60 years or more compared with the Queensland census (Table 2).

Of interviewed respondents, 34% had a length of stay between four and seven days. Respondents with a length of stay between eight and 28 days (25%) and greater than 28 days (20%) were also well represented. Almost 80% of respondents were receiving either full (49%) or high protein, high energy (30%) menus providing three meals and between meal snacks per day. The remaining 20% received fat, carbohydrate, texture, sodium modified or gluten free meals.

Table 3 summarises key responses. During admission over half of respondents reported a decreased appetite and over a quarter of respondents rated their appetite as "poor". Over 40% felt like eating "nothing" when unwell. If unwell, soup (15%), "dry" biscuits or fruit (4% each) were desired most frequently. A broad range of other items were mentioned by a few people each, making no other patterns clearly evident. Soft-drink (7%) and alcohol (7%) were most commonly reported to be missed during admission.

Eggs were most desired for breakfast while meat dishes were most desired for lunch. At one site (Hospital 2), a little under half (48%) indicated they would like to receive toast even if cold. More respondents favoured the option of selecting a smaller (47%) in contrast to larger (34%) meal (Table 3). Soup was popular for lunch, dinner

(evening meal) and as a between meal snack option (Table 3). Fruit and ice-cream were popular dessert items, followed by creamed rice, trifle, muffin, pancakes (8% each), cheesecake and apple pie (7% each).

Difficulty opening packaged food was reported by almost half of respondents but most reported finger foods, such as sandwiches, to be easy to eat (Table 3). Hospital 1 explored the most commonly desired sandwiches serve size for lunch, with four triangles (two slices of bread) (23/48, 49%), being preferred to six triangles (12/48, 25%). Hospital 2 identified a mode of four triangles per serve preferred by females and those aged 30 years or over, with a mode of eight triangles per serve preferred amongst males and those under 30 years. Slightly more people preferred to select from two specified fillings (49%) than an unspecified mixed sandwich platter (44%) (Table 3).

The most preferred between meal snacks included cheese and biscuits (18%), cakes (16%), fruit (15%), sandwiches (11%), biscuits (7%) and yoghurt (4%). Most respondents did not desire a greater variety of options between meals (Table 3).

Suggestions for beverage options at one site (Hospital 1) indicated juice (36%), water (20%) and soft drink (17%) as the most popular cold preferences and tea (64%), coffee (15%) and *Milo*TM (10%) as most popular hot preferences. Although generally satisfied with between meal snack times, 15% would like foods to be offered more frequently or at times different to existing service (Table 3). The most popular times reported were 3-4pm (40%), before breakfast (15%) and before retiring to sleep (15%).

Discussion

The large number of respondents who indicated they were not hungry, preferred smaller meals and had difficulty opening packages emphasises the integral importance of well designed meal and snack delivery systems that avoid unnecessary organisational or time burdens on food service staff. More than half of respondents reported decreased appetites during admission and over a quarter rated their appetite as “poor”. A substantial proportion of respondents indicated they preferred the choice of a smaller meal. Energy dense smaller portions can reduce waste as well as increase nutrient intakes by 25% (11).

Results indicate the consideration of access to an additional between meal snack (between 3-4pm) and between meal options such as soup (desired when ill), fruit juice, soft drink, *Milo*TM and cake. Reasons for hospitalised patients’ irregular eating have included early satiety, rehabilitative therapy, diagnostic testing, altered sleep patterns (12). Studies of a general medical unit had found 25% of meals were missed; 92% due to illness or lack of taste, quality or variety of the food and 8% due to investigations (13). Our study further supports the literature for a variety of easy to consume meals and snacks, able to be kept safely until the patient is available or well enough to eat.

This study’s reported preferences for egg and meat dishes appear consistent with others’ findings (12). When ill patients could request whatever desired from an “a la carte” system, the most requested foods (after milk) included eggs, omelettes,

luncheon meats and plain meats such as baked chicken, roast beef, steak and chops (12). The top five main USA meal preferences which did not alter with age, gender or ethnic group included country steak, cubed steak, salmon patties, chicken and roast pork (14). In an Australian repatriation setting, again, four of the seven most liked food categories were meats (red, eggs, chicken, fish) followed by fruits (fresh, canned, juice) (3).

A large number of respondents reported desiring toast, even if cold. Many services, including the two hospitals in this study, do not offer toast, due to complaints regarding the quality. Perhaps an option of toast should again be explored.

Study strengths and limitations

Using a variety of approaches (eg survey, interview, focus groups, taste testing) to provide evidence for menu preferences is warranted (2, 15). Semi structured questions were used to elicit food preferences from patients, which is in contrast to previous designs where information was requested regarding food items that had been pre-decided by *the investigators* (16, 17). Although gender may influence food preferences it was not a major factor in this study as similar proportions of males and females responded.

This study focused on those at greatest nutritional risk including the nutritionally compromised and longer stay patients. Previous Australian food service studies obtained preferences of entire hospital populations, including relatively well, short stay patients (16, 17), which are not the groups of highest need.

Several potential limitations are noted in this descriptive study. Only clients able to communicate in English and with no cognitive limitations were interviewed.

Although it was emphasised that the responses should reflect their home practices or their preferences, it is difficult to be completely assured that the service or menu received in hospital did not influence responses. However, the investigation of two different hospitals with different menu styles assisted to determine a potential institution bias in responses. More respondents of the hospital that provided soup for lunch desired soup for lunch. It is therefore possible that responses had been influenced to some degree by what they had received as opposed to what they desired. Further research at other sites are needed to confirm this exploratory study.

Conclusions

Desired meals, service times and foods offered have been assumed by the managers of hospital foodservices and, to our knowledge, have not previously been examined in Australian hospitals. While determining the food service preferences of patients with increased energy and protein requirements or long-stay patients, a substantial proportion were found to have a poor appetite. Determining food, fluid and serving preferences is essential to assist with patients consume adequate nutrition and reduce food waste. The results of this study suggest that patients at nutritional risk should have frequent access to egg and meat based dishes and nourishing soups.

Consideration should be given to offering additional items such as soup, juice, cake, soft drink and *Milo*TM between meals. Patient orientated food services, including easy-to-consume meals and snacks, are anticipated to enhance the nutritional intakes of these at-risk hospital groups.

Table 1. Food service provision at hospitals 1 and 2.

	General meal options provided		Meal and snack times	
	Hospital 1	Hospital 2	Hospital 1	Hospital 2
Breakfast	Cold *	Cold**	7-8 am	7-8 am
Morning Tea			9.30 – 10.30 am	9.30 – 10.30 am
Lunch	Cold *	Hot and cold**	12-1 pm	12-1.30 pm
Afternoon tea			2.30-3.30 pm	2.30-3.00 pm***
Dinner	Hot and cold	Hot and cold	5-6 pm	5-6.30 pm
Supper			7.30-8.30pm	7.00-8.00pm

*Cold breakfast incorporated porridge (made with water). Cold lunch incorporated nourishing soup.

** For those with high energy high protein requirements, hot choices are provided at breakfast and lunch. Hot lunch choices are routinely provided for the general menu

*** Afternoon tea provided only for patients with high energy high protein requirements.

Table 2. Demographics data comparing survey respondents with the Australian Bureau of Statistics (ABS) data.

	Hospital 1 n=48 N (%)	Hospital 2 n=86 N (%)	Qld 2004-5 ABS* census (10) %
Gender			
Male	23 (47.9)	42 (48.8)	50.0
Female	25 (52.1)	44 (51.2)	50.0
Age (years)			
< 30	6 (12.5)	11 (12.8)	13.8* (16.6**)
30-44	6 (12.5)	14 (16.3)	22.5
45-59	10 (20.8)	11 (12.8)	19.6
60-69	10 (20.8)	12 (14.0)	7.9
70-79	8 (16.7)	15 (17.4)	5.4
>80	8 (16.7)	23 (26.7)	2.9
Country of birth			
Australia	39 (81.2)	63 (73.3)	82.0
Other	9 (18.8)	23 (26.7)	18.0

* Represents 20-29 year age group from ABS

**Includes 40% from 15-19 age bracket to approximately adjust for inclusion of ages 18 and 19 years.

Table 3. Appetite and highest responses for meal preferences of adult public hospital patients with increased energy and protein requirements or long-stays (n= 134).

	n	%
Appetite quality		
Poor	37	30
Fair	43	32
Good	54	40
Appetite compared to home		
Less than normal	74	55
About normal	51	38
Better than normal	9	7
What do you feel like eating at home when you are not well?		
Nothing	54	42
Soup	20	15
During your stay, what food or drink have you missed most		
Nothing	49	37
Soft drink	10	7
Alcohol	9	7
Foods you would like to receive in hospital for		
<i><u>Breakfast:</u></i>		

Eggs (eg bacon eggs and tomato, eggs on toast)	42	31
Cereal	33	25
Porridge	16	12
Toast	9	7
 <i><u>Lunch:</u></i>		
Meat dishes (eg roast meet and gravy, soft meals, stews, hot dogs)	27	20
Sandwiches	25	19
Cold meat and salad	20	15
 <i><u>Dinner* (n=86):</u></i>		
Meat/Roast Meat/ Beef /Steak and vegetables	24	28
Lasagne	5	6
Soup	5	6
<hr/>		
Would you like the choice of ordering a	Yes (n)	%
Smaller meal?	63	48
Bigger meal?	46	34
 Would you like to have soup at		
Breakfast?	7	5
Lunch?	67	50
Dinner?	93	69
Between meals?	22	16

In hospital, do you find it easy to

Eat finger food?	109	81
Open packaged foods?	65	49

Which is preferable to you? Selecting

From 2 fillings?	64	49
A mixed sandwich platter?	59	44

Would you like more variety of items between meals? 44 33

Are there other times you would like food or drink offered? 20 15

* Responses from Hospital 2

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