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Analysis of Factors Affecting the Satisfaction Levels of Patients Toward Food Services at General Hospitals in Makkah, Saudi Arabia

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Abstract Previous studies showed that hospital food services remain to be a widespread problem all over the world. This study was conducted to determine the factors affecting satisfaction level of patients with food services in a sample of general hospitals in Makkah, Saudi Arabia. A cross sectional study was carried out in four general hospitals including 250 patients. Interview questionnaire was used for measuring satisfaction of the patients with food and food services. Results showed that (78.8%) of patients were satisfied overall with quality of food services in hospitals. Positive correlation was detected between the overall satisfaction level and the different aspects related to food and food services, the first three variables that had the strongest correlation with overall satisfaction were the taste of foods, being served with the favourite food and food appearance. Logistic regression analysis revealed that low monthly income, taste and temperature of food, attitude of staff serving food, and absence of disturbance inside, and outside the room were associated with satisfaction with hospital food and food services ($p < 0.05$) .Increasing the quality of foods and hospital food services increases the level of overall satisfaction with foods and food services. Ongoing education and communication with patients and dieticians is important in improving satisfaction with foodservice.

Keywords Hospital Food Services, Patient Satisfaction, Food Preferences, Healthcare Quality

1. Introduction

Patient satisfaction has become a key criterion by which the quality of health care services is evaluated. When looking at overall hospital patient satisfaction, foodservice satisfaction may sometimes go unnoticed, as nursing and physician quality and the quality of technical medical care are more commonly identified in the research[1-3]. Several researchers have identified food quality as the most important determinant of patient foodservice satisfaction[1, 4, 5].

A comprehensive literature review reveals that there are so many studies conducted on satisfaction in health care facilities as well as in other service providers, but the number of studies on the satisfaction with food services in health care facilities is relatively low[6,7]. However, food service in a hospital is an important component of treatment process since it affects the length of recovery and life quality[6].

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Studies on satisfaction with food services discuss that the quality of hospital food services is a common problem in all over the world, and patients of many hospitals are undernourished, since the patients do not like the food or they say the food is unacceptable[8,9]. Hospital malnutrition is a main problem, since it increases the severity of illnesses, and lengthens recovery duration, and length of stay[6, 10-12]. However, the need to assess the food services in a hospital is not only important for patients' welfare and nutrition but also for financial reasons[6].As far as the hospitals are concerned, food services that satisfy the needs of patients will primarily decrease food wastage, and will contribute in making significant savings[6 ,13], For this reason, hospital food services should be seen as an inseparable part of patient treatment process[6,14], and it is important to evaluate patient views to make sure on whether the food served to the patients meets the expectations of customers[7]. The present study was conducted to determine the factors affecting satisfaction level of patients with food services in a sample of general hospitals in Makkah, Saudi Arabia.

2. Material and Methods

2.1. Subjects

A cross sectional study was conducted between January and June 2011.The study was carried out in Heraa, Al Nour, king Abdulaziz and King Faisal hospitals in Makkah, Saudi Arabia. Permissions for the study were obtained from the authorities concerned .The main criteria for the sample selection were the ability of the patients on evaluating food service quality. After meeting sample selection criteria, the patients were informed about the study, and patients who accepted to participate in the study voluntarily were included in the sample. For this reason, those patients who were unable to complete the questionnaire and patients in paediatrics and psychiatric services were not included in the sample of this study. At the last a convenient sample of 250 selected patients was included in this study.

2.2. Methods

Data were collected using an interview questionnaire. Unfortunately, a valid, reliable, and sound questionnaire was not found. The questionnaire was adapted from[1,6].The clarity of the statements was examined by conducting a pilot study on a small group of patients before starting the study.

The questionnaire was divided into 4 parts: Part (1) included the admission data, part (2) to collect data about socio-demographic characteristics, part (3) to determine the level of satisfaction of patients with the different aspects of food and food services, and part (4) to determine the patient perception on the quality of hospital in general.

The patients were required to give their opinions whether or not they were satisfied with the different items included in the questionnaire by giving three choices (yes, no, or uncertain). These responses were assigned the following scores: Yes = 3, uncertain = 2, and No = 1. There were also questions using three-point scoring schemes with responses similar to those, but where the awarding of points was reversed. For example, the question "Was there a delay in the provision of meals?" would be scored: Yes = 1, uncertain = 2, and No = 3. For comparison purposes, dissatisfied and uncertain patients were pooled in the same category, and this category of patients was compared with satisfied patients.

2.3. Statistical Analysis

Data were analyzed by using Statistical Package for Social Science (SPSS) version 16.0 (SPSS Inc., Chicago, IL, USA).Descriptive statistics were used to summarize the socio-demographic characteristics of the patients, satisfaction levels, and quality of food services. For quantitative variables, compliance with the normal distribution was assessed using the Kolmogorov-Smirnoff test, as appropriate. The chi-square test or Fisher's exact test were used for qualitative variables. T-test or Mann Whitney test were used for quantitative data. The relationship between overall satisfaction and the various aspects related to food and food services was examined by using Spearman correlation. Logistic regression analysis was used to detect the variables that best predict patient satisfaction. P value of less than (0.05) was considered to indicate statistical significance.

3. Results

Table 1. General characteristics of the studied patients

Variables	Frequency (N = 250)	%
Age (years)		
≤30	120	48.0
31- 50	82	32.8
>50	48	19.2
Gender		
Male	115	46.0
Female	135	54.0
Nationality		
Saudi	227	90.8
Non- Saudi	23	9.2
Level of education		
Illiterate/can read and write	67	26.8
Primary/preparatory	72	28.8
Secondary school	58	23.2
University or higher	53	21.2
Occupation		
Unemployed	181	72.4
Employed	69	27.6
Marital status		
Married	162	64.8
Unmarried	88	35.2
Smoking		
Yes	29	11.6
No	221	88.4
Income* (SR / month)		
<3000	152	60.8
3000-5000	39	15.6
>5000	44	17.6
Ward		
Internal medicine	116	46.4
Surgical	84	33.6
Gynaecology and obstetric	50	20.0
Length of stay (days)		
1–7	188	75.2
8–14	37	14.8
≥15	25	10.0
Prior hospitalization		
Yes	136	54.4
No	114	45.6
Type of diet		
Normal	168	67.2
Special hospital diet	82	32.8
Depending on hospital food		
Yes	176	70.4
No	74	29.6

SR : Saudi Riyal, *15 were missing

Table 2. The patients' views on hospital food services and hospital in general

Aspects attached to hospital foods and food services	Yes		No		Uncertain	
	N	%	N	%	N	%
Are you satisfied with the amount of food?	204	81.6	31	12.4	15	6.0
Are you satisfied with the taste of food served?	142	56.8	47	18.8	61	24.4
Are you satisfied with the appearance of food served?	188	75.2	31	12.4	31	12.4
Did you receive various kinds of food?	214	85.6	22	8.8	14	5.6
Are you satisfied with the time of food distribution?	202	80.8	34	13.6	14	5.6
Was there a delay in the withdrawal of meals?	52	20.8	189	75.6	9	3.6
Was there rapid withdrawal of meals?	108	43.2	131	52.4	11	4.4
Are you satisfied with the temperature of food?	132	52.8	68	27.2	49	19.6
When you receive your meals, did you eat on time?	147	58.8	79	31.6	24	9.6
Did you eat the whole meal?	72	28.8	144	57.6	34	13.6
If you want to cool your food, Is there a place for it?	23	9.2	224	89.6	3	1.2
If you want to heat you food, Is there a place for it?	20	8.0	223	89.2	7	2.8
Could you get a drink or snack when you want?	58	23.2	100	40.0	92	36.8
Have all of your favourite foods been served?	80	32.0	107	42.8	63	25.2
Are you satisfied with the cleanness of fork, spoon, and dishes?	242	96.8	7	2.8	1	0.4
Are you satisfied overall with the quality of food services?	197	78.8	28	11.2	25	10.0
Are you satisfied with attitude and behaviours of dieticians?*	48	49.9	59	55.1	0	0.0
Are you satisfied with behaviours of staff serving food?	192	76.8	57	22.8	1	0.4
Are you satisfied with the room in general?	181	72.4	37	14.8	32	12.8
Are you satisfied with level of privacy?	143	57.2	61	24.4	46	18.4
Are you satisfied with room temperature?	177	70.8	55	22.0	18	7.2
Are you satisfied with room décor?	50	60.0	43	17.2	57	22.8
Is there a disturbance inside and/or outside the room?	89	35.6	142	56.8	19	7.6
Are you satisfied with level of room cleanliness?	196	78.4	31	12.4	23	9.2
Do you complain of flies?	69	27.6	173	69.2	8	3.2
Are you satisfied with level of cleanliness of bathroom?	160	64.0	63	25.2	27	10.8
Are there means of hygiene in the bathroom?	141	56.4	86	34.4	23	9.2
Would you return again to this hospital for medical care?	172	68.8	39	15.6	39	15.6
Would you recommend this hospital to friends or family?	178	71.2	36	14.4	36	14.4
Can you say that this hospital (or at this time) serves more quality food services compared to other hospitals, or than in previous hospitalization?	74	54.4	25	18.4	37	27.2

*143 had never seen dieticians during hospitalization

Table 1 describes the general characteristics of the studied patients, among the studied 250 patients, (48%) aged less than or equal 30 years, (54.0%) were females, and 60.8% of them reported that they had a monthly income of less than 3000 SR. (54.4%) of the patients stated they had been previously admitted either in this hospital or in other hospital earlier. In terms of food type (32.8%) of the patients were given special diets as directed by their physicians, and (67.2%) of the patients were served regular hospital food.

When the views of the patients on different aspects of foods and hospital food services were considered (Table 2), it was found that, (78.8%) of the patients were satisfied overall with the quality of food services in the hospital in general, that the most satisfied aspect by the patients was the cleanness of food equipment, and 96.8% of the patients were satisfied with this aspect. On the other hand, the aspect that the patients were the least satisfied with was unavailability of place to heat or cool food as stated by (92.0%) and (90.8%) of patients respectively.

The results of comparisons between satisfied and dissatisfied patients by their general characteristics were presented in (table 3), low income was associated with overall satisfaction with food and food services where, (71.4%) of satisfied patients versus (40%) of dissatisfied patients had a monthly income of less than 3000 SR ($p<0.001$). Results showed that (75.1%) of satisfied patients versus 52.8% of dissatisfied patients were depending on hospital food ($p < 0.01$).

Table 4 shows that the mean satisfaction scores differed significantly between satisfied and dissatisfied patients with regard to all variables related to hospital foods, food services and hospitalization with the exception of patients' views on the time of withdrawal of meals, availability of place to cool or heat food ,and attitude and behaviours of dieticians.

Spearman correlation coefficients between the variable of overall satisfaction and the aspects attached to foods and hospital food services are presented in (table 5), the first four variables that had the strongest correlation with overall

satisfaction were the taste of foods (r = 0.428, p < 0.01), Prior hospitalization (r=0.414, p < 0.01), being served with the favourite food (r =0.402, p < 0.001), and the appearance of food (r =0.339, p < 0.001).

Table 3. Patients' satisfaction with hospital food services by general characteristics of patients

Variables	Satisfied		Neutral/not Satisfied		P value
	N= 197	%	N= 53	%	
Age (years)					
≤30	96	48.7	24	45.3	0.862
31- 50	63	32.0	19	35.8	
>50	38	19.3	10	18.9	
Gender					
Male	88	44.7	27	50.9	0.416
Female	109	55.3	26	49.1	
Nationality					
Saudi	178	90.4	49	92.5	0.639
Non Saudi	19	9.6	4	7.5	
Education level					
Illiterate/can read and write	57	28.9	10	18.9	
Primary/preparatory	58	29.5	14	26.4	0.323
Secondary school	42	21.3	16	30.2	
University or higher	40	20.3	13	24.5	
Occupation					
Unemployed	142	72.1	39	73.6	0.964
Employed	55	27.9	14	26.4	
Marital status					
Married	125	63.5	37	69.8	0.389
Unmarried	72	36.5	16	30.2	
Income (SR/ month) *					
<3000	132	71.4	20	40.0	
3000-5000	27	14.5	12	24.0	<0.001
>5000	26	14.1	18	36.0	
Ward					
Internal medicine	91	46.2	25	47.2	0.964
Surgical	67	34.0	17	32.1	
Gynaecology and obstetric	39	19.8	11	20.7	
Length of stay					
1–7 days	143	72.6	45	84.9	0.135
8–14 days	31	15.7	6	11.3	
15 or more days	23	11.7	2	3.8	
Prior hospitalization					
Yes	102	51.8	34	64.2	0.110
No	95	48.2	19	35.8	
Type of food					
Special hospital diet	67	34.0	15	28.6	0.432
Normal	130	66.0	38	71.4	
Depending on hospital food					
Yes	148	75.1	28	52.8	0.002
No	49	24.9	25	47.2	

SR: Saudi Riyal, *15 were missing

Table 4. Mean satisfaction scores for the variables related to hospital food services and hospital in general

Variables	Satisfied	Neutral/not satisfied	Total score	P value
	Mean ± SD	Mean ± SD	Mean ± SD	
Are you satisfied with the amount of food?	2.8±0.6	2.4±0.9	2.7±0.7	<0.001
Are you satisfied with the taste of food served?	2.6±0.7	1.7±0.8	2.4±0.8	<0.001
Are you satisfied with the appearance of food?	2.8±0.5	2.1±0.9	2.2±0.7	<0.001
Did you receive various kinds of food?	2.8±0.5	2.5±0.8	2.8±0.6	<0.001
Are you satisfied with the time of food distribution?	2.7±0.7	2.5±0.8	2.7±0.0	0.03
Was there a delay in the withdrawal of meals?	2.6±0.8	2.3±0.9	2.5±0.8	0.26
Was there rapid withdrawal of meals?	2.1±1.0	2.1±1.0	2.1±1.0	0.98
Satisfaction with the temperature of the food?	2.4±0.8	1.8±0.1	2.3±0.9	<0.001
Did you eat the whole meal?	1.8±0.9	1.3±0.0	1.7±0.9	<0.001
If you want to cool your food, Is there a place for it?	1.2±0.6	1.4±0.4	1.2±0.6	0.46
If you want to heat you food, Is there a place for it?	1.2±0.6	1.3±0.5	1.2±0.6	0.39
Have all of your favourite foods been served?	2.1±0.8	1.2±0.0	1.8±0.9	<0.001
Are you satisfied with the cleanness of food equipments?	3.0±0.2	2.1±0.6	2.9±0.3	<0.001
Are you satisfied with attitude and behaviours of dieticians?	1.9±1.0	1.9±1.2	1.9±1.0	0.92
Are you satisfied with behaviours of staff serving food?	2.7±0.7	2.1±1.0	2.5±0.8	<0.001
Are you satisfied with room in general?	2.7±0.6	2.2±0.9	2.6±0.7	<0.001
Are you satisfied with level of privacy?	2.5±0.8	1.8±0.9	2.3±0.8	<0.001
Are you satisfied with room temperature?	2.6±0.8	2.2±0.9	2.5±0.8	<0.001
Is there a disturbance inside and outside the room?	2.5±0.9	1.7±0.9	2.2±0.9	<0.001
Are you satisfied with level of room cleanliness?	2.7±0.6	2.4±0.9	2.7±0.7	<0.001
Are you satisfied with level of cleanliness of bathroom?	2.5±0.8	1.0±0.9	2.4±0.9	<0.001
Are there means of hygiene in the bathroom?	2.5±0.9	1.3±0.9	2.2±0.9	<0.001
Would you return again to this hospital for medical care?	2.6±0.7	2.3±0.9	2.5±0.8	<0.001
Would you recommend this hospital to friends or family?	2.6±0.7	2.3±0.8	2.6±0.7	<0.001
Can you say that this hospital serves more quality food services compared to other hospitals?	2.6±0.6	1.8±0.9	2.4±0.8	<0.001

Table 5. Spearman correlation between the variable of overall satisfaction and the aspects attached to hospital food services and hospital in general

Variables	R*
Are you satisfied with the amount of food?	0.264
Are you satisfied with the taste of food served ?	0.428
Are you satisfied with the appearance of food served?	0.399
Did you receive various kind of food?	0.191
Are you satisfied with the time of food distribution?	0.130
Are you satisfied with the temperature of the food?	0.295
Did you eat the whole meal?	0.233
Have all of your favourite foods been served?	0.402
Are you satisfied with the cleanness of fork, spoon, and dishes?	0.199
Are you satisfied with attitude and behaviours of staff serving food?	0.322
Are you satisfied with the room in general?	0.306
Are you satisfied with level of privacy?	0.284
Are you satisfied with room temperature?	0.166
Is there a disturbance inside and/or outside the room?	0.286
Are you satisfied with level of room cleanliness?	0.208
Are you satisfied with level of cleanliness of bathroom?	0.294
Are there means of hygiene in the bathroom (soap and wipes)?	0.275
Would you return again to this hospital for your medical care?	0.306
Would you recommend this hospital to your friends or family?	0.238
Can you say that this hospital (or at this time) serves more quality food services compared to other hospitals?	0.414

R: correlation coefficients. *Correlation is significant at the 0.01 level (2-tailed)

Table 6. Logistic regression analysis for the variables associated with patient satisfaction

Variables	P value	Odd's ratio	95%CI of Odd's ratio
Income (SR/ month)			
<3000	0.001	0.1	0.03-0.37
3000-5000	0.555	0.7	0.21-2.32
>5000 (reference category)			
Depending on hospital food (yes).	0.151	2.2	0.75-6.68
Satisfaction with the amount of food (yes).	0.775	0.8	0.24-2.90
Satisfaction with the taste of food (yes).`	0.008	7.3	1.69-31.41
Satisfaction with the appearance of food (yes).	0.547	1.4	0.45-4.56
Satisfaction with the variability of food (yes).	0.972	1.0	0.26-3.73
Satisfaction with time of food distribution.(yes).	0.602	1.4	0.43-4.26
Satisfaction with temperature of food (yes).	0.047	3.1	1.02-9.69
Get a drink or snack when wanted (yes).	0.200	2.9	0.57-14.52
All the favourite foods had been served (yes).	0.051	5.9	0.99-35.60
Satisfaction with the cleanness of fork, spoon, and dishes (yes).	0.053	11.2	0.97-29.34
Satisfaction with attitude and behaviours of staff serving food (yes).	<0.001	16.8	4.52-62.43
Satisfaction with level of privacy (yes).	0.055	3.1	0.97-9.99
Satisfaction with room temperature (yes).	0.428	1.5	0.54-4.26
Disturbance inside and/or outside the room (no).	0.013	4.7	1.38-16.01
Cleanness of room in general (yes).	0.930	0.9	0.29-3.14
Constant	<0.001	0.0	

Note. Chi-square = 129.934; p = 0.000. Cox and Snell R square = 0. 425. Hosmer–Lemeshow test = 5.433, p = 0.710

Results of logistic regression (Table 6) revealed that low monthly income, taste and temperature of food, attitude of staff serving food, and absence of disturbance inside ,and/or outside the room were statistically significant independent variables related to patient satisfaction with hospital food and food services ($P < 0.05$).

4. Discussion

Patient satisfaction is an important element in evaluating the quality of health care services, and in predicting patients' behavioural patterns after receiving the services. In addition, studies on patient satisfaction can identify facility attributes or practices that increase satisfaction and utilization, which may lead to favourable outcomes[1, 15, 16].

Regarding the socio-demographic characteristics of the studied patients, the result of this study showed that patient specific characteristics such as age and gender to be insignificant variables in affecting overall satisfaction of the patients. However, in almost all the studies, age did not have an effect on the level of patient satisfaction[1]. This is in contrast to Sahin et al., 2006 who found that satisfaction level was significantly higher in younger age groups[6]. In addition, other previous studies reported that patients aged 70 and older gave higher overall foodservice ratings when compared to younger patients[4]. On the other hand a patient satisfaction study to assess hospital services in Kuwait concluded age as the most important determinant for overall satisfaction[17], and another study in Sri Lanka stated that the satisfaction level was significantly low for the age group 21- 50 years[18], while a study in China has concluded that increasing age had been a negative predictor of patient satisfaction[17].

Considering the education level, the present study revealed that no association between the level of education and the overall satisfaction of the studied patients, similar results were reported by Sahin and his colleagues in 2006[6], while Al-Hoqail and his colleagues in 2010 reported that less educated patients were generally more satisfied since they were less demanding[16]. Patients who had tertiary education were shown to have significantly lower levels of satisfaction in a study conducted in United Arab Emirates[19] and Saudi Arabia[20]. Other studies uniformly showed no such relationship[17].

In addition to this, low monthly income of patients was significantly associated with higher level of satisfaction, this may make patients satisfied with any services that they were provided, similar result were reported by Watters and his colleagues (2003), however Sahin and his colleagues (2006) found that patients with high income were more satisfied than others with low income[5,6] .

The study also showed that food type (special hospital diet or normal) was not a significant determinant of overall satisfaction with hospital food and food services, and this finding supports the findings of the study of Sahin, and his colleagues in 2006[6]. The results of both this and Sahin, and his colleagues suggest that a special diet given for treatment purpose could be as attractive as normal diet.

The importance of temperature in patient foodservice satisfaction is mentioned in the literature[1, 3], in the current study temperature of food was one of important determinants of overall dissatisfaction, the results of logistic regression suggest that increasing the level of satisfaction with temperature of foods decreases the level of dissatisfaction or increases overall satisfaction among the patients. Unlike the studies conducted by Sahin, and his colleagues[6], and

Tranter, and his colleagues[1]who did not found such association.

As far as the hospitals are concerned, food services that satisfy the needs of patients will primarily decrease food wastage, and will contribute in making significant savings[10].The current study showed that (29.6%) of patients were not depending on hospital diet. This problem was touched on by other studies. For example, the study conducted by Sahin and his colleagues (2006) showed that the majority of patients reportedly consumed less than 50% of their food, 28.9% consumed only the half of their food, 23.5% consumed some of their meals, and 3.2% of patients did never eat their foods[6], while the study conducted by Kowanko, and his colleagues (2001), reported that one third of the patients consumed only 50% of hospital food and as a result, nutritional requirements of a significant amount of patients were not met and malnutrition problems occurred[21]. In another study on an elderly population by Hamilton and colleagues (2002), found that 59% of the patients consumed all of their food, 21% consumed one third of the food provided, 12% ate half and 9% of the patients consumed two thirds of the food provided[22]. Similarly, in the study by Barton and colleagues (2000), 40% of the food delivered was not consumed and hospital resources were wasted by the remainder food disposed[13].

Hospital malnutrition is a main problem, For this reason, hospital food services should be seen as an inseparable part of patient treatment process, and it is important to evaluate patient views to make sure on whether the food served to the patients meets the expectations of customers[10-12, 14].The results of this study showed that there was a positive correlation between length of stay and overall satisfaction with hospital food and food services, and this finding supports the study findings of Tranter and his colleagues who found that patients who had a longer hospital stay giving higher food-quality ratings when compared with patients with shorter hospital stays[1], in contrast to Sahin and his colleagues[6] and Stanga and his colleagues[3] who found a negative relationship between length of stay and overall satisfaction with hospital food and food services.

Several researchers have found that staff interacting with patients during meal service can influence their foodservice satisfaction. A study compared meal service quality when nurses or dietary staff delivered trays, found that patients served by dietary staff were more positive about food quality and appearance than when served by nurses. Personal contact with staff is beneficial because patients perceive emotional support[5]. In this study higher percentage of patients (78.8%) were satisfied with the attitude, and behaviour of the staff serving foods which was positively correlated with the overall satisfaction rate, similar results were reported by other studies[1,6].

Room service is a valuable asset for hospitals in improving patient satisfaction, clinical outcomes for patients, the health of patients restored and their recovery quickened. At the very least, room service gives patients control over one aspect of their hospitalization which improves the quality of their stay and their opinion of the overall quality of care received. Room service systems improve patient nutrient intake and assists in their recovery and regaining of their health[24] .The current study showed positive correlation between room service quality and ,the overall satisfaction with food ,and food services , also higher percentage of patients were satisfied with the different aspects related to room service ,where 72.4%,70.8%.78.4% were satisfied with the room in general , room temperature ,and cleanliness respectively ,similar results were observed by Alaloola and Albedaiwi (2007)[16].

However, there are some limitations of this study, the study is restricted to 4 general hospitals, and no private hospitals were included, so the results may not be generalizable to other hospitals. It should also be mentioned here that high percentage of the study population were less than or equal 30 years old. Given the predominance of younger patients in this study, results may not be generalizable to other hospitals' population. Another weakness of the study is related to measuring food consumption levels, which was not measured in this study.

5. Conclusions

The majority of patients were satisfied overall with food and food services. Increasing the quality of foods and hospital food services increases the level of overall satisfaction with foods and food services. Ongoing education and communication with patients and dieticians is important in improving satisfaction with foodservice.

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