

## Article

# Nutritional Service Experienced During Hospital Stay: Comparison between Centralized Operating System and Contracted Operating System

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**Abstract:** The provision of good healthcare including nutritional services is a challenge for the management of hospitals and health centers. Thus, this study was carried out to measure and compare the performance of the Department of Food and Nutrition in two hospitals with two different operating systems: a centralized operating system and a contracted operating system. A cross-sectional comparative design was used to investigate in-ward food services from the patient's perspective. Ninety patients participated from Hospital A, a hospital with a centralized operating system, and 125 patients participated from Hospital B, a hospital with a contracted operating system. The result showed that the centralized operating system had inherent advantages over the other system in all dimensions. Specifically, the dimensions of "Staff/Service issues" and "Physical Environment" were identified as the areas that differed between the two hospitals and need to be further developed in the contracted operating system.

**Keywords:** Nutritional Service, Department of Food and Nutrition, Centralized operating system, Contracted operating system.

## 1. Introduction

Healthcare institutions face escalating challenges to provide good healthcare services to the community. Those services are the result of the performance of the institutions which require continuous evaluations of their performance to measure the efficiency of their services and improve their quality (Quraishy & Arabah, 2012). Thus, the quality of healthcare service has become a fundamental requirement in all health institutions which try to increase their ability to satisfy the desires of the patients by meeting their needs and expectations. The services perceived by a hospital management as high-quality service may not mean anything if the patients do not see it as so. Patient satisfaction is achieved only when service providers respond to the expectations of their patients, which requires considering patients' views for the evaluation of the quality of the services.

Patient satisfaction is an indicator of the success of the providers in performing in harmony with their patient's values and expectations. Previous studies showed that there was a strong association between patients' general satisfaction and nursing care, while the link was weak between inpatients' overall satisfaction and hotel services. Hotel services at hospitals include welcoming the patients and escorting them to their rooms, suitability of the surrounding environment, cleanliness, and food services. Those variables were found to impact patients' satisfaction in hospitals along with nursing care, good handling, and quality of medical care (Mansoor, 2006).

Although interest is increasing in the broader applicability of numerous hospitality concepts to the healthcare field, the focus and involvement of hospital managers and policymakers in nutritional service have been limited (Crogan NL, 2001). The quality of patients' lives depends on the quality of food, either inside or outside the hospital (Huskisson, 1981). However, nutritional care in hospitals has low priority. In addition to that, the diets and food services may not be part of the therapeutic care plan (Lassen et al., 2005). The early knowledge of nutrition as a science and the beginning of the practice within healthcare had been attributed to Hippocrates, the father of medicine. He had been said to pay strict attention to the diet of his patients as a characteristic of his therapeutic methods (Huskisson, 1981). This approach has been adopted in various clinical settings as a result of the prevalence of malnutrition among hospitalized patients which increased both the length of hospitalization and the cost of that stay (Department of Health and Children (DOHC), 2009). The exact prevalence of malnutrition is unknown, but numerous studies conducted in several countries highlighted that approximately between 33–40% of the patients were malnourished for many reasons such as the metabolic response to trauma, the pathology of specific diseases, and poor meal provision (Langley-Evans and King, 2014).

Nutritional care is an organized and coordinated set of activities and health practices that involves a variety of healthcare providers such as physicians, nurses, nutritionists, pharmacists, and others as part of comprehensive care for patients. All goals and priorities must be well known to the medical staff as well as to the patients (Brotherton and Wood, 2008). In clinical settings, the goal of nutritional care is to meet the client's nutritional needs and prevent malnutrition along with meeting his/her expectations (Diez-Garcia, 2013). Thus, the continuous assessment of the provided services is necessary to ensure meeting the desired goals and to take the necessary action promptly in case of any deviations (Mahan et al., 2011; Lassen, 2006).

During a hospital stay, patients' satisfaction is affected by the quality of food service. Accordingly, one of the essential decisions to enhance the competitiveness of a hospital is selecting an efficient and effective operating system in the department of nutritional care (Al Jazairi, 2011). Most studies in the health field focus on the quality of hospital services in general, while research on the quality of service in the department of nutrition, especially in the Arab region, has received little attention (Larsen and Uhrenfeldt, 2013). Therefore, the purpose of this study is to measure and compare the performance of the Department of Food and Nutrition by investigating the in-ward food services from the patient's perspective in two hospitals utilizing different operating systems.

## 2. Materials and Methods

### 2.1. Study Design and Sampling

A cross-sectional comparative design was chosen to satisfy the study objectives 1) to examine the quality of the food served to patients during their admission periods, 2) to measure the adequacy of the served food quantity, 3) to investigate the staff attitude while serving meals, and 4) to describe the physical environment related to the food services. Finally, we compared the participants' perspectives toward food services in the hospitals with the two-nutrition operating system. The study was carried out for patients admitted to two hospitals in Riyadh city during the study period. Hospital A has a centralized operating system, and Hospital B has a contracted operating system. Two hundred participants were invited through a convenience non-random sampling technique. Subjects excluded from the study were patients with (Nil Per Os) diet orders who withhold oral food and fluids for various reasons and receive enteral or parenteral nutrition as the primary source of nutrition.

### 2.2. Data Collection

This study used a validated survey translated into Arabic language, titled 'the Acute Care Hospital Foodservice Patient Satisfaction questionnaire (ACHFPSQ)' (Capra, 2005). It is an accurate, reliable measure of patient's food service satisfaction and allows the quality improvement process to be focused and measured. It has four main dimensions including food quality, food quantity, staff issues, and physical environment. The survey questionnaire is composed of 31 questions and requires approximately 10 minutes to complete. It begins with 10 questions of personal information and is followed by questions for the four dimensions. The question responses were coded on the Likert Scale of 1–5 (Always = 5, Often = 4, Sometimes = 3, Rarely = 2, and Never = 1). The last question about general satisfaction with the food service has a different scale (Very good = 5, Good = 4, Okay = 3, Poor = 2, and Very Poor = 1). The questionnaire contains a mixture of positive and negative statements to allow consistency checking. The results for the negative statements required reverse coding before analysis to ensure that the scoring system was consistent (Capra, 2005). The translated version was reviewed by three academicians and tested by conducting a pilot study on a small group ( $n = 21$ ) before starting data collection. Questionnaires were distributed with assistants from both hospitals over three weeks from the 5th to the 24th of April 2016. A total of 200 surveys were distributed in each hospital. Ninety completed surveys were collected from Hospital A with a response rate of 45%, while 125 completed surveys were collected from Hospital B with a response rate of 62.5%.

Principles of research ethics were emphasized throughout data collection. Voluntary participation was adopted for this study with a written statement to inform participants about their total freedom to withdraw participation at any point without any further obligations. Their confidentiality was assured as no identity or signature was requested and their responses were used only for research purposes. The primary motivation for this study was to enhance nutritional care in Saudi hospitals.

### 2.3. Data Analysis

Data analysis was conducted by using the Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Descriptive statistics, frequencies, and percentages were calculated to identify the socio-demographic characteristics of the patients. Mean values were used to know the responses to each question on average. Standard Deviation was used to understand the dispersion of responses for each statement from its mean. The Chi-square test was used for categorical variables. T-test was used for quantitative data to know the differences between two means of independent samples. The

relationship between overall satisfaction and other factors related to food and food services was examined by the Spearman correlation analysis. The P value less than (0.05) was considered to indicate statistical significance.

### 3. Results

#### 3.1. Participants' Demography

Table 1 presents the participants' demographics. Most of the participants in the study were Saudis and speak the Arabic language. The number of female participants was larger than that of male participants in both hospitals. The majority of the participants ranged from 20 to 39 years old (68% of total participants). The length of hospital stay in Hospital A was almost evenly distributed, while in Hospital B, 41% of the participants stayed for a week and longer at the time of the survey.

**Table 1.** Characteristics of Study Participants.

Characteristic	Total Sample		Hospital A		Hospital B		p-value
	N = 215	%	n = 90	%	n = 125	%	
Nationality							
Saudi	143	66.5%	55	61.1%	88	70.4%	0.155
Non-Saudi	72	33.5%	35	38.9%	37	29.6%	
Gender							
Male	97	45.1%	38	42.2%	59	47.2%	0.469
Female	118	54.9%	52	57.8%	66	52.8%	
Spoken language							
Arabic	182	84.7%	80	88.9%	102	81.6%	0.010
English	21	9.8%	10	11.1%	11	8.8%	
Other	12	5.6%	0	0.0%	12	9.6%	
Age							
Under 20 yrs	25	11.6%	14	15.6%	11	8.8%	0.508
20-29 yrs	72	33.5%	33	36.7%	39	31.2%	
30-39 yrs	75	34.9%	28	31.1%	47	37.6%	
40-49 yrs	26	12.1%	9	10%	17	13.6%	
50-59 yrs	10	4.7%	3	3.3%	7	5.6%	
≥ 60 yrs	7	3.3%	3	3.3%	4	3.2%	
Length of hospital stay							
Two days and less	67	31.5%	35	38.9%	32	25.6%	0.065
3-6 days	70	32.9%	30	33.3%	40	32%	
Week and more	76	35.7%	25	27.8%	51	40.8%	
Unreported*	2	0%	0	0.0%	2	1.6%	
Sort of Diet							
Regular Diet	121	56.3%	48	53.3%	73	58.4%	0.536
Restricted Diet for medical reasons	71	33%	30	33.3%	41	32.8%	
Don't Know	23	10.7%	12	13.3%	11	8.8%	
Need help							
Yes	62	28.8%	15	16.7%	47	37.6%	0.001
No	153	71.2%	75	83.3%	78	62.4%	
Visitors bring in extra dishes							
Yes	117	54.4%	39	43.3%	78	62.4%	0.006
No	96	45.6%	51	56.7%	47	37.6%	
Prefer the outside dishes							
Yes	94	80.3%	26	66.7%	68	87.2%	0.008
No	23	19.7%	13	33%	10	12.8%	

### 3.2. Dietetic Experience during Hospital Stay

Table 2 shows the participants' perceptions of the quality of the food during their admission period. In Hospital A, most participants were satisfied with the temperature of drinks and hot food with an average score of 3.78. The lowest mean score (2.53) was for the ability to choose healthy meals. In Hospital B, the highest score was for foods that satisfied the participant but the lowest score (2.68) was for the taste of meals. The participant's responses to the food quantity were similar in both hospitals, showing the highest score of 3.74 in Hospital A and 3.57 in Hospital B. The lowest scores in both hospitals (2.53 in Hospital A and 2.76 in Hospital B) were observed for the ability to choose different sizes of meals. The participant's responses to the service of staff indicated that the participants of Hospital A were satisfied with the neatness and cleanness of the staff who deliver the meals (4.47), while those in Hospital B were satisfied with the politeness and good attitude to take away the finished meal tray (3.94). The scores for the staff who delivered the meals were 4.10 in Hospital A and 3.73 in Hospital B. In the food's physical environment, the participants scored 4.10 in Hospital A and 3.63 in Hospital B for the chipped and stained dishes. In Hospital A, the participants were disturbed by the noise of meal trays 3.87, and in Hospital B, the participants was annoyed by the smell of the hospital (3.28).

**Table 2.** Participants' responses toward their dietetic experience during a hospital stay period.

Statement	Hospital A			Hospital B			p-value
	Mean *	Std. Deviation	Rank	Mean *	Std. Deviation	Rank	
First dimension: Food Quality							
The hospital food has been as good as I expected	3.58	1.11	4-2	3.68	0.92	1	0.525
I am able to choose healthy meals in the hospital	2.53	1.36	8	3.00	1.25	10	0.010
The menu has enough variety for me to choose meals that I want to eat	3.05	1.29	6	3.25	1.14	8	0.225
The meals taste good	2.66	1.15	5	2.68	1.07	7	0.889
I like the way the vegetables are cooked	3.66	1.24	2	3.55	1.08	2	0.474
The meat is tough and dry	2.88**	1.22	7	3.08**	1.16	9	0.245
The hot drinks are just the right temperature	3.58	1.22	4-1	3.45	1.00	5	0.400
The cold drinks are just the right temperature	3.78	1.07	1-2	3.51	1.04	3	0.060
The cold foods are the right temperature	3.73	1.11	3	3.52	0.92	4	0.144
The hot foods are just the right temperature	3.78	1.07	1-1	3.47	1.13	6	0.040
Second dimension: Food Quantity							
I am able to choose different sized of meals	2.53	1.38	4	2.76	1.26	4	0.214
I still feel hungry after my meal	3.57**	1.05	2	3.14 **	1.14	2	0.007
I feel hungry in between meals	3.20**	1.11	3	2.92 **	1.13	3	0.106
I receive enough food	3.74	1.11	1	3.57	1.04	1	0.260
Third dimension: Staff/Service Issues							

The staff who delivers my meals are neat and clean	4.47	0.76	1	3.92	1.01	2	$p < 0.0001$
The staff who takes away my finished meal tray are friendly and polite	4.40	0.83	2	3.94	0.99	1	$p < 0.0001$
The staff who delivers my menus are helpful	4.10	1.07	3	3.73	1.05	3	0.014
Fourth dimension: Physical Environment							
The dishes are chipped and stained	4.10**	1.19	1	3.63**	1.20	1	0.005
The hospital smells stop me from enjoying my meals	3.91**	1.22	2	3.28**	1.16	3	$p < 0.0001$
I am disturbed by the noise of finished meal trays being removed	3.87**	1.27	3	3.48**	1.20	2	0.024

\* Total displayed as average score, based on Likert scale: from 5(Always) to 1 (Never); \*\* Total displayed as average score, based on Likert scale: from 1(Always) to 5 (Never).

### 3.3. Operating Different Nutrition System

The result in Table 3 shows no significant difference between Hospital A and Hospital B according to food quality and quantity. Significant differences were observed for the staff/service issues, and the physical environment for the advantage of hospital A. Additionally, the overall satisfaction was significantly higher in Hospital A than in Hospital B.

**Table 3.** Comparing study dimensions between Hospital A and Hospital B.

Dimensions	Sector *	N	Mean	Std. Deviation	p-value
Food quality	Hospital A	90	3.41	7.06	0.56
	Hospital B	125	3.36	5.74	
Food quantity	Hospital A	90	3.25	2.55	0.081
	Hospital B	125	3.11	2.41	
Staff/Service issues	Hospital A	90	4.32	2.23	0.00
	Hospital B	125	3.86	2.60	
Physical Environment	Hospital A	90	3.96	3.20	0.001
	Hospital B	125	3.46	2.93	
Overall, how would you rate your satisfaction with the food service	Hospital A	90	3.77	1.00	0.001
	Hospital B	125	3.52	0.77	

\* Hospital A with the centralized operating system and Hospital B with a contracted operating system.

### 3.4 Participants' Overall Satisfaction by General Characteristics

Table 4 shows the differences in overall satisfaction by the general characteristics of the study participants. The responses indicated that there was no significant difference between the overall satisfaction by the different characteristics in both hospitals with two exceptions in Hospital B. The participants who needed help with their food were less satisfied than those who did not need help. Additionally, receiving outside dishes from visitors was less satisfying than hospital meals.

**Table 4.** Participants' overall satisfaction by general characteristics

Variables		Overall Satisfaction					
		Hospital A			Hospital B		
		Mean	Std. Deviation	<i>p</i> -value	Mean	Std. Deviation	<i>p</i> -value
<b>Gender</b>	Male	3.68	10.77	0.27	3.34	10.10	0.163
	Female	3.55	11.47		3.46	8.95	
<b>Age</b>	less than 20 yrs	3.65	9.81	0.91	3.21	7.72	0.425
	20–29 yrs	3.58	10.82		3.44	9.66	
	30–39 yrs	3.65	13.28		3.42	10.87	
	40–49 yrs	3.41	11.45		3.52	6.29	
	50–59	3.7	6.00		3.29	8.76	
	60 and more	3.58	6.027		3.11	7.71	
<b>Length of hospital stay</b>	two days and less	3.63	12.37	0.44	3.35	9.40	0.066
	3–6 days	3.5	9.88		3.57	9.32	
	week and more	3.68	11.01		3.31	9.34	
<b>Sort of diet</b>	regular diet	3.64	12.25	0.67	3.43	9.72	0.681
	restricted diet for medical reason	3.53	9.64		3.35	9.84	
	Don't know	3.62	10.87		3.38	7.48	
<b>Need help</b>	Yes	3.41	10.88	0.15	3.26	8.52	0.007
	No	3.64	11.17		3.49	9.75	
<b>Extra dishes</b>	Yes	3.58	12.47	0.75	3.32	9.55	0.012
	No	3.62	10.22		3.54	8.98	

#### 4. Discussion

The current study aims to evaluate the performance of the Department of Food and Nutrition by investigating the in-ward food services from the patient's point of view in two hospitals with different operating systems. The findings showed that there was no significant difference in overall satisfaction with food service by gender and age in both hospitals. That finding is contrasted with previous findings where the satisfaction of younger patients with food services was greater than that of patients older than 70 years old (Wright OR, 2006). Whereas the current findings coincide with the findings reported by Tranter (2009), patient satisfaction with food quality did not differ by sex or age of the patients. Although a substantial proportion of the participants from Hospital B stayed for longer periods, the overall satisfaction in both hospitals did not support Tranter's findings in 2009 as satisfaction with food service increased with the increase in the length of stay. Furthermore, the current study supported the study of Abdelhafez et al. (2012) which found that the type of diet did not have an impact on overall satisfaction with food service. The overall satisfaction was lower in Hospital B for the help they needed when eating a meal, which is complementary of the study result of Green et al. (2010) which concluded that the assistants increased the patients' satisfaction and the intake of food for the patients who needed help. Savage and Scott (2005) discussed that nurses have a responsibility to feed the patients and need to play a role in improving patients' experience of eating while in hospitals.

Two-thirds of the participants in Hospital B received extra dishes from their visitors and the majority of them preferred outside dishes. However, the study did not detect a relationship between the outside dishes and overall satisfaction in Hospital A. While the

patients in Hospital B who have been receiving outside dishes from their visitors were statistically less satisfied. The result supported a previous finding that 30% of the patients did not eat hospital food as they were not satisfied with it (Abdelhafez et al., 2012).

The centralized operating system of Hospital A showed inherent advantages. In Hospital A, the participants were satisfied more than those in Hospital B regarding food quality, food quantity, staff/service issues, physical environment, and overall satisfaction. The difference in the last three attributes was statistically significant. This can be explained as the catering staff did not belong to Hospital B. In the centralized operating system, the staff was more likely to serve well the patients (Alford, 2011). This is consistent with the study of Theurer (2011) who found that food service satisfaction was high in the traditional operating system of the nutrition department without interventions.

Staff/service issues were the most serious in both hospitals. Researchers found that staff interaction with patients during meal service significantly influenced the satisfaction level. Theurer (2011) found staff/service issues to be the most positively rated as patients' satisfaction increased with the behavior of the staff (Abdelhafez et al., 2012). On the other hand, Al Jazairi (2011) found that employees' uniforms and personal hygiene showed the lowest rate of patient satisfaction. The quality of food services affected patients' overall satisfaction during a hospital stay (McLymont, 2003). Although food quality and quantity were better in Hospital A than in Hospital B, the overall results showed a negative response in both hospitals. That result was similar to that of the study result that showed food quality was the least positively rated category (Theurer, 2011). A high proportion of respondents in Hospital B responded that the provided food met their expectations in terms of its quality, which is similar to the result of Naithani et al. (2008) and Watters et al. (2003). The importance of food and drink temperature pointed out in Hospital A was also stated by Wright who showed that food service satisfaction was strongly related to flavor, meat texture, temperature, meal taste, and menu variety (Wright, 2006). The study of Donini et al. (2008) presented that increasing overall satisfaction with the quality of food service was related to the diversity of the menu, the size of the meal, and the increased attention to food temperature. The result of this study revealed that the respondents could not choose the appropriate diets for them. This problem was also pointed out by Lassen et al. (2006) who suggested increasing the awareness of patients' rights in the selection of meals at the appropriate time under the supervision and help of a nutritionist.

## 5. Conclusions

In this study, it was found that the hospital with the centralized operating system has inherent advantages over the hospital with the contracted system in all dimensions. Specifically, "Staff/Service issues" and "Physical Environment" showed significant differences between the two hospitals and needed to be further investigated in the hospital operating contracting system. Based on the result, policymakers need to provide food and nutrition services with a high priority in hospitals. Training courses are required for nurses and nutritionists to develop their communication skills with patients and improve their ability to assist in feeding. Finally, policies and procedures need to be developed to control the outside dishes.

The main limitation of the study was utilizing a convenience sample, so the results of the study cannot be generalized to a larger population. Further studies need to be conducted on private hospitals with different operating systems for more realistic comparison.

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