JOURNAL OF NUTRITION FASTING AND HEALTH

Patient Satisfaction with Hospital Food in the Hospitals Affiliated to Mashhad University of Medical Sciences, Iran

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ARTICLEINFO

Article type:
Research Paper

Article History:
Received: 25 Aug 2018
Accepted: 07 Jan 2019
Published: 13 Feb 2019

Keywords:
Food Service
Hospital
Patient Satisfaction

ABSTRACT

Introduction: Food quality in hospitals plays a key role in the integrated program for the improvement of nutritional care in hospitals. Providing appropriate nutrition programs in the hospital setting is particularly challenging due to the diverse dietary needs of patients. The present study aimed to determine the influential factors in the satisfaction of patients with the food service in the hospitals in Mashhad, Iran.

Methods: This cross-sectional study was conducted on 265 patients in five wards of two major teaching hospitals affiliated to Mashhad University of Medical Sciences in Mashhad, Iran. Data were collected using a researcher-made questionnaire about hospital meals upon the discharge of the patients. The first assessment was conducted in Ghaem Hospital in 2010, and the next evaluation was performed in Ghaem Hospital and Imam Reza Hospital in 2016. The median length of hospital stay in the patients admitted in Ghaem Hospital and Imam Reza Hospital was 3.4 days. The questionnaire was completed by dieticians upon the discharge of the patients, and the Cronbach's alpha coefficient was estimated at 0.78.

Results: Overall patient satisfaction with hospital food services was significantly correlated with food temperature, quantity, taste, appearance, replacement meal, and diet compatibility. The rate of patient satisfaction was 60.8%, and the quality of food services in the selected hospitals was good or excellent.

Conclusion: Patient satisfaction with hospital food services plays a key role in evaluating the efficacy of the applied strategies. The results of this study could help dieticians focus on specific indicators in order to improve the food catering services and maximize patient satisfaction with hospital foods.

► *Please cite this paper as*:
Safarian M, Alinezhad-Nameghi M, Vafisani F, Asadi Z, Seyedhamzeh Sh. Patient Satisfaction with Hospital Food in the Hospitals Affiliated to Mashhad University of Medical Sciences, Iran. J Nutrition Fasting Health. 2018; 6(4): 191-197. DOI: 10.22038/JNFH.2019.32579.1141

Introduction

The quality of hospital food services plays a pivotal role in evaluating the quality of the care received by patients. Patient satisfaction encompasses the quality of the food services provided in hospitals (1). Most patients do not receive sufficient nutrition during hospitalization. The quality of hospital food services is of paramount importance in providing the required energy and nutrients to hospitalized patients (2). High quality of foods is essential to improving the health of patients since all patients meet their nutritional needs by consuming hospital foods. Low food intake is common in hospitalized patients, which might lead to malnutrition. On the other hand, the nutritional status of patients and their energy intake are associated with their disease severity and the amount of the ingested food in

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the hospital, which could influence the length of hospital stay and mortality rate (3).

Although the dietary needs of patients vary greatly, a general meal plan is mandatory in every hospital. Such plans should suit all the patients and be flexible with minimal changes. In addition to meeting nutritional needs, proper meal plans for hospitalized patients should be in accordance with the age and religious, cultural, and social beliefs of the community, while corresponding to the health pattern of patients. Most importantly, such regimens should be designed realistically by considering the attitude of patients and their ability to consume various foods. On the other hand, the dietary regiments of hospitalized patients should be compatible with their dietary restrictions. Optimal supply of energy and protein and appropriate dietary management in hospitals could reduce the length of hospital stay. In addition to adherence to the prescribed dietary regimens, proper food distribution and determining suitable portion sizes for patients should be considered in order to evaluate the actual energy intake of patients (4).

The type, quantity, and taste of hospital meals could be educational for patients, encouraging healthier diets mainly after their discharge (5-7). In order to achieve this goal, the healthcare system should develop and implement proper plans to evaluate the nutritional status of patients upon admission through measuring their height, body weight, and current weight gain/weight loss. A nutritionist prescribes the appropriate nutritional program based on these recorded data.

The present study aimed to evaluate the influential factors in the satisfaction level of patients with the food services provided in some hospitals affiliated to Mashhad University of Medical Sciences (MUMS), Iran.

Material and methods

Subjects

This cross-sectional study was conducted in 2010 and 2016 at Ghaem Hospital and Imam Reza Hospital in Mashhad, Iran. Patient satisfaction with the hospital meals was assessed using the Wales questionnaire (8). Sample population consisted of 265 discharged patients receiving oral food intake who were hospitalized for a minimum of 24 hours. The patients were randomly selected from five wards, including general surgery, women's surgery, neurosurgery, internal diseases, and cardiology, in the mentioned hospitals.

Oral consent was obtained from the patients prior to the study. The questionnaire was completed for each patient by a nutritionist. The items in the questionnaire included the time of food distribution, time to eat, providing food for the patients who were absent during meal times, snacks, food temperature, food quantity, taste, appearance, compatibility of the received food to the dietary plan of the patients, receiving all the hospital meals, and overall satisfaction of the patients with the provided hospital meals. In addition, the quality of food services was classified as excellent, good, acceptable, poor, and very poor.

Statistical Analysis

Data analysis was performed in SPSS version 10 (SPSS Inc., Chicago, IL, USA) using descriptive statistics to determine the level of patient satisfaction and quality of food services. In addition, normal distribution of the data was assessed using the Kolmogorov-Smirnov test, and the correlations between overall patient satisfaction and various aspects of hospital meals and food services were evaluated using Spearman's correlation-coefficient. In all the statistical analyses, P-value of less than 0.05 was considered significant, and Cronbach's alpha was applied to evaluate the validity of the questionnaire.

Results

The length of hospital stay is presented in Table 1. In 2010, the highest frequency of hospitalization was 2-3 days (33.3%), while in 2016, it was estimated at 8-14 days (42.2%).

Table 1. Rates of Hospitalization at Ghaem Hospital (2010) and Ghaem Hospital and Imam Reza Hospital (2016)

Length of Hospital Stay	Ghaem (2010) (%)	Ghaem and Imam Reza (2016) (%)
<1 day	9.1	6.04
2-3 days	33.3	8.04
4-7 days	25.8	33.17
8-14 days	21.2	42.2
>2 weeks	9.1	10.55

In 2010, 34% of the patients admitted in Ghaem Hospital were weighed, and in 2016, the height and weight of 74% of the patients at Ghaem Hospital were recorded. Furthermore, 6.4% of the patients admitted in Imam Reza Hospital were weighed during hospitalization, while their height was not measured in 2016.

Table 2. Views of Patients toward Assessment of Their Health Status

Hospital Foods and Food Services	Hospital	Yes		No		Uncertain	
		N	%	N	%	N	%
Is your weight measured during hospitalization?	Ghaem Hospital (2010)	24	36.4	40	60.5	1	1.5
	Ghaem Hospital (2016)	74	74	24	24	2	2
	Imam Reza Hospital (2016)	6	6.4	83	88.3	5	5.3
	Total (2016)	80	41.24	107	55.15	7	3.61
Is your height measured during hospitalization?	Ghaem Hospital (2010)	13	19.7	52	78.8	0	0
	Ghaem Hospital (2016)	74	74	24	24	2	2
	Imam Reza Hospital (2016)	0	0	95	97.9	2	2.1
	Total (2016)	74	37.56	119	60.41	4	2.03
Have you been enquired about your dietary needs?	Ghaem Hospital (2010)	14	21.2	50	75.8	1	1.5
	Ghaem Hospital (2016)	50	50	35	35	15	15
	Imam Reza Hospital (2016)	31	31	41	41	28	28
	Total (2016)	81	40.5	76	38	43	21.5

The views of the patients toward convenience, hospital hygiene, and helpfulness of the staff are shown in Table 3., the results showed that 42.4% of the patients always received an proportionate food according to their dietary needs, 21.2% were served as such most of the time, 1.5% were served seldom, and 7.5% never received proportionate food with their dietary needs. In 2016, 50% of the foods provided to the patients at Ghaem Hospital and 10% of the foods served at Imam Reza Hospital were always proportionate to the dietary needs of the patients. Moreover, 75.8% of the patients in 2010 and 86% of the patients in 2016 at Ghaem Hospital and 46.5% of the patients at Imam Reza Hospital in 2016 were able to wash their hands before the served meals.

Table 3. Views of Patients toward Comfort, Hospital Hygiene, and Staff Help

Hospital Foods and Food Services	Hospital	Always		Usually		Seldom		Never	
		N	%	N	%	N	%	N	%
*Is the food proportionate to your dietary needs?	Ghaem Hospital* (2010)	28	42.4	14	21.2	1	1.5	5	7.5
	Ghaem Hospital^ (2016)	50	50	0	0	0	0	14	14
	Imam Reza Hospital¶ (2016)	10	10	13	13	1	1	1	1
	Total (2016)	60	30	13	6.5	1	0.5	15	7.5
Were you able to wash your hands before eating your meal?	Ghaem Hospital (2010)	50	75.8	9	13.6	1	1.5	5	7.5
	Ghaem Hospital (2016)	86	86	13	13	1	1	0	0
	Imam Reza Hospital (2016)	46	46.5	35	35.4	14	14.1	4	4
	Total (2016)	132	66.33	48	24.12	15	7.54	4	2.01
If you needed help before your meal, did the staff help you for your comfort?	Ghaem Hospital** (2010)	6	9.1	8	12.1	1	1.5	7	10.5
	Ghaem Hospital‡ (2016)	1	1	1	1	4	4	9	9
	Imam Reza Hospital¥ (2016)	2	2	1	1	15	15	23	23
	Total (2016)	3	1.5	2	1	19	9.5	32	16
Are you satisfied with the cleanness of your eating place?	Ghaem Hospital (2010)	50	75.8	8	12.1	3	4.5	5	7.5
	Ghaem Hospital (2016)	92	92	7	7	1	1	0	0
	Imam Reza Hospital (2016)	45	45	39	39	14	14	2	2
	Total (2016)	137	68.5	46	23	14	7	2	1
Did the staff help you eat your meal?	Ghaem Hospital*** (2010)	15	22.7	7	10.6	2	3	3	4.5
	Ghaem Hospitalβ (2016)	1	1	1	1	4	4	9	9
	Imam Reza Hospital€ (2016)	34	34.3	22	22.2	1	1	0	0
	Total (2016)	35	17.59	23	11.56	5	2.51	9	4.52
Are you satisfied with the time of food distribution?	Ghaem Hospital (2010)	50	75.8	8	12.1	1	1.5	7	10.2
	Ghaem Hospital (2016)	66	66	31	31	3	3	0	0
	Imam Reza Hospital (2016)	60	61.2	29	29.6	9	9.2	0	0
	Total (2016)	126	63.64	60	30.3	12	6.06	0	0
Have you been examined by a physician or nurse during mealtime?	Ghaem Hospital (2010)	1	1.5	1	1.5	3	4.5	60	90.9
	Ghaem Hospital (2016)	3	3	12	12	0	0	85	85
	Imam Reza Hospital (2016)	0	0	0	0	20	20.8	76	79.2

	Total (2016)	3	1.53	12	6.12	20	10.2	161	82.15
Did you have enough time for your meal?	Ghaem Hospital (2010)	56	84.8	7	10.6	0	0	2	3
	Ghaem Hospital (2016)	96	96	3	3	1	1	0	0
	Imam Reza Hospital (2016)	70	70.7	24	24.2	5	5.1	0	0
	Total (2016)	166	83.42	27	13.57	6	3.01	0	0
If you missed one of your meals, would you receive a replacement?	Ghaem Hospital**** (2010)	33	50	5	7.6	1	1.5	9	13.6
	Ghaem Hospital© (2016)	35	35	6	6	11	11	19	19
	Imam Reza Hospital® (2016)	0	0	0	0	12	12.8	82	87.2
	Total (2016)	35	18.04	6	3.1	23	11.85	101	52.06
*****Did you receive the meal you ordered?	Ghaem Hospital (2010)	NA	NA	NA	NA	NA	NA	NA	NA
	Ghaem Hospitalᵘ (2016)	35	35	6	6	11	11	19	19
	Imam Reza Hospitalᴰ (2016)	0	0	0	0	13	13.1	86	86.9
	Total (2016)	35	17.59	6	3.01	24	12.06	105	52.76
Could you get fresh fruits when you wanted?	Ghaem Hospital (2010)	0	0	0	0	0	0	65	100
	Ghaem Hospital (2016)	0	0	0	0	0	0	100	100
	Imam Reza Hospital (2016)	0	0	0	0	13	13.1	86	86.9
	Total (2016)	0	0	0	0	13	6.53	186	93.47
Could you receive beverages between meals?	Ghaem Hospital (2010)	0	0	0	0	0	0	65	100
	Ghaem Hospital (2016)	0	0	0	0	0	0	100	100
	Imam Reza Hospital (2016)	0	0	0	0	5	5.1	93	94.9
	Total (2016)	0	0	0	0	5	2.52	193	97.48
Could you receive snacks between meals?	Ghaem Hospital (2010)	0	0	0	0	0	0	65	100
	Ghaem Hospital (2016)	0	0	0	0	0	0	100	100
	Imam Reza Hospital (2016)	0	0	0	0	12	12.6	83	87.4
	Total (2016)	0	0	0	0	12	6.15	183	93.85
Could you receive fresh water during the day?	Ghaem Hospital (2010)	NA	NA	NA	NA	NA	NA	NA	NA
	Ghaem Hospital (2016)	86	86	7	7	3	3	4	4
	Imam Reza Hospital (2016)	71	71.7	24	24.2	4	4	0	0
	Total (2016)	157	78.89	31	15.58	7	3.52	4	2.01
Are you satisfied with the temperature of food?	Ghaem Hospital (2010)	43	65.2	11	16.7	2	3	9	13.6
	Ghaem Hospital (2016)	60	60	38	38	2	2	0	0
	Imam Reza Hospital (2016)	55	55.6	36	36.4	8	11.1	0	0
	Total (2016)	115	57.79	74	37.19	10	5.02	0	0
Are you satisfied with the amount of food?	Ghaem Hospital (2010)	17	25.8	45	68.2	2	3	1	1.5
	Ghaem Hospital (2016)	17	17	82	82	0	0	1	1
	Imam Reza Hospital (2016)	54	54.5	34	34.3	2	0	11	11.1
	Total(2016)	71	35.68	116	58.29	0	0	12	6.03

NA: not applicable
*21.2% did not require special diets; 4.5 % did not know the answer.
^29% did not need special diets; 7% did not know the answer.
¶63% did not need special diets; 12% did not know the answer.
**45.5% did not need help to become comfortable; 19.7% did not ask for help.
ᵗ85% did not need to become comfortable.
¥59% did not need help to become comfortable; *** 45.5% did not need help to eat; 12.1% did not ask for help.
ᵝ85% did not need help to eat.
€42% did not need help to eat.
****25.8% did not miss any meals.
©29% did not miss any meals.
®0.9% did not miss any meals.
ᵘ29% did not order any meals.
ᴰ0.16% did not order any meals.

The initial assessment at Ghaem Hospital in 2010 revealed that 61.5% of the patients considered the served hospital food to be good or excellent. No significant differences were reported between the selected hospitals, and they had similar food service systems, as well as a similar trend of patients. In the next assessment in 2016, the obtained results indicated that 60.8% of the patients in the hospitals considered the quality of the served foods to be good or excellent. Overall, 39% and 82.8% of the patients admitted in Ghaem Hospital and Imam Reza Hospital considered the quality of the served food to be good or excellent. The highest rate of patient satisfaction was with the adequate time of the meals (96.5%). On the other hand, 94.5%, 93.5%, and 93% of the patients stated that the temperature of the food, amount of the food, and time of serving were respectively excellent or good.

Table 4. Views of Patients toward Quality of Hospital Food Services

Hospital Foods and Food Services	Hospital	Excellent		Good		Acceptable		Poor		Very Poor	
		N	%	N	%	N	%	N	%	N	%
What is your satisfaction level with the taste of food?	Ghaem Hospital (2010)	10	15.2	21	31.8	26	39.4	3	4.5	5	7.6
	Ghaem Hospital (2016)	5	5	44	44	25	25	22	22	4	4
	Imam Reza Hospital (2016)	14	14.4	58	59.8	24	24.7	1	1	0	0
	Total (2016)	19	9.65	102	51.78	49	24.87	23	11.67	4	2.03
What is your satisfaction level with the appearance of food?	Ghaem Hospital (2010)	10	15.2	37	56.1	11	16.7	2	3	5	7.6
	Ghaem Hospital (2016)	4	4	38	38	43	43	12	12	3	3
	Imam Reza Hospital (2016)	12	12	65	65	23	23	0	0	0	0
	Total (2016)	16	8	103	51.5	66	33	12	6	3	1.5
What is your satisfaction level with the healthiness of food?	Ghaem Hospital (2010)	16	24.2	34	51.5	11	16.7	1	1.5	3	4.5
	Ghaem Hospital (2016)	3	3	48	48	41	41	7	7	1	1
	Imam Reza Hospital (2016)	14	14	66	66	18	18	2	2	0	0
	Total (2016)	17	8.5	114	57	59	29.5	9	4.5	1	0.5
What is your overall satisfaction level with the food quality?	Ghaem Hospital (2010)	9	13.6	34	51.5	17	25.8	2	3	3	4.5
	Ghaem Hospital (2016)	3	3	36	36	35	35	20	20	6	6
	Imam Reza Hospital (2016)	19	19.2	63	63.6	17	17.2	0	0	0	0
	Total (2016)	22	11.05	99	49.75	52	26.13	20	10.05	6	3.02

The initial assessment at Ghaem Hospital in 2010 demonstrated that 84.6% of the patients were completely satisfied with the food temperature at all times, whereas 15.4% were dissatisfied. The quantity of the served meals was reported to be satisfactory to 92.3% of the patients, while the taste of the food was considered acceptable to only 61.5%. In addition, the appearance of the meals was described as good by 92.3% of the patients and totally unpleasant by 7.7%. On the other hand, the patients were not served fresh fruits (92.0%), beverages (96.5%), and snacks (91.5%) between the main courses. Therefore, they used the snacks provided by their companions (e.g., industrial juices, fruits, biscuits, and sweets). According to the initial assessment at Ghaem Hospital in 2010, the patients were not served snacks or fruits during hospitalization, and 80.3% used the snacks provided by their companions.

According to the findings of the current research, the computability of the served foods and dietary habits of the patients was 30% (50% at Ghaem Hospital and 10% at Imam Reza Hospital in 2016), while this rate was estimated at 42.4% in the initial assessment at Ghaem Hospital in 2010. In 2010, the overall patient satisfaction was significantly correlated with asking for a special diet, washing hands, helping the patients to become comfortable, place of eating the meals, tidiness, helping the patients eat instantly, disturbance by the nurses or physicians, time of the meals, temperature and amount of the food (P<0.001), taste of the food (P=0.005), and eating aids and healthiness (P=0.02). However, in 2016, the overall patient satisfaction was correlated with staff help, performing examinations by the physicians during the mealtime, adequate time for serving the meals, and providing fresh water to the patients at both hospitals (P<0.0001).

Discussion

According to the results of the present study, the overall satisfaction of the patients with the quality of the hospital food services was 60.8% in the selected hospitals. The highest level of satisfaction was with hygiene observance and the appearance and taste of the foods, respectively. Overall patient satisfaction was significantly correlated with food temperature, quantity, taste, and appearance, replacement meals, and dietary compatibility.

There are a few hospital audits in Iran, which have been focused on determining the food quality indices in hospitals. According to a study conducted in Iran, 83.5% of patients were satisfied with selecting their favorite meals at the hospital (9). Nutritional risk is associated with the increased length of hospital stay (10), while in the mentioned study, less than half of the patients were weighed during hospitalization.

Hospital food service plays a key role in the care of patients, and several factors should be considered in this regard. For instance, increasing the amount of food intake in hospitalized patients is associated with reduced mortality rate and length of hospital stay (7). High quality of hospital meals is associated with the reduction of food waste, length of hospital stay, malnutrition, and the imposed costs on the

healthcare system. Therefore, instead of increasing the portion sizes, it is preferred to provide foods with higher calorie contents and quality in order to avoid food waste.

An indicative model of patient satisfaction based on the Plate System of Delivery and Trolley System of Delivery food service systems showed significant associations between patient satisfaction, food temperature, and food texture. Furthermore, the results of the mentioned study demonstrated that the Trolley System of Delivery enabled all foods to have a better texture, which in turn enhanced patient satisfaction through allowing the patients to select their preferred food upon consumption (6).

Patient dissatisfaction with the taste and appearance of hospital foods could be due to the unfamiliarity of the food, changes in the daily diet, medical conditions or the effects of medication. The patients who are aware of the advantages of a healthy diet on the treatment success and earlier recovery have a greater incentive to eat. Therefore, developing a nutritional program based on the general patterns of health and increasing the quality of food could definitely affect the recovery process and reduce the length of hospital stay.

In the current research, only 36.5% of the patients considered their daily diet to be compatible with their medical condition. This finding indicated that the food preparation personnel in the selected hospitals required further training regarding various regimens and communication skills. Malnutrition and poor food intake are independently associated with in-hospital mortality; therefore, a standard regimen based on scientific principles and the nutritional needs of patients is essential to the prevention of malnutrition (11).

According to a theory, standard hospital diets may be designed to meet the nutritional requirements of patients, while it may not be practically consumed by the individuals who are unwell or have a suppressed appetite, and the nutritional needs of patients remain unmet (12, 13). Menu planning should also be considered based on the dietary needs of patient populations. Patients provided with foods that they are familiar with and enjoy are more likely to consume the foods, ensuring that they receive the nutrition provided on the plate. In addition, the provision of wider choices is more likely to meet the food preferences and dietary needs of individuals (11). Unfortunately, few hospitals in Iran provide menu planning, which could affect the food choice and food intake of patients.

Although the five food groups (especially fruits) are highly important, the results of the present study indicated that 93.47% of the patients never received fruits during hospitalization. Food variety, flexibility, and interest are possible through the addition of snacks and beverages, while in the current research, 93.85% and 97.48% of the patients stated that they never received snacks and beverages between meals, respectively.

The mealtime should trigger positive sensations in patients. The results of a recent study in this regard indicated that having a flexible time to order food service by patients could result in the cost-effective improvement of clinical outcomes (14). However, in the present study, the meals were served at specific times in accordance with the catering program of the hospitals.

In the present study, Cronbach's alpha was used to assess the internal consistency, which has been assessed in only a few studies (1). Although the patients received a replacement meal in the case of absence during the food serving hours, they had complaints about cold food. Therefore, it is recommended that all hospital wards be equipped with microwave devices for the heating of foods.

One of the limitations of the present study was that we did not consider the amount of food waste. It is recommended that further investigations in this regard be focused on the standardization and satisfaction indicators of hospitalized patients regarding the quality of hospital meals.

Conclusion

Patient satisfaction with hospital food service is essential to evaluating the efficacy of the applied strategies. According to the results, factors such as food temperature, quantity, taste, and appearance, replacement meals, and diet compatibility were significantly correlated with the overall satisfaction of patients with food services at Ghaem Hospital and Imam Reza Hospital in Mashhad, Iran. These findings could help dieticians to focus on specific indicators in

order to improve hospital food catering services and maximize patient satisfaction with hospital food.

Acknowledgments

Hereby, we extend our gratitude to the Department of Clinical Nutrition, kitchen staff, and nurses at Ghaem Hospital and Imam Reza Hospital affiliated to Mashhad University of Medical Sciences, Iran for assisting us in this research project.

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