



## Comparison of Patient Satisfaction with Self-operating Food Services and Contracting Food Services in the Teaching Hospitals of Tabriz, Iran



Ahmadreza Rasouli<sup>a</sup> | Vida Ebrahimi<sup>b</sup> | Hamidreza Hamedi Behtash<sup>c</sup> | Asieh Panjeshahin<sup>d</sup> | Morteza Kazemi<sup>e</sup> | Ali Tarighat-Esfanjani<sup>c\*</sup>

*a. Department of Nutrition, School of Health, Qazvin University of Medical Sciences, Qazvin, Iran.*

*b. Department of Pharmaceutical Biotechnology, School of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran.*

*c. Nutrition Research Center, Faculty of Nutrition and Food Sciences, Tabriz University of Medical Sciences, Tabriz, Iran.*

*d. Department of Nutrition, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*

*e. Department of Biostatistics and Epidemiology, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran.*

**\*Corresponding author:** Nutrition Research Center, Faculty of Nutrition and Food Sciences, Tabriz University of Medical Sciences, Tabriz, Iran. Postal code: 5166614711.

E-mail address: tarighata@tbzmed.ac.ir

### ARTICLE INFO

**Article type:**  
Original article

**Article history:**  
Received: 4 November 2020  
Revised: 13 December 2020  
Accepted: 28 December 2020

DOI: [10.29252/jhehp.7.1.8](https://doi.org/10.29252/jhehp.7.1.8)

**Keywords:**  
Food satisfaction  
Self-operating food service  
Contractor food service

### ABSTRACT

**Background:** Nutritional satisfaction is essential to the reduction of hospital costs given the faster recovery of patients. Food satisfaction may be influenced by self-operating or contracting food service management. This descriptive study was aimed to assess patient satisfaction with the dinner served in two hospitals of Tabriz, Iran by contracting and a self-operating system in 214 participants during April-May 2014.

**Methods:** Data were collected using a researcher-made questionnaire with 20 items on demographic and food satisfaction data. Data analysis was performed in SPSS, and the intragroup and intergroup differences were evaluated and compared at the significant *P*-value of less than 0.05.

**Results:** Overall food satisfaction was significantly higher in hospital A (contracting food service) compared to hospital B (self-operating food service) ( $P < 0.001$ ). In addition, a negative correlation was observed between food satisfaction and the literacy level of the subjects. Having a companion also reduced the satisfaction score of the patients.

**Conclusion:** Our findings could provide useful information for the legislation of new policies to increase the food satisfaction of inpatients and exploit its advantages, while contributing to the decision-making regarding the choice of financial support for hospital food services.

## 1. Introduction

Progress toward the increased provision of qualified food is an important responsibility of every hospital [1]. Food

Service management could be facilitated through self-operating or contracting systems. The financial management of hospital food services affects food costs and patient satisfaction, and the related factors should be balanced to



*Archive of SID*

achieve the optimal satisfaction of inpatients with hospital food services. The assessment of nutritional satisfaction is a critical tool for selecting the most efficient food service facilitators for hospitals [2].

Hospital malnutrition is a grave concern in patients and a common phenomenon in several developing and developed countries [3]. The prevalence of malnutrition is estimated at 25–40% in hospitalized patients [4]. It is defined as a condition of poor, inadequate or unbalanced food intake [5].

Inadequate nutrition often occurs in hospitals to some extent among all diagnostic classifications and all age groups of patients [6]. It is a high-impact state, which could influence various clinical outcomes, including the immune response, healing process, disease severity, need for additional drugs, risk of infection, length of hospital stay, risk of readmission, and survival expectation [7]. Therefore, this challenge should be properly addressed due to the subsequent financial losses and psychiatric wellbeing of patients [8].

Nutritional satisfaction plays a pivotal role in the recovery process and economization of hospital costs [9]. A common approach to analyzing the quality of meeting the standards of hospital food service is to determine the level of food satisfaction in patients [10]. Healthy, adequate, and qualified food is a fundamental right of patients as the ingredients used in hospital meals greatly contribute to patient recovery [11]. The provision of healthy and qualified meals by healthcare centers and implementation of 'gold standards' in nutritional care would encourage patients to have adequate food intake, support their recovery process, and improve their quality of life [12]. Food and other aspects of food services delivery largely influence the overall perception of patients toward their hospitalization experience and the daily commitment of the healthcare team to the delivery of appropriate food to patients [13].

The foremost goal of a hospital food service is to provide inpatients with nutritious meals that are beneficial for their recovery and health, which is also an example of healthy nutrition for preparing hospital menus that are tailored to the specific health conditions of various patients. When meals are carefully planned and customized to meet the specific needs of patients, the goals of a hospital food service are achieved [14].

As the healthcare industry is increasingly competitive and patients are becoming more discriminating about quality, patients are redefined and recognized as customers at least in the setting of a private healthcare insurance system, such as in the United States [15]. Hospital menus should be primarily based on the clinical needs and preferences of patients, while factors such as the variety, quality, and taste of food should also be taken into account in this regard. Moreover, the hospital environment and the pleasant,

helpful attitude of the nursing staff are important elements of hospital service quality [16].

Hospital food service is a complicated system in the hospitality industry, which encompasses several interrelated variables and aspects. However, surveys of food satisfaction are limited and often contain few general questions about food services, and their findings do not present adequately detailed feedback for the precise evaluation of patients' needs and preferences. Awareness of patients' expectations is essential to the monitoring and assessment of the effect of food service innovations and food service satisfaction outcomes in patients. In the current research, a new approach to food satisfaction assessment was used based on specific questionnaire items rather than only assessing the physical properties of food and also by considering the recipe of the serving service.

A holistic insight into the nutritional service of hospitals is regarded as the optimal approach to quality assessment and also results in a better experience of hospital stay for patients. We attempted to design a questionnaire that covers more food satisfaction aspects compared to previous studies. In addition, self-operating and contracting food services were compared.

The present study aimed to evaluate patient satisfaction with the self-operating and contracting food services that provided the dinner served for one month in the hospitals in Tabriz, Iran. The study was performed in two main teaching hospitals of this city, one of which had a contracting food service provider, and the other was managed by self-operating food services.

## 2. Materials and Methods

This descriptive study was conducted on the patients admitted to two hospitals with or without a hospitalization history in Tabriz during April–May 2014. In hospital A, food services were financially supported by a contractor, while the food services was self-operating in hospital B. In total, 214 participants were selected almost equally from hospitals A (n=106) and B (n=108), including 129 females and 85 males (41.5% and 38% from hospitals A and B, respectively). Notably, the consent of the subjects was obtained prior to enrollment. Questionnaires were completed anonymously, and the participants were assured of data confidentiality. In addition, participation in the study was voluntary.

The demographic data of the patients included the hospital (a/B), gender, education level, occupation status, location, ability to eat, food type, and history of hospitalization, which were collected using a questionnaire or by asking the participants [17]. To examine the satisfaction of the subjects with the food service of dinner in the hospital, another questionnaire was designed by the researchers, which

## Archive of SID

consisted of 20 items. The questionnaire items were queried to be scored from zero (very weak) to 10 (perfect), while also assessing the food color/appearance, food smell, food taste, food temperature, degree of doneness, salt amount, fat amount, portion size, dietary diversity, overall acceptance, time of food delivery, adequate time to eat, food container, timely container collection, staff hygiene state, staff behavior, food hygienic state, cleanliness of the surrounding area of food, relaxing conditions while eating, food residue collection, and staff help for eating.

### 2.1. Statistical Analysis

Data analysis was performed in SPSS version 24. The quantitative variables were expressed as mean and standard deviation (SD), and the qualitative variables were expressed as percentages. The normality of the quantitative data was evaluated using the Kolmogorov-Smirnov test, and the differences in the qualitative variables between the study groups were assessed using Chi-square. Moreover, paired sample t-test was used to evaluate the changes within each group, and independent samples t-test was applied to compare the mean values between the groups. The analysis of covariance (ANCOVA) was also employed in case contaminants had to be controlled. If data were not distributed normally, nonparametric tests were used. In all the statistical analyses, the P-value of less than 0.05 was considered significant, and the P-value of less than 0.001 was considered highly significant.

## 3. Results and Discussion

In total, 214 inpatients selected from hospitals A and B in Tabriz were enrolled in the study. The patients were almost equally divided into the study groups. The demographic analysis revealed that 38% (n=41) and 41.5% of the patients (n=44) were male in hospitals B and A, respectively. In addition, 44 patients at hospital B and 41 patients at hospital A were rural residents. Among the samples, 93.5% (n=101) from hospital B and 91.5% (n=97) from hospital A were able to eat. In hospitals B and A, 82.3% (n=89) and 75.5% of the patients (n=80) had normal diet, respectively (Table 1).

According to the findings, the patients admitted to hospital B were younger than the patients admitted to hospital A on average (Table 2). The mean length of hospital stay in hospital B was 4.65 days, while it was 7.1 days in hospital A. Additionally, The mean length of the previous hospitalization in the patients of hospital B was almost six days longer than the average stay in hospital A.

Table 3 shows the comparison of the mean food satisfaction score between the two hospitals in terms of different study variables based on independent t-test. Accordingly, the mean score of satisfaction with the dinner service at hospital A was higher compared to hospital B in

**Table 1:** Frequency (percentage) of research variables in hospitals A and B

Variables		Hospitals	
		A	B
Gender	Female	62 (58.5)	67 (62)
	Male	44 (41.5)	41 (38)
Education	Illiterate	43 (40.6)	6 (5.6)
	Lower than diploma	38 (35.8)	70 (64.8)
	Diploma	16 (15.1)	25 (23.1)
	Associate degree and higher	9 (8.5)	7 (6.5)
Job	Manual Worker	5 (4.7)	5 (4.6)
	Free	5 (4.7)	13 (12)
	Other	60 (56.6)	84 (77.8)
	Employee	36 (34)	6 (5.6)
Location	Rural	41 (38.7)	44 (40.7)
	Urban	65 (61.3)	64 (59.3)
Does the patient have a companion?	No	33 (31.1)	13 (12)
	Yes	73 (68.9)	95 (88)
Ability to eat	No	9 (8.5)	7 (6.5)
	Yes	97 (91.5)	101 (93.5)
Food type	Specialized diet	26 (24.5)	19 (17.6)
	Normal diet	80 (75.5)	89 (82.3)
Hospitalization history	No	49 (46.2)	46 (42.6)
	Yes	57 (53.8)	62 (57.4)

both male and female patients, and the difference in this regard was considered statistically significant. Furthermore, the mean difference in the score of food satisfaction was considered significant between the illiterate and undergraduate patients admitted to hospitals A and B.

According to our findings, food satisfaction in hospital A was highly significant ( $P < 0.001$ ). In terms of education level, no significant difference was observed in the mean score of food satisfaction between the two hospitals. With the exception of laborers, the mean score of food satisfaction in the other occupational groups in hospital A was higher compared to hospital B. However, no significant difference was denoted in the mean food satisfaction score of the patients who were unable to eat between the two hospitals. Table 4 shows the correlation-coefficients between the food satisfaction scores and the variables of age, current hospital stay, and history of hospital stay. The assessment of the correlation between these variables only indicated a significant correlation between the satisfaction score and current hospital stay in the patients admitted to hospital A, which was considered positive and showed higher food satisfaction with increased length of hospital stay.

As can be seen in Figure 1, the mean scores of food satisfaction in all the education levels were higher in hospital A compared to hospital B. Furthermore, Figure 2 shows that the mean food satisfaction score of the patients who were accompanied by a family member was higher in hospital B compared to hospital A.

**Table 2:** Mean age and previous/current hospitalization in patients of hospitals A and B

Variables	Hospital	
	A	B
Age	48.88(17.68)	22.83(10.17)
Current hospitalization stay	7.1(7.4)	4.65(5.6)
Previous hospitalization stay	6.61(4.43)	12.77(25.49)

**Table 3:** Comparison of mean food satisfaction scores regarding research variables in hospitals A and B

Variables		A	B	Pvalue*
		Mean (SD)	Mean (SD)	
Gender	Female	163.82(29.43)	143.81(28.4)	<0.001
	Male	168.5(17.04)	147.90(23.04)	<0.001
Education	Illiterate	169.48(17.38)	132.17(31.75)	<0.001
	Lower than diploma	168.19(27.70)	147.79(22.82)	<0.001
	Diploma	160.50(29.35)	144.20(33.70)	0.121
	Associate degree and higher	147.22(31.64)	136.57(27.77)	0.493
Job	Manual Worker	160.60(18.44)	151.60(24.44)	0.529
	Free	177.80(12.02)	142.08(25.85)	0.01
	Other	164.43(29.64)	145.48(26.91)	<0.001
	Employee	166.94(17.82)	145.67(28.45)	0.019
Location	Rural	166.29(17.42)	148.48(25.66)	<0.001
	Urban	165.33(29.27)	143.22(26.98)	<0.001
Does the patient have a companion?	No	176.41(22.99)	132.77(30.55)	<0.001
	Yes	160.96(24.78)	147.08(25.55)	0.001
Ability to eat	No	159.22(31.83)	142.57(51.61)	0.439
	Yes	166.33(24.57)	145.55(24.26)	<0.001
Food type	Specialized diet	169.81(30.79)	132.79(39.10)	0.001
	Normal diet	164.35(23.07)	148.04(22.29)	<0.001
Hospitalization history	No	165(30.16)	146.17(24.19)	<0.001
	Yes	166.32(20.21)	144.76(28.20)	0.001

\* Independent Samples Test

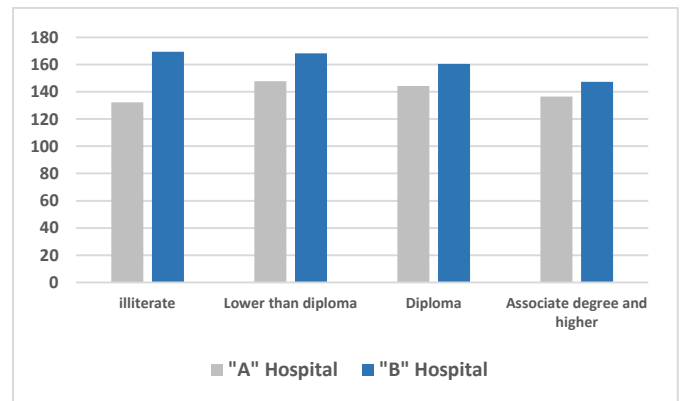
According to the results of the present study, the moderators of food intake and quality of life in long-term care settings included the provision of adequate staff assistance at mealtimes, sociopsychological aspects of the dining experience, the option to choose meals and express personal preferences, appetite, sensory ability, and dissatisfaction with institutional diets and food. Studies of acute care hospital clients have indicated that taste, flavor, temperature, variety, and presentation are the main determinants of food quality, and food quality is the most salient influence of overall food service satisfaction [18, 19]. Our survey showed that several tools could be used to measure and monitor the perceived quality of hospital food service, which may be qualitative or quantitative.

In the current research, 214 hospitalized patients were asked to complete the questionnaire. According to the obtained results, the food service quality seemed superior in hospital A, which was associated with higher food satisfaction among the inpatients of this hospital. Other reasons for this satisfaction could be the proper behavior of the staff, hygienic food serving, and better food taste.

**Table 4:** Correlations between food satisfaction score, age, and previous/current hospitalization in patients of hospitals A and B

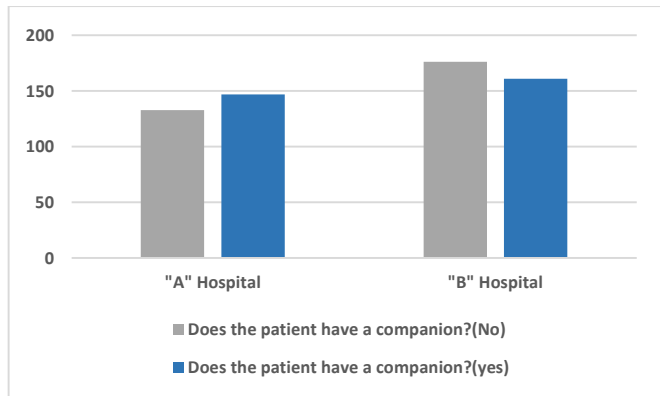
Variables	Hospital	
	A	B
Age	0.089	-0.178
Current hospitalization stay	0.262*	0.159
Previous hospitalization stay	-0.123	0.003

Notes: \* P < 0.05



**Figure 1:** Food satisfaction scores in hospitals based on education level

Malnutrition is a common issue among hospitalized patients due to suffering from a severe disease, which is a major cause of undernutrition [20]. Therefore, highly qualified food services and hospital staff attempting to serve food optimally play a pivotal role in increasing the appetite of hospitalized patients, which contributes to sufficient nutrient intake and disease improvement in the patients. In the present study, the food service system in hospital A was done by the contracting system, and the higher food satisfaction in this hospital confirmed the more successful performance of contractor-directed food services.



**Figure 2:** Food satisfaction scores based on having a companion in hospitalized patients

In the study by El-Sherbiny *et al.* (2017), food service satisfaction was measured based on an interview questionnaire in the hospitals of Fayoum (Egypt) to assess the determinants of food satisfaction [8]. The factors identified in the mentioned study were also evaluated in the current research. In another study performed by Ovčina *et al.* (2018) in Bosnia and Herzegovina, food satisfaction was evaluated mainly based on visual food appearance, which was also fully covered in the questionnaire applied in our study [21]. In another study conducted by Safarian *et al.* (2018) in Mashhad (Iran), Wales questionnaire [22] was employed for food satisfaction analysis, the items of which were incorporated into our data collection instrument [17]. According to the results of the present study, the mean satisfaction score was correlated with the education level of the patients, and food satisfaction decreased with higher literacy. Furthermore, the variable of having a companion significantly reduced food satisfaction. However, the food satisfaction score was not correlated with gender, hospitalization history, occupation status, food type, and the ability to eat.

### Limitations of the Study

Measurement of food service satisfaction is a subjective process, and several variables (e.g., social interaction, mood, and pain) may influence food service satisfaction in the clinical setting. In this study, criterion validity could not be assessed due to the lack of a 'gold standard' measure of food service satisfaction. Although the new instrument and analytical methods could be applicable to larger populations, our findings are rather context-specific, particularly given the use of convenience sampling for selecting the patients.

### 4. Conclusion

Measurement of patient satisfaction with hospital food services is an important approach to the cost-efficient analysis of financial food service management in hospitals,

and gaining a holistic insight into various aspects of this satisfaction could help determine the direction of further food satisfaction investigations.

### Authors' Contributions

A.R., V.E., H.H.B., and A.P., collected the data; A.R., and V.E., drafted the manuscript, M.K., performed the statistical analysis, and A.T.E., reviewed and edited the manuscript. All the authors read and approved the final manuscript.

### Conflicts of Interest

The Authors declare that there is no conflict of interest.

### Acknowledgements

Hereby, we extend our gratitude to Tabriz University of Medical Sciences for assisting us in this research project (Code: d/97/5/170).

### References

- Kolasa KM. Creating and Sustaining a Healthy Food Environment in Hospitals Contracting With a Food Service Management Company. *Nutr Today*. 2018; 53(1): 5-12.
- Burns J, Gregory S. Changing Foodservice Systems: a Balancing Act between Patient Satisfaction and Cost. *J Foodserv Bus Res*. 2007; 10(4): 63-78.
- Lovesley D, Parasuraman R, Ramamurthy A. Combating Hospital Malnutrition: Dietitian-Led Quality Improvement Initiative. *Clin Nutr ESPEN*. 2019; 30: 19-25.
- Seljak BK, Mastnak DM, Mrevlje Ž, Veninšek G, Kozjek NR. A Multi-Center Survey on Hospital Malnutrition and Cachexia in Slovenia. *Eur J Clin Nutr*. 2020; 74(3): 419-26.
- Correia MI, Perman MI, Waitzberg DL. Hospital Malnutrition in Latin America: A Systematic Review. *Clin Nutr*. 2017; 36(4): 958-67.
- Russell CA, Elia M. Nutrition Screening Survey in the UK in 2008. *BAPEN*. 2009.
- Finocchiaro C, Fanni G, Bo S. Risk, Prevalence, and Impact of Hospital Malnutrition in a Tertiary Care Referral University Hospital: a Cross-Sectional Study. *Intern Emerg Med*. 2019; 14(1): 7-9.
- El Sherbiny NA, Ibrahim EH, Hewedi MM. Patients' Satisfaction with Delivered Food Services in Fayoum Hospitals. *EC Nutr*. 2017; 9: 94-104.
- Sahin B, Demir C, Celik Y, Teke AK. Factors Affecting Satisfaction Level with the Food Services in a Military Hospital. *J Med Syst*. 2006; 30(5): 381-7.
- Jessri M, Mirmiran P, Jessri M, Johns N, Rashidkhani B, Amiri P, *et al.* A Qualitative Difference. Patients' Views of Hospital Food Service in Iran. *Appetite*. 2011; 57(2): 530-3.
- Hartwell HJ, Edwards JS, Symonds C. Foodservice in Hospital: Development of a Theoretical Model for Patient Experience and Satisfaction Using One Hospital in the UK National Health Service as a Case Study. *J Foodserv*. 2006; 17(5-6): 226-38.
- Azadi F, Azami SR, Ghaziasgar M, Pakdaman M, Ansari B, Zadeh NS. The Quality of Food Services through Three Various Methods among Selected Hospitals Affiliated To Tehran University of Medical Sciences, Based on the Servqual Model. *J Health Policy Sustainable Health*. 2015; 1(4).

13. Hartwell HJ, Shepherd PA, Edwards JS, Johns N. What do Patients Value in the Hospital Meal Experience? *Appetite*. 2016; 96: 293-8.
14. do Rosario VA, Walton K. Hospital Food Service. In: Meiselman HL, Ed. Handbook of Eating and Drinking: Interdisciplinary Perspectives. *Cham, PA: Springer International Publishing*; 2019. p. 1-27.
15. Mazurenko O, Zemke DM, Lefforge N. Who Is a Hospital's "Customer"? *J Healthc Manag*. 2016; 61(5): 319-33.
16. Chen H, Li M, Wang J, Xue C, Ding T, Nong X, et al. Factors Influencing Inpatients' Satisfaction with Hospitalization Service in Public Hospitals in Shanghai, People's Republic of China. *Patient Prefer Adherence*. 2016; 10: 469.
17. Safarian M, Vafisani F, Alinezhad-Namaghi M, Asadi Z, Seyyed Hamzeh S. Patient Satisfaction with Hospital Food in the Hospitals Affiliated to Mashhad University of Medical Sciences, Iran. *J Nutr, Fasting Health*. 2018; 6(4): 191-7.
18. Wright OR, Capra S, Connelly LB. Foodservice Satisfaction Domains in Geriatrics, Rehabilitation and Aged Care. *J Nutr Health Aging*. 2010; 14(9): 775-80.
19. Dall'Oglio I, Nicolò R, Di Ciommo V, Bianchi N, Ciliento G, Gawronski O, et al. A Systematic Review of Hospital Foodservice Patient Satisfaction Studies. *J Acad Nutr Diet*. 2015; 115(4): 567-84.
20. Pierzak M, Szczukiewicz-Markowska G, Głuszek S. The Problem of Hospital Malnutrition and its Consequences. *Med Stud/Studia Medyczne*. 2020; 36(1): 46-50.
21. Ovcina A, Izetbegović S, Eminović E. Satisfaction of Patients with Hospital Food Services. *J Appl Health Sci*. 2018; 4(1): 29-37.
22. Nagai K, Shibata S, Akishita M, Sudoh N, Obara T, Toba K, et al. Efficacy of Combined Use of Three Non-Invasive Atherosclerosis Tests to Predict Vascular Events in the Elderly; Carotid Intima-Media Thickness, Flow-Mediated Dilation of Brachial Artery and Pulse Wave Velocity. *Atheroscler*. 2013; 231(2): 365-70.