

Client Satisfaction on Hospital Diet Service at Base Hospital Akkaraipattu, Sri Lanka

Mohamed Haniffa Mohamed Azaath

Base Hospital, Sammanthurai, Ministry of Health
azaath18[at]gmail.com

Abstract: ***Introduction:** A clear insight of the aspects of diet satisfaction is crucial to promote health, nutritional status of patients and overall quality of diet service in hospital settings. **Objectives:** Major aims of this study to evaluate the client satisfaction on diet service at Base Hospital Akkaraipattu, to identify the association between overall satisfaction on hospital diet and patients' demographic characteristics and to describe the facilities in the hospital kitchen. **Methods:** A descriptive cross sectional study was carried out to assess client satisfaction. A total of 384 patients who received inpatient care and consume normal diet from 22nd April 2022 to 24th May 2022 were included in this study. Interview administrated questionnaire was used to collect data and data were analyzed by using SPSS software. A checklist was used to collect information regarding available hospital kitchen facilities. **Results:** In this study, 50% of patients neutrally satisfied with the overall quality of food service in hospital. Majority of the patients were neutral with variety, appearance, aroma, freshness, temperature of food and time of food delivery. Although most of them were dissatisfied with texture, tasted of food and temperature of hot drinks. The most satisfied aspects by the patients were the way of food delivery (54.7%), cleanliness of dishes and utensils (57.3%), and attitude and behaviors of food serving staffs (57%). Patient satisfaction on overall quality of food service was significantly associated with gender, age, academic background, and monthly income (p value < 0.05). There was no significant association between marital status, ethnicity, length of hospital stay and overall quality of food service (p value > 0.05). The available human resources at the hospital kitchen are steward, assistant cooks, and cleaner while the chief and senior dieticians, store keeper and head cook are not available. And in the infrastructure, while the raw material receiving area and storage area, special diet area, garbage collection area, adequate space, cooking oven and distribution trolley are not available and all other facilities are available such as preparation area, cooking area, serving area, washing area, administrative area, adequate ventilation, gas, enough light, water supply, solid stainless flooring, steam supply, cutting equipment, weighing machine, grinding machine and mixing machine. Also the main defect of the resource is there is no any permanent place for kitchen. **Conclusion:** Patients were neutrally satisfied with the overall quality of diet service at Base Hospital Akkaraipattu. Taste, texture and temperature of hot foods were dissatisfied by the most patients which need to improved. To enhance the food quality, have to recruit well trained cooks for preparing foods. Regular monitoring and evaluation of the quality of food service in hospitalized patients are important to improve the overall quality of diet service.*

Keywords: Aspects of food quality, Client satisfaction, Hospital diet service, Kitchen facilities

1. Introduction

Diet service has been recognized as an important part of health care services since the time of Florence Nightingale who highlighted that food may play in the recovery of patients. The ultimate aim of hospital food services is to provide inpatients with nutritious meals that are important for their recovery, health and act as a healthy nutrition model to patients' specific health condition (7). Foods those are provided by health care settings must be safe as contaminated foods can cause potentially serious health risks. Lack of food intake during hospitalization may increase the risk of malnutrition that lead to higher morbidity and mortality. A study suggested that patients who consume lesser amount of food ($<25\%$) provided by hospitals, found to be a significantly longer period of hospital stay (1). Barton et al reported that 40% of food that offered in hospitals were wasted. Inadequate food intake highly reported in many hospitals in Sri Lanka because of several reasons including quality and sensory properties of food are poor (15). Diet satisfaction is multidimensional and difficult to evaluate (28). Studies suggested that plate wastage is a common issue faced by hospital catering in worldwide. Client satisfaction on overall quality of food service and the sufficiency of the meals are essential components in successful operation of hospital food services (10). Overall quality of food service depends on variety of food given. Appearance, aroma, texture, freshness, taste,

temperature of food as well as service standards such as time of food delivery, way of food delivery, cleanliness of dishes and utensils, attitude and behaviors of food serving staffs (12).

Research has proven that client satisfaction on hospital diet service can be improved by interventions the improve the quality of food and meal delivery which lead to increase the consumption of whole meal and reduce food wastage (16). All government hospital in Sri Lanka offer diet in free of charge to the inward patients and only minority of patients depend on hospital diet service. A study conducted in Sri Lanka revealed that only 27% of inward patient consume hospital diet (12). The major reasons for lack of food consumption in hospitals are the tastelessness, unpleasant aroma, prestige issues among people.

According to the general circular published by the Ministry of Health, Sri Lanka in 2015, a patient's diet for a day is the entire requirement of feed for a patient for a period of 24 hours starting from 12 noon on a particular day to 12 noon on the following day. As the diet is regarded as a part of treatment, suitable diet for patient is determined by the medical officer during morning ward round and also head of the institution is expected to pay a special attention in ordering, accounting, controlling and economizing diet.

Volume 11 Issue 8, August 2022

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

A number of food service systems are followed in provision of hospital meals based on the methods of food preparation and way of meal delivery (10). The traditional food preparing methods are providing freshly cooked meals by using locally available ingredients. There are newer methods of preparing foods such as precooked, frozen, or chilled products which need to be reheated upon delivery at the time of use. The most common forms of food delivery, plated meal service which is meals are served on plates in kitchen and bulk meal service which is meals deliver in bulk to wards.

Objectives

This study is aimed to evaluate the client satisfaction on diet service at Base Hospital Akkaraipattu, to identify the association between overall satisfaction on hospital diet and patients' demographic characteristics and to describe the facilities in the hospital kitchen.

2. Methodology

A descriptive cross sectional study was carried out to assess client satisfaction on hospital diet service at Base Hospital Akkaraipattu. Patients who received in-patient care minimum for 3 days, consume normal diet from 22nd April 2022 to 24th May 2022 in the gynecology, surgical, medical wards, and could understand and respond to the questionnaire were included. Patients who did not received any meals in hospital, critically ill patients and those who were not in normal diet were excluded. A total of 384 patients were enrolled to the study who were selected by convenient sampling.

A pretested interview-administered questionnaire was used to gather data which consisted of three components namely: general information of client, client satisfaction with food menu, client recognition regarding the sufficiency of the meal that served in hospital. A five point Likert scale rating of very dissatisfied, dissatisfied, neutral, satisfied, and very satisfied was used to collect data on patients' satisfaction on following aspects: variety of food given, appearance of food, aroma of food, texture of food, freshness of food, taste of food, temperature of food, temperature of hot foods, time of food delivery, way of food delivery, cleanliness of dishes and utensils, attitude and behaviors of food serving staffs, overall quality of food service. Descriptive statistics were used to summarize the socio demographic characteristics of clients, level of satisfaction and sufficiency of the meals.

The purpose of the study and voluntary nature of participation was explained to the subjects before they were requested to sign the consent form. Anonymity and confidentiality of data was ensured. Ethical clearance was obtained from Research Unit under Planning and Development Unit of Base Hospital Akkaraipattu. No conflict of interest declared.

Collected data were analyzed by SPSS. Chi-square test was used to determine the statistical significance of association between variables and 0.05 was considered as the critical value for statistical analysis.

A checklist was used to collect information regarding available hospital kitchen facilities and cost of March for certain food items, that had two parts: available hospital kitchen facilities and monthly cost for food items. Human resources, infrastructure and permanent place for kitchen were access under the available hospital kitchen facilities. Chief and senior dietician, steward, storekeeper, head cook, assistant cook, cooks and cleaners were included in human resources. Raw material receiving area and storage area, preparation area, cooking area, special diet area, serving area, washing area, garbage collection area, adequate space, administrative area, adequate ventilation area, gas, enough light, water supply, solid stainless flooring, steam supply, cutting equipments, weighing machine, grinding machine, mixing machine, cooking ovens, distribution trolley were categorized under the infrastructure of kitchen. Monthly cost for rice, fish, meat, egg, vegetables, green leafy vegetables, dried fish, coconut were gathered from this questionnaire.

3. Results

The total number of 384 clients' data were analyzed in this study. Baseline demographic characteristics of clients are shown on Table1. The majority were female (65.6%) and from gynecology ward (27.9%). Most of them were in the age of 19-35 (37.8%) years, married (88%) and Tamils (46.9%). 37.8% of patients were studied grade 6-11 and 53.4% of respondents said that they were economically dependent. 72.4% of patients were stayed in hospital for 1-7 days.

Table 1: Frequencies of clients' attributes (n=384)

Attributes	Number of client (%)
Ward	
Gynecology	107 (27.9%)
Surgical- female	79 (20.6%)
Medical-female	66 (17.2%)
Medical-male	93 (24.2%)
Surgical-male	39 (10.2%)
Gender	
Male	132 (34.4%)
Female	252 (65.6%)
Age	
13-18Y	41 (10.7%)
19-35Y	145 (37.8%)
36-55Y	138 (35.9%)
Above 56	60 (15.6%)
Marital status	
Never married	36 (9.4%)
Married	338 (88%)
Separated	7 (1.8%)
Divorced	3 (0.8%)
Ethnicity	
Sinhalese	22 (5.7%)
Tamil	180 (46.9%)
Muslim	175 (45.6%)
Other	7 (1.8%)
Academic Background	
No formal education	46 (12%)
Gr 1-5	97 (25.3%)
Gr 6-11	145 (37.8%)
G.C.E.A/L	75 (19.5%)
Diploma/Degree	21 (5.5%)
Monthly Income	
Economically dependent	205 (53.4%)

<5000	29 (7.6%)
5000-10000	46 (12%)
10000-20000	57 (14.8%)
>20000	47 (12.2%)
Length of hospital stay	
1-7 days	278 (72.4%)
8-14 days	106 (27.6%)

The level of satisfaction of the client on different aspects of food and food services are presented in Table 2. It was found that, 14.3% of patients were satisfied, 34.9% were dissatisfied and half of them neutral with the overall quality

of food service in hospital. Majority of the patient neutral with variety of food given, appearance of food, aroma of food, freshness of food, temperature of food, time of food delivery. Majority of patients dissatisfied with texture of food, taste of food, temperature of hot drinks and majority of patient satisfied with way of food delivery, Cleanliness of dishes and utensils and Attitude and behaviors of food serving staffs. The most satisfied aspects by the patient were the cleanliness of dishes and utensils (57.3%) and attitude and behaviors of food serving staffs (57%). The most dissatisfied attribute was the taste of food (54.2%).

Table 2: Level of client satisfaction on the diet service of Base Hospital Akkaraipattu

Features of hospital diet service	Level of satisfaction of client			
	Very Dissatisfied (%)	Dissatisfied (%)	Neutral (%)	Satisfied (%)
Variety of food given	0	126 (32.8)	176 (45.8)	82 (21.4)
Appearance of food	0	121 (31.5)	164 (42.7)	99 (25.8)
Aroma of food	1 (0.3)	145 (37.8)	170 (44.3)	68 (17.7)
Texture of food	0	182 (47.4)	151 (39.3)	51 (13.3)
Freshness of food	0	140 (36.5)	176 (45.8)	68 (17.7)
Taste of food	0	208 (54.2)	150 (39.1)	26 (6.8)
Temperature of food	2 (0.5)	141 (36.7)	187 (48.7)	54 (14.1)
Temperature of hot drinks	0	172 (44.8)	167 (43.5)	45 (11.7)
Time of food delivery	0	28 (7.3)	188 (49)	168 (43.8)
Way of food delivery	0	19 (4.9)	155 (40.4)	210 (54.7)
Cleanliness of dishes and utensils	0	28 (7.3)	136 (35.4)	220 (57.3)
Attitude and behaviors of food serving staffs	0	6 (1.6)	159 (41.4)	219 (57)
Overall quality of food service	3 (0.8)	134 (34.9)	192 (50)	55 (14.3)

Table 3 describes the sufficiency of the meal that they offered to patients. Majority of the patient state that all food items were adequately supply in hospital. Except rice other food items were not consumed by all patients.

Dried fish	233 (60.7)	75 (19.5)	76 (19.8)
Coconut sambol	212 (55.2)	69 (18)	103 (26.8)

Table 3: Client recognition regarding the sufficiency of the meal served and the percentage who consumed each food item

Food item	Client recognition on adequacy of meals		Total number of clients who didn't consume the particular food item (%)
	Adequate (%)	Not adequate (%)	
Rice	304 (79.2)	80 (20.8)	0
Fish	278 (72.4)	76 (19.8)	30 (7.8)
Meat	243 (63.3)	83 (21.6)	58 (15.1)
Egg	286 (74.5)	43 (11.2)	55 (14.3)
Vegetables	246 (64.1)	87 (22.7)	51 (13.3)
Green leafy vegetables	242 (63)	96 (25)	46 (12)

The result of association between satisfaction of the overall quality of food service and demographic characteristics of clients were displayed in Table 4. There was significant association between gender (p value 0.000) and satisfaction of overall quality of food service. Age (p value 0.001) was significantly associated with satisfaction of overall quality of food service in hospital. Results showed that overall satisfaction of the quality of food service significantly associated with academic background (p value 0.005) and monthly income (p value 0.000). There was no significant association between marital status (p value 0.549), ethnicity (p value 0.444), length of hospital stay (p value 0.369) and satisfaction of overall quality of food service.

Table 4: Distribution of association between satisfaction of the overall quality of food service and characteristics of clients

Characteristics of client	The overall quality of food service				Total (%)	P value
	Very Dissatisfied (%)	Dissatisfied (%)	Neutral (%)	Satisfied (%)		
Gender						0
Male	1 (0.8)	66 (50)	59 (44.7)	6 (4.5)	132 (100)	
Female	2 (0.8)	68 (27)	133 (52.8)	49 (19.4)	252 (100)	0.001
Age						
13-18Y	1 (2.4)	11 (26.8)	18 (43.9)	11 (26.8)	41 (100)	
19-35Y	1 (0.7)	69 (47.6)	63 (43.4)	12 (8.3)	145 (100)	
36-55Y	1 (0.7)	40 (29)	79 (57.3)	18 (13)	138 (100)	0.549
Above 56	0 (0)	14 (23.3)	32 (53.3)	14 (23.4)	60 (100)	
Marital status						
Never married	0 (0)	9 (25)	17 (47.2)	10 (27.8)	36 (100)	
Married	3 (0.9)	122 (36.1)	170 (50.3)	43 (12.7)	338	0.549
Separated	0 (0)	2 (28.6)	4 (57.1)	1 (14.3)	7 (100)	
Divorced	0 (0)	1 (33.3)	1 (33.3)	1 (33.4)	3 (100)	

Ethnicity						
Sinhalese	0 (0)	7 (31.8)	10 (45.5)	5 (27.7)	22 (100)	0.444
Tamil	2 (1.1)	61 (33.9)	97 (53.9)	20 (11.1)	180 (100)	
Muslim	1	64	83	27	175	
Other	0	2	2	3	7	
Academic Background						0.005
No formal education	0 (0)	11 (23.9)	26 (56.5)	9 (19.6)	46 (100)	
Gr 1-5	0 (0)	33 (34)	40 (41.2)	24 (24.8)	97 (100)	
Gr 6-11	2 (1.4)	45 (31)	81 (55.9)	17 (11.7)	145 (100)	
G.C.E.A/L	1 (1.3)	33 (44)	38 (50.7)	3 (4)	75 (100)	
Diploma/Degree	0 (0)	12 (57.1)	7 (33.4)	2 (9.5)	21 (100)	
Monthly Income						0
Economically dependent	2 (0.9)	59 (28.8)	109 (53.2)	35 (17.1)	205 (100)	
<5000	0 (0)	4 (13.8)	15 (51.7)	10 (34.5)	29 (100)	
5000-10000	0 (0)	18 (39.2)	22 (47.8)	6 (13)	46 (100)	
10000-20000	1 (1.8)	26 (45.6)	28 (49.1)	2 (3.5)	57 (100)	
>20000	0 (0)	27	18	2	47(100)	
Length of hospital stay						0.369
1-7 days	3 (1.1)	91 (32.7)	144 (51.8)	40 (14.4)	278 (100)	
8-14 days	0 (0)	43 (40.5)	48 (45.3)	15 (14.2)	106 (100)	

4. Discussion

The present study was conducted to identify the level of clients' satisfaction on hospital diet service and how the demographic characteristics of clients associated with overall quality of diet service in Base Hospital Akkaraipattu. The hospitality of diet services in a hospital is depended on the quality of given foods and the manner of food served. According to our finding majority of patient rated neutral for variety (45.8%), appearance (42.7%), aroma (44.3%), freshness (45.8%), temperature of food (48.7%) and time of food delivery (49%). Hartwell *et al* pointed out food quality, food temperature, taste of food, variability, time of food distribution, and staff service were important factors on patient satisfaction regarding hospital diet service.

Patient satisfaction is closely connected with sensory quality of foods. Another cause of dissatisfaction was temperature of hot drinks due to delay between serving of food in kitchen and delivery at bed side, which was evidenced by majority of patient rated as dissatisfied (44.8%). Preparation of food, transport, and serving have been described as a food chain, which play an important role in ensuring that the optimization of food consumption (30). Nearly more than half of the patients (57.3%) satisfied with the cleanliness of utensils and dishes which may also contribute to increased meal consumption and satisfaction. According to result of present study most dissatisfied aspects of food were taste and texture. Most of the patient who were participated in this study not willing to get hospital foods as poor palatability of meals. More than half of our patient (54.2%) dissatisfied with taste of food that served. most of the patients dissatisfied with texture of food that provided. For an example most of the patients were said that rice and mung beans were not properly cooked.

Several studies pointed that the attitudes and behaviors of food serving staffs can influence on overall quality of diet service (22). In this study more than half of the respondents (57%) were satisfied with the attitude and behaviors of food serving staffs. A study found that attitudes and behaviors of food serving staff was positively correlated with overall quality of food service (22). Present study reported that

nearly 54.7% of patients were satisfied with the way of food delivery in hospital. In here bulk food delivery system is practiced by hospital kitchen. Hot foods are sent by mobile trolley in ward areas. This food service system has advantages such as selection can be made on present appetite, amount of food that need to consume can determined by personal interest, it encourages patients to be more socialized. One of the disadvantage of this system is patient need to mobile to access the trolley.

When considering the views of the clients on different aspects of foods and foods service, it was identified that nearly half of the respondents (50%) were neutral and only 14.3% were satisfied with the overall quality of food service in hospital. Regarding to the socio economic characteristics of the clients, this present study demonstrated that clients' gender and age were significantly associated with the satisfaction of overall quality of food service where more of the female patient (19.4%) were satisfied with overall quality of food service than males (4.5%). A study reported that women expressed more favorable ratings for the attributes of food quality than males. However, many studies stated that age didn't have any association on level of satisfaction (27). A study found that the level of satisfaction on overall quality of food service was significantly higher in younger agers (22). Another study claimed that patients who were in the age of 70 and above gave higher rating for overall quality of food service than youngers (31). A study which was conducted among Asian hospitals concluded that age as the important aspect for satisfaction of overall quality of food service (8). Another research was done in Sri Lanka revealed that level of satisfaction was significantly low for the age group 21-50 years (23).

Considering the academic background of the clients, present study concluded that educational level of the patients was associated with the satisfaction of overall quality of food service. A study mentioned that less educated patients were generally more satisfied as they were less demanding (3). A study was conducted in United Arab Emirates and Saudi Arabia mentioned that clients who had tertiary education were shown to have significantly lower level of satisfaction (2). According to the results of current study, monthly

income of patient significantly associated with over quality of food service. Watters et al concluded that low monthly income of patients was significantly associated with higher level of satisfaction (5). Another study found that patient with high income were more satisfied than patient with low income (22).

In present study shown that there was no significant association between length of hospital stay and satisfaction level on overall quality of food service. Some of the researchers found that an association between length of hospital stay and satisfaction of overall quality of food service which was patients who had a longer hospital stay shown to have higher satisfaction on overall quality of food service than who had short period of hospital stay (26). In contrast some studies were demonstrated that there was a negative relationship between length of hospital stay and overall satisfaction on hospital food services (24).

In this study the availability of kitchen facilities and cost of March, 2022 for certain food items also were analyzed. The available human resources at the hospital kitchen are steward, assistant cooks, and cleaner while the chief and senior dietitians, store keeper and head cook are not available as the hospital kitchen facilities which makes the kitchen works a bit challenge to run. Dietitians can influence the victory of diet service in hospitals by menu planning, recipe development and nutritional analysis of hospital meals (6). In the absence of dietitians, medical officers who are qualified in human nutrition can do this works in hospitals. There are two steward, four assistant cooks who are health assistants and not properly trained and one cleaner. A similar finding which was conducted in Zagazig university hospitals stated that none of the food service department staffs received formal or informal training regarding their duties and responsibilities (11). study stated that the number of personnel assigned adequately in hospital kitchen will help to perform all functions effectively in order to meet the needs of patients (25)

And in the infrastructure, while the raw material receiving area and storage area, special diet area, garbage collection area, adequate space, cooking oven and distribution trolley are not available and all other facilities are available such as preparation area, cooking area, serving area, washing area, administrative area, adequate ventilation, gas, enough light, water supply, solid stainless flooring, steam supply, cutting equipments, weighing machine, grinding machine and mixing machine. The available facilities help much to take forward the kitchen work easily while the unavailable infrastructure facilities make the kitchen discomfort to work. A study found that only 6.7% of kitchen requirements were fulfilled (29) and another study revealed that none of the kitchen needs were fulfilled (9). Also the main defect of the resource is there is no any permanent place for kitchen.

According to the cost of the food items in March, 2022, the highest cost in March among the food items was for fish which costs Rs.167475 and the next was for rice which cost Rs.124345. The cost for meat (chicken) was Rs.49383 in March while eggs cost Rs.27020 only. Also vegetables and green leafy vegetables cost Rs.76243, Rs.31307

respectively. And the expenses for dried fish was Rs.26961 and coconut was Rs.86283.

However, there were some limitations in this study. This study is restricted to only four wards and patients who consume normal diet in hospital and also patients were recruited by convenient sampling so the results were not generalizable to the population. Patient who consumed food minimum a day and irregularly were included. Although the patients who had favorably responded to the questionnaire with fear also included.

5. Conclusion

It can be concluded that patients were neutrally satisfied with the overall quality of the diet service at Base Hospital Akkaraipattu. Taste, texture and temperature of hot foods were dissatisfied by the most patients which need to be improved. To enhance the food quality, have to recruit well trained cooks for preparing foods. Training the health personnel regarding interpersonal skills and communication can resolve issues related to staff attitudes and behaviors in serving foods. Regular monitoring and evaluation of the quality of food service in hospitalized patient including patient satisfaction are important to improve overall quality of diet service. The measurement system on level of satisfaction and its determinants must provide to each patient in hospital to identify their satisfaction level regarding diet service. This type of study must be conducted periodically to improve the quality of food service.

References

- [1] Agarwal, E., Ferguson, M., ... Isenring, E., 2013. Malnutrition and poor food intake are associated with prolonged hospital stay, frequent readmissions, and greater in-hospital mortality: Results from the Nutrition Care Day Survey 2010. *Clinical Nutrition* 32, 737–745. doi:10.1016/j.clnu.2012.11.021
- [2] Al-Doghaither, A.H., 2004. Inpatient satisfaction with physician services at King Khalid University Hospital, Riyadh, Saudi Arabia. *Eastern Mediterranean Health Journal* 10, 358–364. doi:10.26719/2004.10.3.358
- [3] Al-Hoqail, I.A., Abdalla, A.M., ... Bahnassy, A.A., 2010. Pilgrims satisfaction with ambulatory health services in Makkah, 2008. *Journal of Family and Community Medicine* 17, 135–140. doi:10.4103/1319-1683.74331
- [4] Barton, A.D., Beigg, C.L., ... Allison, S.P., 2000. High food wastage and low nutritional intakes in hospital patients. *Clinical Nutrition* 19, 445–449. doi:10.1054/clnu.2000.0150
- [5] Briefs, P., 2003. Foodservice Through Focus Groups and. October 8223, 1347–1349.
- [6] British Dietetic Association, 2017. *The Nutrition and Hydration Digest*. 2nd Edition 1–228.
- [7] Brogden, B.J., 2004. Clinical skills: importance of nutrition for acutely ill hospital patients. *British journal of nursing* (Mark Allen Publishing). doi:10.12968/bjon.2004.13.15.15532
- [8] Dayasiri, M.B.K.C., Lekamge, E.L.S., 2010. Predictors of patient satisfaction with quality of health care in

- Asian hospitals. *Australasian Medical Journal* 3, 739–744. doi:10.4066/AMJ.2010.375
- [9] Dubé, L., Trudeau, E., Bélanger, M.C., 1994. Determining the complexity of patient satisfaction with foodservices. *Journal of the American Dietetic Association* 94, 394–401. doi:10.1016/0002-8223(94)90093-0
- [10] Edwards, J.S.A., Hartwell, H.J., 2006. Hospital food service: A comparative analysis of systems and introducing the “Steamplicity” concept. *Journal of Human Nutrition and Dietetics* 19, 421–430. doi:10.1111/j.1365-277X.2006.00730.x
- [11] El badawy, Amal & A., Salah & S., Eassa & Mortada, Eman. (2009). Hospital food service in Zagazig University Hospitals (a gap analysis approach).. *Zagazig university Medical journal*. 15. 128-44.
- [12] Fernando, G.H.S., Wijesinghe, C.J., 2016. Patient perceptions on hospital food service at Teaching Hospital, Karapitiya. *Galle Medical Journal* 20, 13. doi:10.4038/gmj.v20i2.7933
- [13] Fernando, G.H.S., Wijesinghe, C.J., 2017. Quality and standards of hospital food service; a critical analysis and suggestions for improvements. *Galle Medical Journal* 22, 17. doi:10.4038/gmj.v22i2.7970
- [14] Hartwell, H.J., Edwards, J.S.A., Symonds, C., 2006. 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*. *Journal of Foodservice* 17, 226–238. doi:10.1111/j.1745-4506.2006.00040.x
- [15] Johns, N., Hartwell, H., Morgan, M., 2010. Improving the provision of meals in hospital. The patients’ viewpoint. *Appetite* 54, 181–185. doi:10.1016/j.appet.2009.10.005
- [16] M. Abdelhafez, A., Al Qurashi, L., ... Mograbi, H., 2012. Analysis of Factors Affecting the Satisfaction Levels of Patients Toward Food Services at General Hospitals in Makkah, Saudi Arabia. *American Journal of Medicine and Medical Sciences* 2, 123–130. doi:10.5923/j.ajmms.20120206.03
- [17] Mallawarachchi, S.M., Mallawarachchi, C., Dalpatadu, K., 2020. A Project to Improve the Process and Practices of Provision of Diet to Inward Patients in a Government Hospital, Sri Lanka. *International Journal of Research Foundation of Hospital and Healthcare Administration* 7, 85–90. doi:10.5005/jp-journals-10035-1111
- [18] Ministry of health. Manual of management of teaching, provincial, base, and special hospital, ministry of health: Diet service 2015; Ministry of Health 442-58
- [19] Murphy, T., 2017. The role of food in hospitals: The current state of food in hospitals, *Health Care CAN*.
- [20] Piciocchi, C., Lobefaro, S., ... Donini, L.M., 2022. Innovative cooking techniques in a hospital food service: Effects on the quality of hospital meals. *Nutrition* 93. doi:10.1016/j.nut.2021.111487
- [21] Sadaf, S., Malik, A.A., ... Saeed, A., 2018. Patient satisfaction regarding food and nutrition care in hospitals of Lahore, Pakistan. *Progress in Nutrition* 20, 248–256. doi:10.23751/pn.v20i2-S.5855
- [22] Sahin, B., Demir, C., ... Teke, A.K., 2006. Factors affecting satisfaction level with the food services in a military hospital. *Journal of Medical Systems* 30, 381–387. doi:10.1007/s10916-006-9022-3
- [23] Senarat, U., Gunawardena, N.S., 2011. Development of an instrument to measure patient perception of the quality of nursing care and related hospital services at the national hospital of Sri Lanka. *Asian Nursing Research* 5, 71–80. doi:10.1016/S1976-1317(11)60015-7
- [24] Stanga, Z., Zurflüh, Y., ... Knecht, G., 2003. Hospital food: A survey of patients’ perceptions. *Clinical Nutrition* 22, 241–246. doi:10.1016/S0261-5614(02)00205-4
- [25] Sussan, A., Alexis, C.A., Elisabeth, B., 1987. Analyzing Patient Satisfaction: a Multyanalytic Approach. *Quality Review Bulletin*.
- [26] Tranter, M., Gregoire, M., ... Fullam, F.A., 2008. Can Patient Written Comments Help Explain Patient Satisfaction with Food Quality? *Journal of the American Dietetic Association* 108, A68. doi:10.1016/j.jada.2008.06.172
- [27] Tranter, M.A., Gregoire, M.B., ... Lafferty, L.J., 2009. Can Patient-Written Comments Help Explain Patient Satisfaction with Food Quality? *Journal of the American Dietetic Association* 109, 2068–2072. doi:10.1016/j.jada.2009.09.001
- [28] Trinca, V., Duizer, L., Keller, H., 2022. Putting quality food on the tray: Factors associated with patients’ perceptions of the hospital food experience. *Journal of Human Nutrition and Dietetics* 35, 81–93. doi:10.1111/jhn.12929
- [29] Wakefield, K.L., Blodgett, J.G., 1994. The Importance of saerivcscape. *Journal of Services Marketing* 8, 66–76.
- [30] Williams, P.G., 1996. Vitamin retention in cook/chill and cook/hot-hold hospital foodservices. *Journal of the American Dietetic Association* 96, 490–498. doi:10.1016/S0002-8223(96)00135-6
- [31] Wright, O.R.L., Connelly, L.B., Capra, S., 2006. Consumer evaluation of hospital foodservice quality: An empirical investigation. *International Journal of Health Care Quality Assurance* 19, 181–194. doi:10.1108/09526860610651708