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Navigating hospital foodservice satisfaction: Insights from Importance-Performance Map Analysis

Menelusuri kepuasan layanan makanan Rumah Sakit: Telaah Importance-Performance Map Analysis

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Abstract

Hospital food service satisfaction is critical to inpatient care quality and affects patients' experiences and well-being. This study employed Importance-Performance Map Analysis (IPMA) to systematically evaluate and enhance food service satisfaction in inpatient care within healthcare facilities. A cross-sectional quantitative survey was conducted in August 2023 at a 300-bed private hospital in Central Jakarta involving 324 conscious patients aged > 17 years. The Acute Care Hospital Foodservice Patient Satisfaction Questionnaire (ACHFPSQ) was used to measure various food service factors. IPMA analysis has illuminated a strategic path for healthcare institutions to enhance food service satisfaction. IPMA analysis showed that Meal Taste, Meal Portion, and Meal Serving were highly important and performed well. These aspects should be maintained to ensure satisfaction with food services. Meal Variety and Utensils were identified as areas of high importance but low performance, warranting improvement. By acknowledging the strengths (meal taste, meal portion, and meal serving) and weaknesses (meal variety and utensils) of various food service components and prioritizing improvements accordingly, hospitals can better cater to the preferences and needs of their inpatient population, ultimately leading to increased satisfaction and improved overall healthcare experience.

Keywords: Food service satisfaction, IPMA, patient satisfaction

Abstrak

Kepuasan layanan makanan rumah sakit merupakan aspek penting dari kualitas perawatan rawat inap, yang berdampak pada pengalaman dan kepuasan pasien selama rawat inap. Penelitian bertujuan untuk mengevaluasi secara sistematis dan meningkatkan kepuasan layanan makanan untuk perawatan rawat inap di fasilitas Kesehatan menggunakan Importance-Performance Map Analysis (IPMA). Survei kuantitatif potong lintang dilakukan di sebuah rumah sakit swasta dengan 300 tempat tidur di Jakarta Pusat pada Agustus 2023, yang melibatkan 324 pasien yang sadar dan berusia > 17 tahun. Kuesioner Acute Care Hospital Foodservice Patient Satisfaction Questionnaire (ACHFPSQ) digunakan untuk mengukur berbagai faktor layanan makanan. Analisis kepuasan menggunakan model IPMA. Hasil menunjukkan bahwa *Meal Taste, Meal Portion,* dan *Meal Serving* memiliki tingkat kepentingan yang tinggi dan berkinerja baik. Aspek-aspek ini harus dipertahankan untuk memastikan kepuasan layanan makanan. *Meal Variety* dan *Utensil* sebagai area yang sangat penting namun kinerjanya rendah, sehingga perlu ditingkatkan. Dengan mengetahui kelebihan (segi

Meal Taste, Meal Portion, dan *Meal Serving*) dan kekurangan (segi *Meal Variety* dan *Utensil*) dari berbagai komponen layanan makanan, manajemen dapat menentukan prioritas perbaikan yang sesuai, rumah sakit dapat memenuhi preferensi dan kebutuhan pasien rawat inap dengan lebih baik, yang pada akhirnya akan meningkatkan kepuasan dan meningkatkan pengalaman layanan kesehatan secara keseluruhan.

Kata Kunci: IPMA, kepuasan layanan makanan, kepuasan pasien

Introduction

Hospital food service satisfaction is an important aspect of inpatient care quality that affects the patient's experience and satisfaction during hospitalization. Both well-nourished and malnourished patients experienced a decline in nutritional status during their hospital stay. Higher mortality rates, longer hospital stays, increased costs, and higher complication rates are negative clinical outcomes associated with malnutrition during hospitalization (Rapo et al., 2021). Measuring patient satisfaction with food services is considered a method to assess the quality of the food service provided (Teka et al., 2022).

According to a study conducted in Kenya, 64,3% of inpatients were dissatisfied with the overall quality of hospital foods. Most patients were dissatisfied with the variety of food (96,9%), type of food (76,5%), taste (71,4%), and food presentation (65,3%) (Teka et al., 2022). Similar findings were found in Indonesia in 2023, where only 71,4% of patients were satisfied with hospital food services (Farapti et al., 2023). Patients with a good appetite can still suffer from reduced food intake if the food is out of reach, they are unable to hold utensils, have dental or gum issues, have physical difficulties with eating, or the timing of ordered food is too far from mealtime (Schiavone et al., 2020). A study from Pennsylvania also indicated that to have a positive experience during treatment, a comfortable room and a well-designed kitchen menu for patient meals correlates with overall experience (Seltzer et al., 2022).

Data from XYZ Hospital from January to June 2023 show that complaints related to food service satisfaction consistently ranked among the top three for 6 consecutive months in the inpatient division. However, the management of XYZ hospital does not yet have comprehensive data regarding patient satisfaction with food services to determine priorities for improvement that need to be made.

The Importance-Performance Map Analysis (IPMA) method is an analytical approach used to identify the most important factors (importance) affecting patient satisfaction and assess the performance of healthcare facilities in providing these factors. Through this method, important factors can be categorized into quadrants that can be followed up on, distinguishing between highly important areas where performance meets or fails to meet expectations and less important areas where resource allocation can be optimized. Based on the background of the problem, this research aimed to systematically evaluate patient satisfaction with food services for inpatient care within healthcare facilities.

Methods

Design dan Sample

This research used a cross-sectional quantitative survey method to collect primary data, which was conducted at a hospital located in Central Jakarta with a total of 300 patient beds. This research was conducted at one of the XYZ hospitals in August 2023. Ethical approval for this research was granted in August 2023 by the Ethics Committee of XYZ Hospital with Approval Letter Number 13556/A11000/2023-S0 with approval from the President Director and Corporate Medical Director.

The sample was inpatients, and the sample size was calculated using G*Power (version 3.1.9.4), considering a significance level of 0,05, an effect size of 0,15, and a power of 0,95 (Memon et al., 2020). On the basis of these calculations, a sample size of obtained was 324 patients. The sampling was conducted purposively according to the inclusion and exclusion criteria.

Inclusion criteria were patients aged over 17 years who were treated at XYZ Hospital towards the end of their inpatient stay. The inclusion criteria also specified that patients must be conscious, capable of consuming food orally, and able to eat independently without any assistance. The exclusion criteria also

included patients who had undergone gastrointestinal surgery, those using nasogastric tubes or other feeding aids, patients receiving care in intensive care units or stroke units, and patients with consciousness or psychiatric disorders.

Measuring Instruments and Variable

The data collection began by providing an explanation of the main research objectives to all participants and obtaining verbal consent for data collection. The participants then completed a structured questionnaire provided by the researcher. The questionnaire was distributed through a Google Forms link to participants without requesting any personal information, such as name, phone number, or email address, ensuring anonymity in their responses.

The instrument used in this research was the Acute Care Hospital Foodservice Patient Satisfaction Questionnaire (ACHFPSQ), consisting of 20 questions, including two questions specifically related to overall satisfaction with food services. The questionnaire comprises various domains: meal taste (MT) with three questions, meal tensils (U) with two questions, Staff Service (SS) with three questions, Physical Environment (PE) with two questions, Menu Variety (MV) with two questions, Meal Portion (MP) with four questions, Meal Serving (MS) with four questions, and two questions related to overall satisfaction with food services (Schiavone et al., 2020).

This study follows previous research recommendations to use a 1-6 Likert scale with higher reliability than the 5-point Likert scale for questions related to motive tests, attitude tests, and satisfaction tests (Tyumeneva et al. 2022). The research used a Likert scale of 1-6 instead of 1-5, considering that the majority of patients in the hospital are Indonesian. Asian cultures, including Indonesia, tend to select more items at the middle level (choosing 3 on a 1-5 scale) on a Likert scale compared with other cultures. This tendency is due to their preference not to influence or harm the research data analysis (He et al., 2017; Tyumeneva et al., 2022).

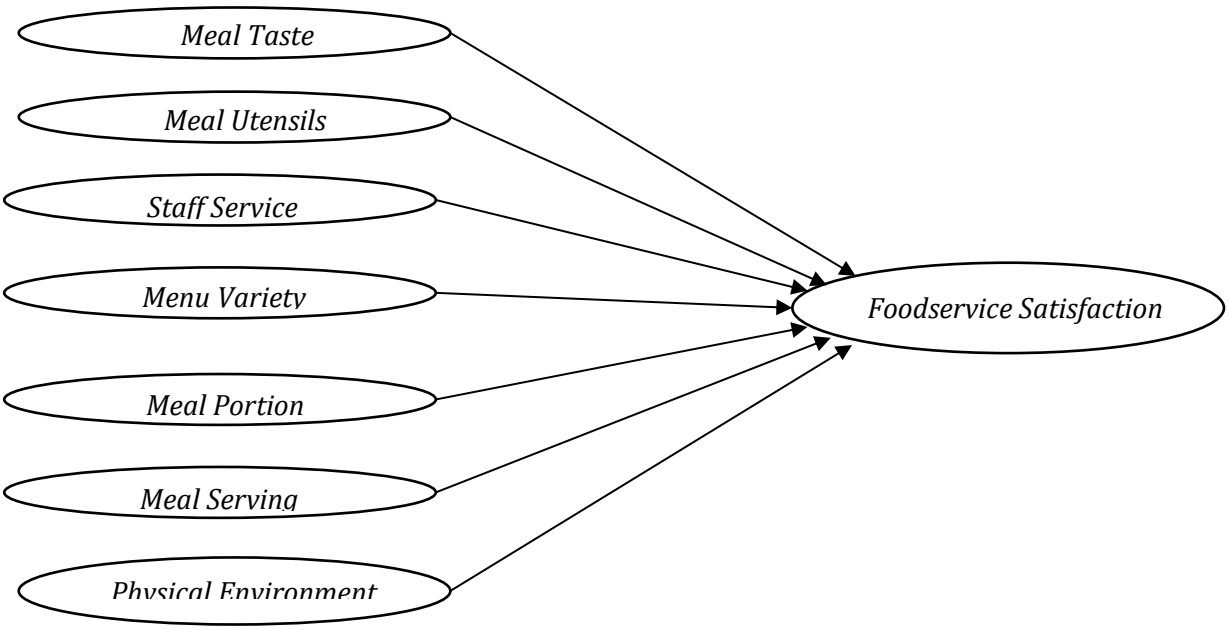

Figure 1. Research conceptual framework

We developed the conceptual framework depicted in Figure 1. SmartPLS™ (version 4.0) was chosen for its bootstrapping and IPMA analysis to verify significance when conducting PLS-SEM analysis. All constructs were measured in the four stages of reliability and validity. Subsequently, an Importance-Performance Map (IPMA) analysis is used to identify indicators as priorities for improvement activities (Ringle & Sarstedt, 2016).

Result and Discussion

Demographic Data

The demographic data of the 324 participants are presented in Table 1. Of the participants, 52,8% were female and 47,2% were male. Most participants reported a decrease in appetite during hospitalization (65%). The participants' length of stay varied from less than 3 days to over 14 days. Most respondents used payment methods through their company insurance (65%).

Table 1. Demographic data

Characteristic	Total (324 Participants)	
	n	%
Sex		
Female	171	52,8
Male	153	47,2
Age		
<20 years	69	21,3
21-30 years	72	22,2
31-40 years	91	28,1
41-50 years	64	19,8
>51 years	28	8,7
Appetite during hospital stay		
Increased	0	0,0
No difference	152	3,1
Decreased	172	65,0
Length of Stay		
< 3 days	69	21,3
4-6 days	72	22,2
7-10 days	61	18,8
11-14 days	64	19,8
>14 days	58	17,9

Reliability and Validity

The first step in PLS-SEM analysis is to assess the reliability of the reflective model indicators (outer loadings). The instrument test indicated that all indicators had loading values > 0,708 (Ringle and Sarstedt, 2016). The results showed that all the indicators met this criterion. The second step of the analysis was to test the internal consistency. Constructs become reliable in each model if the constructs show that Cronbach's alpha is greater than 0,7 and composite reliability is at the upper threshold (0,7 – 0,95). The third step was to measure the Average Variance Extracted (AVE) to assess convergent validity, as shown in Table 2. These results indicate that all constructs had an AVE ≥ 0,50, as required in the literature. All constructs explain at least 50 percent of the item variance in the model, thus establishing convergent validity (Hair et al., 2019). Table 2 presents the results of the reliability and validity tests of the conceptual research framework.

Table 2. Reliability and validity test results

Variable	Indicator	Loading	Cronbach's alpha	rho_a	rho_c	AVE
Foodservice	FS1	0,96	0,62	1,08	0,81	0,69
Inpatient Satisfaction	FS2	0,67				
Meal Portion	MP1	0,89	0,82	0,88	0,87	0,64
	MP2	0,69				
	MP3	0,70				
	MP4	0,88				
Meal Serving	MS1	0,91	0,87	0,87	0,91	0,72
	MS2	0,81				
	MS3	0,83				
	MS4	0,83				
Meal Taste	MT1	0,89	0,89	0,95	0,93	0,82
	MT2	0,91				
	MT3	0,91				
Meal Variety	MV1	0,94	0,83	0,85	0,92	0,85
	MV2	0,91				
Room Environment	PE1	0,89	0,70	0,71	0,86	0,76
	PE2	0,85				
Server service	SS1	0,87	0,70	0,70	0,83	0,62
	SS2	0,78				
	SS3	0,70				
Meal Utensil	U1	1,00	0,83	26,4	0,86	0,76
	U2	0,72				

Heterotrait-Monotrait (HTMT) Ratio

The final step in the outer model analysis is to examine discriminant validity using the heterotrait-monotrait (HTMT) ratio. The recommended threshold value for the HTMT ratio is below 0,85, indicating that each construct indicator is conceptually distinct (Hair et al., 2019). Table 3 displays the HT/MT values, which indicate satisfactory discriminant validity. All four criteria for testing the reliability and validity in the outer model analysis were successfully met. Therefore, it can be concluded that each indicator in this research model was accurate and reliable for measuring each construct.

Table 3. Discriminant validity HTMT ratio

Foodservice Inpatient Satisfaction	Meal Portion	Meal Serving	Meal Taste	Meal Utensil	Meal Variety	Physical Environment	Server service
Meal Portion	0,349						
Meal Serving	0,583	0,246					
Meal Taste	0,412	0,178	0,256				
Meal Utensil	0,092	0,057	0,064	0,159			
Meal Variety	0,42	0,097	0,397	0,218	0,049		
Physical Environment	0,399	0,11	0,262	0,12	0,084	0,258	
Server service	0,302	0,13	0,291	0,231	0,031	0,229	0,317

IPMA Analysis

Patient satisfaction in the context of food service satisfaction can be assessed through several theoretical frameworks. Current theoretical frameworks related to food service satisfaction emphasize patient expectation management, ensuring high-quality services, and prioritizing individual preferences and patient needs in food services (Lidia et al., 2020; Omar et al., 2023; Schiavone et al., 2020).

The expectancy-confirmation theory posits that patient satisfaction with food services is influenced by individual patient expectations and their perception of food quality. If patient expectations regarding taste, quality, and menu variety are met or even exceeded, they will feel satisfied. However, patients may feel dissatisfied if these expectations are not met (Andreassen et al., 2021; Lindholm et al., 2018). The Health Belief Model can be applied to hospital food services by considering patients' beliefs and perceptions regarding the benefits and barriers to consuming hospital food. Patient satisfaction with food services can be influenced by their perception of the nutritional value of the food.

Importance-Performance Map Analysis (IPMA) was utilized to identify indicators to be prioritized in hospital improvement activities (Ringle & Sarstedt, 2016).

IPMA allows defining factors and variables into four quadrants, which makes it possible to define four different strategies (see Figure 2): Quadrant A with High Importance/Low Performance (as a top priority), Quadrant B with High Quality/High Performance (to be maintained), Quadrant C with Low Importance/Low Performance (as low priority), and Quadrant D with Low Importance/High Performance (17,18). This method is based on the level of importance derived from the total effect and the performance based on the average value, as shown in Figure 3 and 4.

Table 4 presents the average values of importance and performance for the variables and indicators. The average values for importance and performance of the variables were 0,164 and 56,661, respectively. From this data, the researcher created two lines to be drawn so that the four quadrants could be grouped in a graph, as shown in Figure 3.

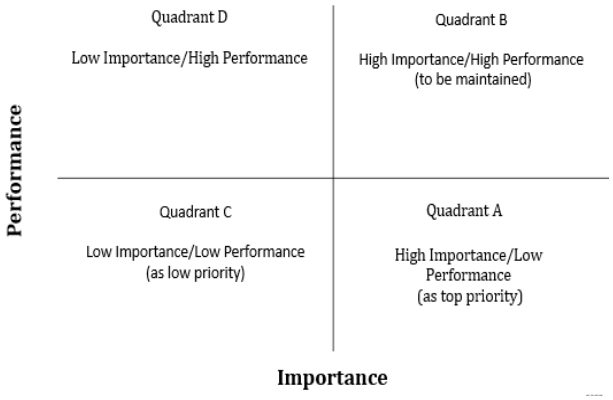

Figure 2. Four quadrants of IPMA

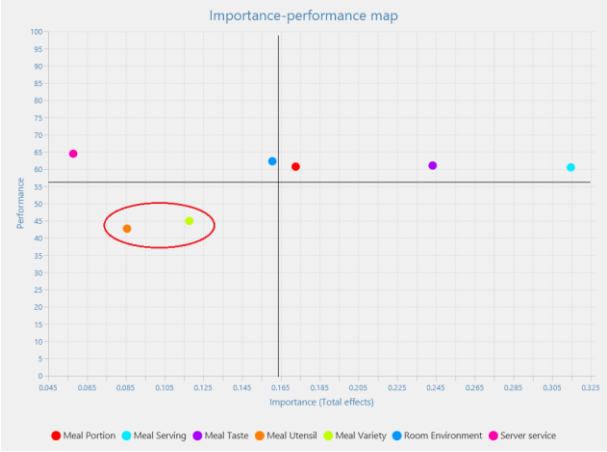

Figure 3. IPMA variable

The research model target constructs (Figure 3) in the upper right quadrant are Meal Taste (MT), meal proportion (MP), and Meal Serving (MS), indicating important areas that have performed well. Therefore, it can be concluded that the priority of hospital management is to continue maintaining MT, MP, and MS to sustain patient satisfaction with inpatient food services. In the lower right quadrant, there is not a single variable included in the highest importance category, but it has not performed well. Therefore, researchers considered Quadrant C as the next priority: Meal Variety (MV) and Utensil (U).

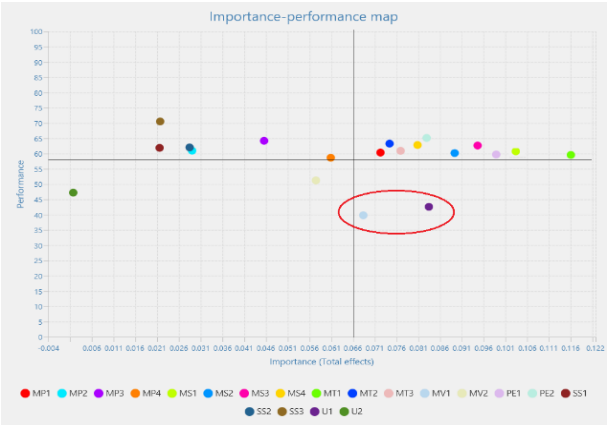

Figure 4. IPMA indicator

A more in-depth analysis can be conducted on IPMA Indicators. Table 4 also shows the average values of the importance and performance of the food service quality construct for each indicator. The average indicator for importance was 0,066 and the average performance was 58,531. The interpretation of values below or above these values is essentially the same as that of the IPMA construct. Two lines can be drawn from the data, grouping the four quadrants in a graph, as shown in Figure 4. As a priority for hospital management, the indicators MV1 and U1 need to be improved because they fall into the area of high importance but low performance for the quality of food services.

Improving the quality of hospital food services has the potential to positively impact overall satisfaction levels during hospital stays (El-Sherbiny et al., 2017). Based on the IPMA Analysis, Meal Taste, Meal Portion, and Meal Serving (MS) are areas that perform very well and are highly important to patients. This suggests that hospital management must prioritize maintaining the quality and presentation of these aspects to ensure continued satisfaction with food services among inpatients.

Meal Taste (MT) is the variable with the highest level of importance and performance. Patients who express dissatisfaction with the taste of hospital food face an increased likelihood of malnutrition owing to reduced food consumption. This risk is further heightened when patients already experience reduced appetite owing to underlying medical conditions (Miyoba & Ogada, 2019). Therefore, hospital management should pay special attention to this variable. The culture, age, and personal preferences of hospitalized patients should be considered when providing hospital meals, as patient preferences, food tastes, and expectations tend to vary. Older patients may have lower taste sensitivity than younger patients, as different age groups have varying taste perceptions. With reduced taste sensitivity, older patients are more likely to find food blands; however, the kitchen team needs to limit food spices because of the patient's metabolic diagnosis (Aminuddin et al., 2018).

The meal Portion (MP) is one of the variables with the highest level of importance and performance level. Hospital management needs to implement effective and efficient food management to ensure that patients receive appropriate meals while maintaining their nutritional value. As an alternative, hospital management can also consider meeting patients' energy needs by using six smaller meals compared to the traditional method of serving three meals and two snacks. This technique can also reduce food waste (Theron & O'Halloran, 2022).

Table 4. Performance and importance assessment results

Indicator	*Importance*	*Performance*	Variabel	*Importance*	*Performance*
MP1	0,073	60,340			
MP2	0,030	60,957	*Meal Portion*	0,172	60,702
MP3	0,046	64,198			
MP4	0,061	58,642			
MS1	0,104	56,944			
MS2	0,090	60,185	*Meal Serving*	0,314	60,500
MS3	0,095	62,654			
MS4	0,081	62,809			
MT1	0,117	59,568			
MT2	0,075	63,272	*Meal Taste*	0,243	61,026
MT3	0,077	60,905			
MV1	0,069	39,815	*Meal Variety*	0,118	44,942
MV2	0,058	51,235			
PE1	0,099	59,722	*Physical Environment*	0,160	62,277
PE2	0,083	65,123			
SS1	0,022	61,883			
SS2	0,029	62,037	*Server service*	0,058	64,478
SS3	0,022	70,525			
U1	0,084	42,593	*Meal Utensil*	0,085	42,703
U2	0,002	47,222			
Mean	0,066	58,531	Mean	0,164	56,661

Meal Serving (MS) is the third variable with the highest level of importance and the highest performance level. It is very important for patients to receive hot meals (for hot foods) and cold meals (for cold foods), as required. Patients also consider the tenderness, appearance, and texture of the meat. Therefore, hospital management needs to provide food on time and ensure that the transportation process from the kitchen to the wards runs effectively and efficiently, as well as prevent food contamination. Supporting equipment, such as hot and cold trolleys and food moving equipment, are very important to ensure that this process can be carried out well (Theron & O'Halloran, 2022).

Based on IPMA analysis, hospital management needs to prioritize meal variety (MV) to enhance food service satisfaction within the organization. Addressing food variety issues in hospitals requires a balanced approach that considers patient preferences, dietary requirements, budget constraints and logistical challenges. Hospitals must prioritize food safety and logistics. This can limit their ability to prepare and serve a wide range of dishes, especially those with complex preparation requirements. A high patient volume can strain the kitchen's capacity to prepare a variety of foods within a short timeframe. Hospital kitchens are often smaller and less equipped than commercial kitchens, which can limit their ability to efficiently prepare a wide range of foods (Retmi et al., 2021).

There are several strategies for improving menu variety in hospitals. (Osman et al., 2021). Hospital management can form a menu planning committee consisting of chefs, dietitians, healthcare professionals, and patient representatives. These diverse groups can provide inputs for menu development (Greig & Garcia, 2016; Osman et al., 2021). Hospital management can also create a new food service system implemented using the latest technology that focuses on food ordering from patient rooms. For example, the use of an Electronic Menu (E-menu) with attractive displays and descriptions is an alternative approach. Hospitals can also implement bedside meal (bedside) ordering systems to enhance food intake and patient satisfaction, compared to traditional paper menu systems. Bedside meal ordering systems also improve the interactions between dietitians and patients during their care (Osman et al., 2021).

Based on IPMA analysis, hospital management needs to prioritize equipment to increase food service satisfaction. Food Utensils

(U) influence patients' perceptions of their meals. Patients with a pleasant dining experience were more likely to eat well and were satisfied with their hospital stay. This can positively impact recovery and overall healthcare outcomes (Andreassen et al., 2021). Previous research has also shown that patients have difficulty bringing food to their mouths when given utensils that are not suitable for self-feeding, which can interfere with their perception of food. For example, patients who are given a spoon may have a lower appetite because they use chopsticks as their preferred eating utensil. Eating with proper ergonomic utensils will improve the overall eating experience and promote a sense of normalcy and dignity in the patient. This can help them feel less like they are in a clinical setting and more like they enjoy a regular meal (Lidia et al., 2020; Omar et al., 2023).

A sense of sight is very important in the dining experience. Through vision, people can perceive color, size, shape, quantity, and surface texture. If a patient's food is served with dirty, flawed, or unclean-looking utensils, their appetite decreases (Schifferstein et al., 2022). Staining of utensils can raise concerns about cleanliness and hygiene. Patients may be concerned that the stain is the result of inadequate cleaning, which can lead to concerns about food safety and potential foodborne illnesses. These concerns can reduce appetite (Singh & Seo, 2020; Singh & Seo, 2023).

Appetite can be stimulated not only by the sense of taste but also by the color and shape of the plates. (Kokaji & Nakatani, 2021). According to previous research, changing the shape and color of utensils can influence the perceived taste and flavor of food. For example, when snacks are served on red plates or drinks with a red label, people tend to consume less food (Andreassen et al., 2021; Lindholm et al., 2018). Using plates and glasses with contrasting colors increases food and beverage consumption by 25% and 84%, respectively (Kokaji & Nakatani, 2021). The choice to eat utensils can influence a patient's perception of food. Using high-quality, aesthetically pleasing utensils can create positive associations with food and make it more appealing (Singh & Seo, 2023; Singh & Seo, 2023).

There are two limitations to this research conducted so far. The first is related to the influence of the medical conditions/medications consumed during the treatment period. Approximately 65% of respondents reported a decreased appetite during the treatment period, which may have influenced the food preferences they provided in the questionnaire. Decreased appetite can be caused by various factors, including health conditions, side effects of medications, or stress due to medical treatment, which may reduce the relevance of the food preferences reported by patients. The second limitation is related to individual preferences during hospitalization. Each patient may have different food preferences as well as varying responses to hospital food services. Factors such as health conditions, eating habits, and personal preferences can influence appetite, which may be difficult to control in such studies.

Conclusion

Some areas perform well and are very important to patients. This indicates that hospital management should prioritize these three aspects to maintain sustainable food service satisfaction among inpatients. Furthermore, meal variety and tension are variables with high importance but low performance; therefore, they are crucial areas that need to be improved. Therefore, it is critical for hospital management to focus on improving these aspects to increase overall food service satisfaction levels and provide a better inpatient experience.

Suggestions for improvement based on research regarding tension for hospital management. First, investment in high-quality, durable cutlery that can withstand frequent use, as well as be easy to clean and sanitize, such as stainless steel utensils. Second, a cutlery with an ergonomic design is easy to grip, especially for patients with physical limitations or disabilities, so that the cutlery can be used with a comfortable handle.

Suggestions for future research include conducting comparative analysis between different time periods or shifts to identify performance variations, and then using IPMA again to assess the influence of food supply factors in each segment.

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