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# Factors Influencing Patients' Satisfaction with Meals Served at Hospitals in Malaysia

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**Abstract:** Hospitals play a vital role in restoring patients' health, and the quality of food served can significantly contribute to the recovery process. The food's taste, appearance, and freshness are key factors that can enhance patient satisfaction and, in turn, build trust, improving the hospital's overall performance. Given the many meals served to patients, hospital food service is a critical component of hospital management, with the potential for growth and improvement in service delivery. This research will examine the factors influencing food quality, including taste, appearance, and freshness, and explore how these elements impact patient satisfaction. The findings aim to help hospitals identify areas for improvement and enhance their food service operations.

**Keywords:** *Taste, appearance, freshness, satisfaction, hospital, patient meal*

## 1. Introduction

The quality of food served in hospitals is a critical factor influencing patients' overall satisfaction and recovery. In healthcare settings, particularly in hospitals, food is not merely a necessity but a vital component of patient care that can affect recovery times, patient morale, and the overall hospital experience. While medical treatment and attention are healthcare facilities' primary focus, food service's role in patient satisfaction cannot be overlooked. In Malaysia, where healthcare services are rapidly evolving to meet the needs of a diverse and growing population, hospitals must also adapt their food service strategies to enhance the patient experience.

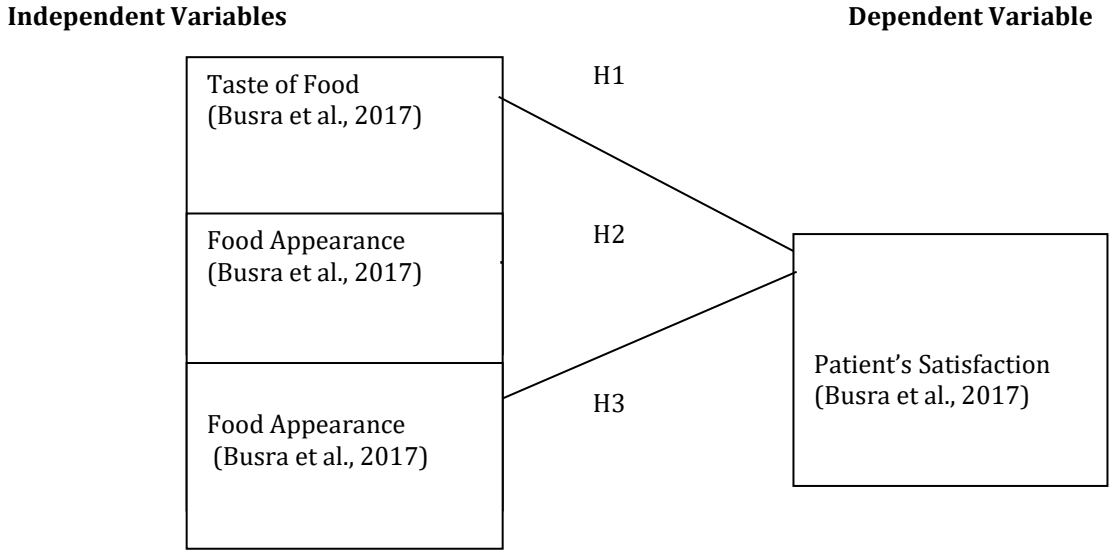
This research explores the key elements contributing to food quality in patients' meals in Malaysian hospitals, focusing specifically on how taste, appearance, and freshness influence patients' satisfaction. The study seeks to identify the components of food quality that are most significant to patients to provide actionable insights for hospital management to improve food services. Several studies have shown that food quality in healthcare settings impacts patient satisfaction and willingness to trust and recommend the hospital. Furthermore, there is increasing recognition that food, as part of the healing process, can directly affect a patient's psychological and physical recovery. As the demand for better food service increases in Malaysian hospitals, it is crucial to understand the relationship between the various dimensions of food quality—taste, appearance, and freshness—and their influence on patients' perceptions and overall satisfaction.

Previous research has demonstrated that food quality in healthcare settings can lead to improved patient outcomes, higher levels of satisfaction, and potentially more favorable hospital reviews. However, most Malaysian public hospitals do not provide menus, leaving patients unaware of their repetitive meals (Aminuddin et al., 2018). Foodservice is crucial for patient well-being, yet 40% experience disease-related malnutrition due to inadequate care. This long-standing issue has been emphasized by Wilandh et al. (2024). By investigating these factors in the Malaysian context, this study hopes to contribute to developing more patient-centered food service practices in hospitals, ultimately improving patient care and operational performance. The following are the research study's hypotheses:
H1: The taste of food had a significant relationship with patients' satisfaction
H2: Food appearance had a significant relationship with patients' satisfaction
H3: The freshness of food had a significant relationship with patients' satisfaction

The framework established by Busra et al. (2017) includes three independent variables: taste, appearance, and freshness of food. All three play a significant role in patient satisfaction. According to Lai and Gemming (2021),

patient satisfaction with a food service system is influenced by patients' perceptions of the food, the quality of service, and the overall environment.

**Figure 1: Conceptual Framework for this Study**




The taste of food, its appearance and freshness are equally important factors influencing patient satisfaction in hospitals. The visual appeal of a meal can significantly impact a patient's willingness to consume it, especially when dealing with illness or discomfort. A well-presented meal stimulates the appetite and creates a sense of care and attention from the hospital staff, which can positively affect the patient's overall experience. Research has shown that when meals are visually appealing, with vibrant colors and an organized presentation, patients are more likely to feel satisfied and confident in the food quality.

Furthermore, the freshness of food plays a critical role in ensuring that patients receive nutritious and safe meals, which directly impacts their recovery. Fresh ingredients contribute to better taste, higher nutritional value, and a more pleasant eating experience. When patients receive meals made from fresh, high-quality ingredients, they are more likely to perceive the food as enjoyable and beneficial to their health. Food taste, appearance, and freshness create a holistic meal experience that can significantly enhance patient satisfaction and contribute to better recovery outcomes in hospital settings.2. Literature Review.

**2. Food as a significant contribution**

The chord tympani, a branch of the seventh cranial nerve, transmits taste perception to the tongue's anterior two-thirds. The perikarya of these pseudo-unipolar afferent neurons are found in the ganglion geniculi. The glossopharyngeal nerve, or ninth cranial nerve, is responsible for taste perception in the distal portion of the tongue (Speth et al., 2023). The sensation we call taste is a combination of smell and taste. Taste is the technical name for combining sensory sensations obtained while consuming food and beverages. "Taste" refers to the sensation caused by stimulating taste receptor cells on the tongue's surface. This sense of taste, like smell, is based on chemical interactions between inputs and receptors during learning. Spices must dissolve in saliva to interact with taste receptors. Saliva then concentrates the dissolved chemicals near clusters of receptor cells known as taste buds. Without saliva, the taste buds' performance rapidly deteriorates. Chemical taste receptors are buried in "bumps" (known as papillae) on the tongue's surface (Younes, 2024).

Taste is one of the five basic senses that allow people to discriminate between different substances' odors. People will be able to simultaneously integrate their senses to avoid ingesting potentially harmful chemicals, facilitate oral ingestion, and evaluate the nutritional content of food. Most people know four main flavors: sour, bitter, salty, and sweet. Nonetheless, other researchers have included different flavors, including umami (monosodium glutamate [MSG]), disodium guanylate (disodium inosinate), metallic (iron salts), and chalky

(calcium salts) (Sa'uadi et al., 2023).

**The food appearance of the patient**

Visual information commonly influences consumers' purchasing decisions in their daily lives. It is widely understood that exterior food features, such as product packaging design, can influence human preferences and decisions via expectation processing. Packaging significantly impacts customers' sensory experiences of food by providing visual information, which in turn influences their consumption and eating behavior. Color not only conveys sensory information in the visual domain, but it also influences consumer expectations and assessments of items and brands. Aside from the impact of color in the visual modality, the sensation transmission phenomenon has proven visual appearance's influence on flavor perception. The concept of color-flavor association, a common cross-modal phenomenon (Jiang et al., 2024), refers to people's tendency to associate various colors with specific flavors based on previous experiences or expectations. For example, a red-colored drink could be related to a sweet or strawberry flavor. Color-flavor associations can help consumers retrieve information and even change their impression of the actual dish. Given these considerations, we may influence consumers' food preferences by combining color and other cognitive components (Jiang et al., 2024).

**The freshness of the food for the patient**

Freshness is a major issue in the fish and meat industries, and multisensory analysis is an efficient technique for shelf-life and post-mortem duration monitoring (Lvova, 2016). According to Roisin (2023), although date codes can provide useful information regarding food freshness, they are not necessarily trustworthy indicators of food safety or quality. Regardless of the date code, factors such as storage conditions, handling, and processing can all affect the freshness and safety of food goods. Besides, smell and taste are frequently effective predictors of food freshness, particularly for perishable goods such as meat, fish, and fruit. While scent and taste can be strong indicators of freshness, when analyzing the safety and quality of food products, it is always vital to employ sound judgment and common sense. Some foods may not indicate deterioration, yet they can still cause foodborne illness if infected with hazardous bacteria or other pathogens. Proper food handling techniques generally include rapidly refrigerating perishable items, heating foods to their prescribed internal temperature, and rejecting any food that seems or smells rotten.

Fresh food is characterized by perishability, temperature sensitivity, unsustainable usage of natural resources, and seasonality (Liao et al., 2023). Smart food labels (SFL), which provide people with knowledge of the freshness of the food they buy, can swap out the concept of "shelf life" for food packaging by adopting a dynamic tagging system (Lv et al., 2024). The freshness of food products influences consumer buying decisions. Consumers are hesitant to acquire food items that do not appear fresh. Fresh green things, bakery, and culinary products are typical instances of deteriorating products on the market (Iqbal et al., 2024).

**Patient satisfaction in the hospitality industry**

Due to the nature of its business, the hospitality industry has served as a model for pioneering outstanding service standards emulated by other industries in the service economy. The goal is to teach team members how to make the best positive impression with guests, exceed expectations, and achieve guest loyalty, whether it's Disney's strategy to be "assertively friendly," the Ritz Carlton Hotel's "zero-defect policies," Danny Meyer's "hospitality quotient," or an unnamed restaurant becoming a neighborhood gathering place. Good meals, attentive staff, and pleasant environments contribute significantly to hospital demand (Poorani et al., 2023).

Nurses are well-known for putting in a lot of effort to keep mastectomy patients comfortable by providing physical and psychological support. It should be highlighted that when providing psychological assistance, nurses should consider their patients' personality features as well as their current psychological state. Nurses, for example, may use trust-based communication to reduce patients' fear or to increase their understanding of surgery and sickness during the perioperative period. Other nurse therapies that may benefit patients during the perioperative phase include promoting physical and mental relaxation, maintaining patient privacy, and providing additional support to family members (Sağdıç et al., 2024).

Moreover, the measure of medical service quality was patient satisfaction, which was defined as the decision made by patients and their families after contrasting their emotions throughout the medical service with their

pre-existing expectations (Fang et al., 2019).

## 3. Methodology

The research adopts a quantitative approach using simple random sampling to include 382 patients from both private and government hospitals. This study uses a structured questionnaire divided into five sections. Section A collects demographic information, while Sections B, C, and D assess the independent variables: taste of food, food appearance, and food freshness, respectively. Section E uses a Likert scale (1-5) to measure the dependent variable, patients' satisfaction. The data will be analyzed using statistical methods, including pilot tests, reliability analysis, normality testing, descriptive statistics, and multiple linear regressions, utilizing IBM SPSS Statistics.

## 4. Findings

**Table 1: Cronbach Alpha of All Variables**

| Variables | Cronbach's Alpha | Number of Items | Number of Respondents |
|---|---|---|---|
| Taste | 0.905 | 3 | 382 |
| Appearance | 0.857 | 5 | 382 |
| Freshness | 0.779 | 5 | 382 |
| Satisfaction | 0.708 | 4 | 382 |

Table 1 displays the Cronbach's Alpha values for all variables, including the independent variables: taste (0.905), appearance (0.857), freshness (0.779), and the dependent variable: satisfaction (0.708). All variables in the study demonstrate Cronbach's Alpha values exceeding 0.7, signifying that the data is reliable for the analysis. Scores above 0.8 are deemed good, 0.7 is acceptable, and values below 0.6 are considered questionable. The significance of these Cronbach's Alpha values is that they exceed the commonly accepted threshold of 0.7, suggesting that the data collected is reliable for further analysis. To elaborate, scores over 0.8 are categorized as demonstrating good reliability, while those at or above 0.7 are deemed acceptable. Conversely, values below 0.6 indicate questionable reliability. Overall, the results indicate that the study's variables are well-measured and can provide valid insights into the relationship being investigated.

**Table 2: Demographic Respondent Profile**

| Characteristics | Participants | Frequency | Percentage |
|---|---|---|---|
| Age | 31-50 | 125 | 32.7 |
| | 50 and above | 67 | 17.5 |
| | Below 30 | 190 | 49.7 |
| Gender | Female | 223 | 58.4 |
| | Male | 159 | 41.6 |
| Education | | | |
| | No formal education | 38 | 9.9 |
| | Primary | 85 | 22.3 |
| | Secondary | 100 | 26.2 |
| | Tertiary | 159 | 41.6 |
| Length of stay (days) | 1-2 | 111 | 29.1 |
| | 3-7 | 123 | 32.3 |
| | 8-16 | 94 | 24.6 |
| | More than 16 | 54 | 14.1 |
| Marital status | Married | 130 | 34.0 |
| | Not married | 252 | 66.0 |

As shown in Table 2, demographic data show that there are 382 total respondents with three age groups: below 30 years, 31-50 years and 50 years and above. 190 respondents, representing 49.7% of the sample, are below 30 years old, while 125 respondents, accounting for 33.9%, are 31-50. The lower number of respondents, aged above 50, accounted for just 67 respondents, representing 17.5% of the sample. Other than that, data shows that there are 382 total respondents, with 223 (58.4%) female and 159 (41.6%) male participants. This indicates that most respondents to the questionnaire are female. Furthermore, the data also collects the background of the respondent's level of education.

The highest number of the respondents' educational level is from the *tertiary level,* with 159 (41.6%) respondents. This is followed by the *secondary level*, with 100 (26.2%) respondents. Respondents who completed primary school are 85 (22.3%) people. Meanwhile, having no formal education gains 38 respondents (9.9%). This indicates that most of the local respondents are *from tertiary* holders. Based on the Length of stay, 3-7 days, representing 123 (32.2%) is the highest number of respondents, followed by 1-2 days with 111 (29.1) respondents, 8-16 days with 94 (24.6%) respondents and the lowest is more than 16 days 54 (14.1) respondents. Additionally, demographic data shows that unmarried respondents make up the highest number at 252 (66%); married respondents are the lowest at 130 (34%). This indicates that most of the participants in this data are not married respondents.

**Table 3: Descriptive Analysis of Variables**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Taste | 382 | 1.00 | 3.00 | 1.9747 | .62485 |
| Appearance | 382 | 1.00 | 2.60 | 1.8832 | .34669 |
| Freshness | 382 | 1.00 | 2.60 | 1.9230 | .50721 |
| Satisfaction | 382 | 1.00 | 3.00 | 1.9555 | .60940 |
| Valid N (listwise) | 382 | | | | |

Table 3 presents all the variables derived from the descriptive analysis, including each variable's mean and standard deviation. The average mean scores for the following variables are as follows: taste (M = 1.9747), appearance (M = 1.8832), freshness (M = 1.9230), and satisfaction (M = 1.9555). Please note that the Likert scale used is as follows: (1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree).

**Table 4: Correlation Analysis**

| | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| **Model** | | **B** | **Std. Error** | **Beta** | **t** | **Sig.** |
| 1 | (Constant) | -.252 | .109 | | -2.309 | .021 |
| | Taste | .113 | .036 | .115 | 3.171 | .002 |
| | Appearance | .291 | .070 | .166 | 4.163 | .000 |
| | Freshness | .747 | .047 | .622 | 15.833 | .000 |

a. Dependent Variable: Satisfaction

Table 4.4 shows a correlation analysis, and the appearance beta value (β) is 0.291; $p<0.05$. Beta = 0.747; $p<0.05$ is the freshness beta value. According to the analysis, these independent factors showed significant relationships with the dependent variables. Because freshness has the most extensive beta value compared to other independent variables, it is the most significant component with a strong link with dependent variables. Appearance is the second crucial element, while taste is the third. Taste has the lowest relationship and shows a bad relationship with patients' satisfaction. H1: The taste of food had a significant influence on patients' satisfaction.

The hypothesis indicates a positive correlation between the taste of food and patients' satisfaction. Based on Figure 15, the relationship between food taste and patients' satisfaction is analyzed as $t = 3.171$ and $p = 0.002$; $p<0.05$. In conclusion, this states that the taste of food will increase patients' satisfaction. It is indicated that H2: Food appearance had a significant influence on patients' satisfaction.

The hypothesis indicates a positive correlation between food appearance and patients' satisfaction. Based on Figure 15, the relationship between food appearance and patients' satisfaction is analyzed as $t = 4.163$ and $p = 0.000$; $p<0.05$. In conclusion, this stated that food appearance will increase patients' satisfaction and shows that H3: The freshness of the food had a significant influence on patients' satisfaction.

The hypothesis indicates a positive correlation between the freshness of the food and patients' satisfaction. Based on Figure 15, the relationship between the freshness of the food and patients' satisfaction is analyzed as $t = 15.833$ and $p = 0.000$; $p<0.05$. In conclusion, this states that the freshness of the food will increase patients' satisfaction.

**Discussion**

The study attempted to discover factors affecting patients' satisfaction with meals provided in Malaysian hospitals, emphasizing taste, appearance, and freshness of food. This has been supported by Lee & Mo (2019), who said that meal satisfaction was high when food options were available and people were served high-quality cuisine that smelled and tasted excellent or was personalized. The study found strong positive correlations between the taste of food, food appearance and the freshness of the food towards patient satisfaction. This has been supported by Frost & Baldwin (2021), who said that good nutrition is essential to patient care.

The meal's freshness appeared as the most influential aspect, followed by its appearance and taste. This has been supported by Roisin (2023), who said that although taste and scent can be robust markers of freshness, it is always important to use common sense and good judgment when evaluating the safety and quality of food products. 65% (248) of the 382 respondents are satisfied with the freshness of the food. These findings are consistent with earlier research, emphasizing the relevance of sensory qualities in food serving within healthcare settings. This has been supported by Osman et al. (2021), who said that when the patient is satisfied, the food will be fully eaten, which can improve the nutrients in the patient's body. The positive correlation between food quality and patient satisfaction emphasizes the importance of hospital food services in improving patient recovery and overall experience. 5. Conclusion and Recommendations for Future Research

In conclusion, the study found that improving hospital meals' taste, appearance, and freshness can considerably increase patient satisfaction. The findings indicate that hospital administrators should prioritize food quality characteristics to improve patient outcomes and satisfaction. Focusing on these key factors allows hospitals to provide a more desirable patient experience, which is critical for patient recovery and faith in healthcare services. The study's findings are helpful for hospital food service management and emphasize the significance of ongoing improvement in food quality standards. Furthermore, findings have significant implications for hospital food service management. Administrators can increase patient satisfaction and wellness outcomes by prioritizing improvements in the taste, appearance, and freshness of hospital meals. The study also concludes that investing in food quality is an essential component of patient-centered treatment. For policymakers, the findings emphasize the importance of allocating adequate resources to hospital food services to maintain good food quality standards. Furthermore, the study establishes a framework for future research to investigate additional characteristics that may influence patient satisfaction with hospital meals, thus contributing to the healthcare service quality improvement field.

In addition, this study has significant limitations. First, the sample size was confined to a few Malaysian hospitals, which may not reflect the entire country. Second, the study used a cross-sectional design, which limits the capacity to demonstrate causality between the variables evaluated and patient satisfaction. Furthermore, the study relied on self-reported data, which may be prone to response bias. As a suggestion for future studies, we could overcome these limitations by using a bigger and more diversified sample size, longitudinal designs, and objective food quality measurements.

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