The Relationship Between Quality of Food and Nutrition Services and Patient Loyalty with Mediated Patient Satisfaction at X Hospital Bogor

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Hospital’s success depends on patients’ expectations, perception, and judgment on the quality of services provided by hospitals. The study aims to determine the suitability between expectations and perceptions quality of food and nutrition service which is received by patients during inpatient care at X Hospitals and to analyze the relationship between quality of food and nutrition services and patient loyalty that is mediated by patient satisfaction. This research used a longitudinal prospective survey with a quantitative approach and simple random sampling. The sample of this study consists of 35 elderly inpatients 60 years old and over and at least three days of being hospitalized. The data required was collected through the standard SERVQUAL, satisfaction, and loyalty questionnaire and then it was path analyzed using the SPSS software. The result of the study showed the average perceived congruence between perceptions and expectations of the quality of food and nutrition services was 95.22%. The correlation analysis shows all of the relationship independent and dependent variables have a positive and significant pattern (p<0.05). Based on the results of the path analysis shows that the quality of food and nutrition services has a direct effect (39.3%) on patient loyalty greater than the indirect effect (27.2%). Patients’ perception of food and nutrition service exceeded their expectations. The variable patient satisfaction does not mediate the relationship between the quality of nutritional and food services and patient loyalty at the X Hospital in Bogor.

Keywords: Quality of Food and Nutrition Service, Patient Satisfaction, Patient Loyalty

1. INTRODUCTION

Hospital is an organization related to services which are required to be able to match the perception and expectation of perceived service by the patient. Patient satisfaction is an important indicator to assess the quality of service in the hospital. The satisfaction experienced by patients is closely related to the rate of the quality of service which is provided by the hospital. Customer assessment of the quality of hospital services is important as a reference to improve hospital service quality and achieved customer satisfaction and customer loyalty. A service quality affects customer satisfaction [1, 2]. Here, a customer satisfaction is not enough, they must be an impact on customer loyalty because the company will increase customer loyalty with increasing customer satisfaction [3]. In addition, the quality of service must also be improved because it is the basis of loyalty that will make loyalty. Patient loyalty is built by the patient’s experience at the hospital but it depends on the level of experience. As we know that loyalty is the last stage of customer behavior. If customers become loyal customers, they will not choose another product or service. Loyalty customers is depended from their experience about received the services or products. One of the services that provide at the hospital is food and nutrition services. The high level of food and nutrition services in hospitals could be assess if the output that is produced close to the expected results and applied appropriate to the standard and procedure. A patient experience and satisfaction models of food and nutrition services at the UK National Health Service hospital [4]. It states that satisfaction is obtained by patients related to hospital meals can be identified from patient expectations and patient perceptions of the quality of services provided. The theory model by SERVQUAL can measure the quality of food and nutrition service which is consisted of five dimensions, namely tangible, reliability, responsiveness, assurances, and empathy [5]. According to the survey satisfaction and loyalty that is held by X JoMA, Vol. 04, No. 06, 2020 No.1511/2020/11
Hospital in Bogor found about 4% back hospital to get re-admission and the survey also found that there are several patient complaints related to the food and nutrition services in 2019. The problem of food and nutrition service quality should be solved now. The study aims to determine the suitability between expectations and perceptions of food and nutrition services which is received by patients during the treatment period and to analyze the relationship between food and nutrition services quality and patient loyalty that is mediated by patient satisfaction. The previous research found that a significant relationship between the variables of service quality, customer satisfaction, and customer loyalty in the scope of outpatient and inpatient services, and the samples have gained various age criteria. However, this study used the geriatric patient as the population sample because X Hospital in Bogor is the pioneer of elderly hospital services in Indonesian.

2. LITERATURE REVIEW

A. Patient Loyalty
The characteristics of loyal customers are they repeatedly buy products or use services at the same company, they continue to use products or services even though they get another offer from other companies, and they promote the product or services to others about the satisfaction of using the products or services [6].

Furthermore, customer loyalty is categorized as a deeply held commitment to rebuy or patronize a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behavior [7]. It means that customer loyalty commits to repurchase service products consistently in the future, despite marketing influences potentially lead to change behavior. In a business context, the loyalty describes the continuity of customers buy and use the product in the long term, repeatedly and voluntarily recommend the products to their friends or colleagues. Loyalty is traditionally illustrated as loyalty and enthusiastic dedication to the country, dream, or individual [8]. The variable dimensions of customer loyalty include make regular repeat purchases, purchase across product and service lines, buy one or more products and services at the same business entity, make a recommendation based on experiences about products and services to colleagues or other customers, and customer denies another product [9].

B. Service Quality
Service quality is a concept consisting of five dimensions, namely tangible, reliability, responsiveness, assurance, and empathy [10]. These five dimensions are instrumental in shaping customer loyalty levels. The dimension of tangible that the ability of a company shows the appearance company related to physical facilities and infrastructure which is relied on as clear evidence of the services which is provided by the service provider. It includes several components such as physical facilities, equipment used, and employee appearance. The reliability dimension of the company’s ability to provide services as promised accurately and reliably includes punctuality, equal service to all customers without error, sympathetic attitude, and high accuracy.

The responsiveness dimension It related to the company policy to make a fast response (responsive) and accurate service to customers. The Assurance dimension is closed to knowledge, politeness, and ability of company employees to foster customers’ trust in the company. Then the empathy dimension is related to the psychological approach about how to give sincere and individual or personal attention to customers by understanding their desires.

C. Customer’s Expectation
A customer expectation is related to customer thinks regarding the product before they try or use [11]. Its use as a standard or reference to assess the product's performance. The expectation can relate how to companies add some benefits to their offer which does not only satisfy consumers but also bring surprise and delight them exceeding consumer expectations [12]. Expected service is defined customer desires about the products or services [10].

D. Customer’s Perception
Perception as a process of selecting, organizing, and interpreting information about a product or service by a customer [8]. Perception is influenced by the condition of service perceived by customers. Another expert also said the same thing about the perception. A perception is the process of selecting, organizing, and interpreting information input, received sensations through sight, feeling, hearing, smell, and touch to produce meaning [13].

Perception is defined as a process of an individual in selecting, organizing, and interpreting input and information to create a meaningful picture of the world. Everyone has different perceptions, even though they are faced with the same situation and conditions [7]. The level of conformity will influence the priority of improvement based on factors that affect customer satisfaction. Regarding the results of the assessment of the customer expectation and customer perception, it will calculate as the level of conformity between the level of importance and the level of implementation.

E. Customer’s Satisfaction
The company should maintain the quality of services which are provided to its customers. It will influence the customer to use or buy repeatedly if the quality of service has received by customers is the same or higher than they expect. However, the perceived service is lower than the expected service, consumers will be disappointed and it causes them to use another product or service from other companies [14]. A customer satisfaction is a pleasant or unpleasant feeling experienced by customers based on the
results of his evaluation of the expectation and reality of product/service obtained [13]. The existence of a gap theory in the healthcare industry [15,16]. They explain that basically the patient's orientation and service provider is different, and if the condition is appropriate, the patient will feel satisfied. Therefore, patient satisfaction plays an important role in assessing service quality and continued service in the next period [17].

F. Hypothesis
Thus, in this study we noted the several hypothesis related relations between food quality as follows:
1. H1: There is a positive and significant relationship between the quality of food and nutrition services and patient satisfaction.
2. H2: There is a positive and significant relationship between the quality of food and nutrition services and patient loyalty.
3. H3: There is a positive and significant relationship between patient satisfaction and patient loyalty.
4. H4: There is a positive and significant relationship between the quality of food and nutrition services and patient loyalty mediated by patient satisfaction.

3. METHODOLOGY
The research method design uses a longitudinal prospective survey with a quantitative approach. This research is conducted at the Bogor Senior Hospital during July 2020. The sample who participate in this study were 35 inpatients at the Bogor Senior Hospital whose calculations used G* power software and use the simple random sampling method. The sample meets the criteria in the study, there is inpatient at BSH, good in communication patient who use the oral feeding route, and patients who inpatient a minimum 3 x 24-hour stay. Patients who include in this study are elderly patients aged 71-90 years. The study used a questionnaire distributed to respondents adopted to the Service Quality (SERVQUAL) that measured the five dimensions of health service quality. The score answer used a Likert scale. The questionnaire is given twice, there was on the first day of treatment that purposed to find out the patient's expectations regarding the service, and at the end of the treatment that purposed to find out the patient's perception of the service received (see Figure 1).

Table I. Three Box Method’s Matrix of Behavior

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Three Box Method’s Category</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Patient Expectation</td>
<td>V</td>
<td>Have high expectation for food and nutrition services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Feel satisfied and happy</td>
</tr>
<tr>
<td>2</td>
<td>Patient Perception</td>
<td>V</td>
<td>Satisfied with the food and nutrition service received</td>
</tr>
<tr>
<td>3</td>
<td>Patient Satisfaction</td>
<td>V</td>
<td>Will revisit and recommend to others</td>
</tr>
<tr>
<td>4</td>
<td>Patient Loyalty</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Research constellation

Validity test used Pearson Product Moment Correlation; a variable is said to be valid if r count> r table. The questioner is tested by respondents 10 people and the validity test has a significant level of 5% that is valid if it has a minimum result of 0.632 (r table). According to the output r count > r table, it stated that all of the questioners are valid. The reliability test used the Cronbach Alpha test if Cronbach's Alpha value is> 0.6 then the questionnaire is declared reliable or consistent. Based on the criteria of reliability testing by Cronbach's Alpha that has criteria min score of Alpha at least 0.6, the reliability test is found all of the questioners met the reliability criteria. To get the tendency of respondents’ answer of each variable on the score from calculation of the three-box method. The categories are Low: 8.7 – 16.9, Moderate: 17 – 25.7 and High: 25.8 – 35 (see Table I).
Data analysis techniques in this study using univariate analysis produced a descriptive analysis of service quality in terms of comparison of patient expectations and perceptions of nutritional services received during treatment. The bivariate analysis used the correlation test using SPSS V 23. The multivariate analysis used path analysis by constructing the conversion of structural equations and measurement models:

\[ Z = \alpha + PX \]  
\[ Y = \alpha + PX + PZ + \varepsilon \]

where, the parameters as follows: Z is stand for Patient Satisfaction, X is Quality of food and nutrition services, Y is Patient Loyalty, P is Determination Coefisient and e stand for Error calculation.

4. RESULT AND DISCUSSION

A. Respondent Characteristic
The research was conducted on 35 geriatric patient’s and the result showed that most respondents who are treated at X Hospital aged 71-80 years about 15 respondents (43%). Meanwhile, there are 2 respondents (6%) aged over 90 years old. According to the gender, most of the respondents treated at the X Hospital were male about 20 respondents (57%) and female about 15 respondents (43%).

B. Level of Conformity of Patients’ Perceptions and Expectations of Patients on Food and nutrition Services
Table II shows that the average level of conformity between patient perceptions and expectations in the dimension of assurance is 95.2%. The lowest level of conformity is found in the food safety guarantee served about 92% but the patient is satisfied with food safety because the percentage above the minimum standard service. In this indicator, the patient feels that the diet which was given is appropriate to the disease, the food is safe to consume, the nutritionist and other nutrition staff shows friendliness and politeness during inpatient visits. Furthermore, the recapitulation of conformity level data can be seen in Table II.

Table II. Recapitulation of Comparison of Expectations and Perceptions of Patients

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean Patient Perception</th>
<th>Mean Patient Expectation</th>
<th>Percentage of comparison of expectation and perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tangible</td>
<td>3.38</td>
<td>3.54</td>
<td>95.0%</td>
</tr>
<tr>
<td>2. Reliability</td>
<td>3.18</td>
<td>3.38</td>
<td>93.5%</td>
</tr>
<tr>
<td>3. Responsiveness</td>
<td>3.24</td>
<td>3.49</td>
<td>94.4%</td>
</tr>
<tr>
<td>4. Assurances</td>
<td>3.41</td>
<td>3.58</td>
<td>95.2%</td>
</tr>
<tr>
<td>5. Empathy</td>
<td>3.42</td>
<td>3.47</td>
<td>98.0%</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td>95.22%</td>
</tr>
</tbody>
</table>

Furthermore, the highest level of conformity is empathy about 98%. Meanwhile, the lowest level of conformity is reliability about 93.25%. It illustrates that the quality of food and nutrition services which is received by patients during the inpatient period following patient expectations. This study shows that the quality of food and nutrition services on five dimensions is above the standard. The average of the quality of service on tangible (85.61%), reliability (84.67%), responsiveness (94.00%), assurance (87.25%) and empathy (86.92%) in the high category.

The expectation is a desire that is formed due to past experiences, certain personal needs, word of mouth, and external communication. Perception defines as what is customer feels when or after the public enjoys a certain type of service. Service quality must start from customer needs and end with customer perceptions. It means that a good quality service is not based on the point of view or perception of the service provider but it is based on the customer’s point of view or perception. If the received service is as the expectation, the perceived service quality measure as a good service and bring the satisfaction. If the received service exceeds customer expectations, the perceived service quality is ideal. Thus, the quality of service depends on the ability of service providers to consistently meet customer expectations. This study a service quality is a comparison between customer expectations and perceptions of the service performance which is they received. In this study, the patient satisfaction is the feeling of pleasure or disappointment which occurs after comparing the customer perceptions and customer expectations. In addition, the patient’s perception of food presentation is an indicator of the patient’s subjective assessment of the hospital’s food presentation includes food appearance, food taste, and menu variations. Besides, patient perception is an interesting topic in consumer behavior that influences patients to purchase services. The patient’s perception is part of the evaluation at the post-purchase stage and orientation for the hospital to create the marketing strategy.

Table III. Analysis of Correlation and Determination

<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Food and nutrition Service – Patient Loyalty</td>
<td>0.665**</td>
<td>0.000</td>
</tr>
<tr>
<td>Quality Food and nutrition Service – Patient Satisfaction</td>
<td>0.671**</td>
<td>0.000</td>
</tr>
<tr>
<td>Patient Satisfaction – Patient Loyalty</td>
<td>0.668**</td>
<td>0.000</td>
</tr>
</tbody>
</table>

C. Relationship Between Food and nutrition Services Quality and Patient Satisfaction
This study found that the relationship between the quality of nutritional services and the satisfaction of inpatients at X Hospital shows a positive pattern with R-value 0.671 and significant with P-value 0.000 less than 0.05.
It means that increase the food and nutrition quality service will impact to make a patient satisfaction with the food and nutritional service that they have received as an inpatient. The result of this study supports previous research regarding service quality towards customer satisfaction that foodservice quality related to eating habits, food taste, and performance of nutrition staff affects patient satisfaction. Here, a service quality consists of tangibles (X1), reliability (X2), responsiveness (X3), assurance (X4), and empathy (X5) variables have a significant relationship on patient satisfaction. In addition, a similar result as this study which shows that there is a positive and significant relationship between service quality and customer satisfaction. Then, a patient's assessment of quality is determined by two things such as the patient’s expectations of quality (expected quality) and patient perceptions of quality (perceived quality). The success of food and nutrition service is measured by patient perception of the provided services quality that illustrates the significant result. Furthermore, in this study a service quality influence customer satisfaction and attract patient to use this service in the future.

**D. Relationship Between Food and nutrition Services Quality and Patient Loyalty**

The result found that the correlation between the quality of food and nutrition services on patient loyalty has a positive pattern with R-value is 0.665 and significant which is proven by P-value 0.000 less than 0.05. This study shows that increasing food and nutrition quality service will increase the loyalty of patients among food and nutrition services. The dimensions of service quality have a simultaneous relationship to patient loyalty. It means that whether the quality of service is good or not will impact significantly patient loyalty. Thus, to confirms that service quality has a direct relationship with loyalty patients.

**E. Relationship between Patient Satisfaction and Patient Loyalty**

Based on the results, it is found the correlation between patient satisfaction and loyalty of inpatients at the Bogor Senior Hospital has a positive pattern with R-value 0.668 and a significant relationship with p-value 0.000 less than 0.05. It means that increasing patient satisfaction will increase patient loyalty. These results prove that patient satisfaction has an impact on patient loyalty. This study supports previous research on patient satisfaction. It’s found that the customer satisfaction has an impact on the formation of customer loyalty in long term.

When customers feel satisfied with a product or service is provided by a company, the customer tends to re-purchase the product or re-visit the service, which is an indicator of customer loyalty.

**F. The Relationship between Food and nutrition Service Quality and Patient Loyalty Mediated by Patient Satisfaction.**

Regarding the analysis of the relationship between food and nutrition service quality on patient loyalty mediated by patient satisfaction, it has a significant P value of 0.000 less than 0.05. It indicates that the variables of food and nutrition service quality and patient satisfaction have a positive and significant relationship on patient loyalty variables. So the regression equation is $Y = 0.606 + 0.454X + 0.368Z + \epsilon$ with the positive regression line equation means that the better the quality of food and nutrition services and patient satisfaction, the patient's loyalty will increase significantly. The magnitude of the influence of the quality of food and nutrition services on patient loyalty mediated by patient satisfaction can be seen in the direct influence and indirect influence between the variables. The following is a table for calculating the direct and indirect effects that obtained from the results of the analysis in the following table: Based on the table above, it found that the food and nutrition service quality variable (X) has a direct relationship with patient loyalty (Y). Furthermore, the direct relationship of the patient satisfaction variable (Z) on patient loyalty (Y) is equal to to $\epsilon_1 = \sqrt{(1 - 0.532)} = 0.648$. Here, direct relationship described:

1) The relationship between food and nutrition service quality (X) on patient loyalty is 39.3%

2) The relationship between patient satisfaction (Z) on patient loyalty is 27.2%

Furthermore, the Indirect relationship is described as a relationship between food and nutrition service quality (X) and patient loyalty (Y) which is mediated by patient satisfaction (Z) is the multiplication of the beta value of food and nutrition service quality (X) on patient loyalty (Y) with the beta value of patient satisfaction (Z) on patient loyalty. (Y). $X \rightarrow Z \rightarrow Y = (0.671 \times 0.405) = 0.272$ or 27.2%. Based on the mediation test, it is found that the relationship between quality of food and nutritional services and patient loyalty is significant (p-value <0.05). Besides, it is known that the quality of food and nutrition services has a direct effect (39.3%) on patient loyalty is greater than the indirect effect (27.2%) the direct and indirect calculation is showed in Table IV.
In addition, it is known that the quality of food and nutrition services has a direct effect (39.3%) on patient loyalty greater than the indirect effect (27.2%). It means that the variable patient satisfaction does not mediate the relationship between the quality of food and nutrition services and patient loyalty at the Bogor Senior Hospital (see Figure 3).

![Figure 3. Diagram Path Analysis](image)

The results indicate that patients will re-visit the X Hospital because the quality of food and nutrition services which is received has exceeded expectations. It is described the level of conformity between patient expectations and patient perceptions during the admission in the five service dimensions that reach above 93%. Including this research, it found that the quality of food and nutrition services and patient satisfaction have affected patient loyalty by 0.532. It is concluded that the relationship between the quality of food and nutritional services and patient loyalty mediated by patient satisfaction is 53.2%. While about 46.8% is influenced by other factors which are not examined in this study. The results of the mediation test show that the highest direct relationship on patient loyalty is patient satisfaction compared to the food and nutrition service quality. The quality of food and nutrition services has an indirect relationship with patient loyalty of about 0.345 (34.5%). It appears that a direct relationship is greater than an indirect relationship. So, the relationship between patient satisfaction on patient loyalty indicates the strongest in its direct relationship. A variable can be said to be a mediator if the result is path c is significant, path a is significant, path b is significant and path c’ is not significant. In this study, the relationship between the quality of food and nutrition services and patient satisfaction and patient loyalty has resulted in two independent estimation values of patient satisfaction and quality of food and nutrition service. The prediction of patient satisfaction on patient loyalty describes as the coefficient of b, while the prediction of the quality of food and nutrition services on patient loyalty describes as the coefficient of c’. Path b is expected to be significant (p < 0.05), while path c’ is expected to be insignificant (p> 0.05).

A customer satisfaction did not mediate the relationship between customer service quality and customer loyalty. This is evidenced by the value of the mediation coefficient of 0.0887 which is smaller than the value of the direct effect of 0.409. In addition, a different result from the studies above, namely that service quality has an indirect relationship to patient loyalty. In other words, patient satisfaction does not mediate the relationship between service quality and patient loyalty. This is because the services provided by expectations of the patient. This study does not support a company will achieve customer loyalty if the company reaches a maximum level of customer satisfaction. The company will get benefit from customer satisfaction. If customer satisfaction has been achieved, the company maintain old customers and attract new customers. The customers will automatically have a good impression of the product and will tell their experience to others to use the product so that it will benefit the company when the company achieves customer satisfaction.

5. CONCLUSION
The conclusion of this study showed all of the variable categorized as a high index based on the distribution of questionnaires response respondents. Patients’ perception of nutrition and food services exceeded their expectations. According to the relationship between the independent and dependent variable show a positive pattern and significant. The variable patient satisfaction does not mediate the relationship between the quality of nutritional food and services and patient loyalty at the Bogor Senior Hospital.

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