

INFLUENCE OF SERVICE QUALITY FACTORS ON PATIENTS' SATISFACTION ON PRIVATE DENTAL CLINICS IN KLANG VALLEY, MALAYSIA

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Abstract—To ensure the growth of a business, service providers should understand and evaluate the importance of service quality and patients satisfaction. Service quality is understood as the extent to which consumers' pre-consumption expectations of quality are confirmed or disconfirmed by their actual perceptions of the service experience. Patient satisfaction could influence a patient's decision to visit a dentist, schedule and maintain visits, and follow dentist's instructions. The main purpose of this study was to describe the relationship between service quality and patients satisfaction on private dental clinics in Klang Valley, Malaysia. The five SERVQUAL dimensions of service quality were used to observe how patients feel about the service quality and how it can influence patient satisfaction. A set of questionnaire was developed according to the SERVQUAL instrument and distributed using the Google Forms platform. The link to the questionnaire was shared to five (5) private dental clinics in Klang Valley, where the clinics then shared the link to their patients. From the analysis carried out using SPSS, it was found out that, service quality did significantly influence patient satisfaction, proved via correlation analysis. The regression analysis showed that three service quality dimensions, tangibles, responsiveness and empathy had a significant positive influence on patient satisfaction. In conclusion, it is recommended that dental service providers should aim to improvise more on the tangible, responsiveness and empathy dimensions to ensure patients are satisfied and to gain loyal patients, allowing for overall growth and expansion of the business.

Keywords— service quality, patient satisfaction, private dental clinic, SERVQUAL.

I. Introduction

The National Oral Health Plan for Malaysia (2011), defines optimal oral health as a state of health, free from ongoing illness that allows a person to eat, speak, interact, and do daily tasks without pain, discomfort or humiliation. Though the majority of oral disorders are not life threatening, the repercussions of poor oral health could lead to a significant impact on quality of life.

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As people in diverse parts of the world exhibit varied patterns of oral disorders, the perceived and actual need for dental treatment is growing globally (Marcenes *et al.*, 2013). Regardless of patients' socioeconomic level or other personal or environmental situations, it was clear that the utilization of oral health care services has improved globally, despite fluctuating market demands (Marcenes *et al.*, 2013). A rise in dental attendance was also seen in Malaysia too as Malaysia is a developing country, and citizens of all ages have become more conscious of oral health (Ahmad, 2017). In Malaysia, public and private institutions and organizations are involved in the oral healthcare system (Musa, Bernabe and Gallagher, 2020). Since the market for dentistry in Malaysia encompasses a wide range of patients' treatment and desires, it is plausible to conclude that dentistry in Malaysia has a bright future that would allow patients to seek a wide range of treatment procedures across several fields of the practice.

Quality control and quality management are necessity for healthcare services to survive in today's competitive environment (Aghamolaei *et al.*, 2014). Hence understanding, measuring, and improving quality becomes a significant problem for all healthcare companies (Zarei *et al.*, 2012). Various measuring models for assessing and evaluating service quality exists but SERVQUAL, established by Parasuraman (1985), based on service quality gap theory, is the most frequent and commonly used model (Lin, Xirasagar and Laditka, 2004).

Patient satisfaction is crucial in determining the overall quality of care. A recent review found that people were more favorable to a dental practice when they thought the dental staffs listened to their concerns (Sbaraini *et al.*, 2012). Satisfaction level might vary depending on the dental procedure, and the clinical groups serviced (Mitchell *et al.*, 2017). In the dental sector, patient satisfaction could assist in identifying the strengths and shortcomings of dental services and improve treatment quality (Ali, 2016).

This study focuses on the interaction between service quality factors and satisfaction on private dental clinics in Klang Valley, as it is most densely and populated region in Malaysia. The SERVQUAL model was used in the research to measure the satisfaction level. The findings of this study would provide a window of opportunity for improving the

quality of private dental clinic services, retaining loyal dental patients, and determining the level of satisfaction with the current state of private dental services in Klang Valley.

II. Methodology

Since the population for this study could not be clearly identified because it was not known how many patients were visiting the private dental clinics in Klang Valley, hence, the sample size for this study was calculated through Cochran's formula (1977).

$$n = Z^2 / 4e^2$$

n = size of the sample group

Z = confidence level at 95% ($\alpha = 0.05$)

e = probability of error at 5%

$$n = 1.962^2 / 4 * 0.052 = 384$$

To achieve the minimum sample size of 384 respondents, a total of 410 patients were randomly selected from 5 private dental clinics around Klang Valley for this study. The questionnaires were distributed in the form of Google Forms links. The study was conducted daily over a two-month period between August and September 2021. An average of 5 questionnaire responses was obtained daily. The questionnaires were adapted with some modification from Ahmed *et al.*, (2017), Caruana (2002), John *et al.*, (2011), Parasuraman *et al.*, (1988), Nyan, Rockson and Addo (2020) and Kitapci *et al.*, (2014).

SERVQUAL, established by Parasuraman *et al.*, on the basis of service quality gap theory, was used as the survey instrument in this research study. The SERVQUAL scale was modified to assess the quality of dental treatments at private dental clinics in Klang Valley. A literature search was used to develop the expectation and perception items. The questionnaire assessed patients' expectations and impressions of service quality in private dental clinics across five dimensions: reliability, responsiveness, assurance, empathy, and tangibles. In total, 25 items (Section B) were illustrated in order to capture these five elements of SERVQUAL.

The questionnaires developed contained 3 sections: Section A, Section B and Section C. Section A was developed to access the patients' sociodemographic profile. Section B measured the patients' expectations based on the SERVQUAL dimensions. Lastly, Section C was developed to measure the satisfaction the patient had towards the private dental clinics. A pilot test was conducted with 50 patients so that the data gathering plans could be refined. Irrelevant and unclear questions were detected after the pilot study were modified or removed. Internal consistencies of the proposed questionnaires were also checked by using Cronbach's alpha analysis.

III. Results

A. Sociodemographic

The patients were slightly dominated by females 207

(50.5%) than males 203 (49.5%). The patients' age in the survey were distributed into five categories ranged below 20 years old to above 50 years old. The patients were mostly aged 31-40 years old with the total number of 153 patients (37.3%), followed by 28% were aged 41-50 years old and 21% were aged between 21 and 30 years old. Least percentage (4.6%) of patients were aged >50 years. The marital status of the patients was also explored. Majority of the patients were married (48%) while 44.6% were single, 4.1% were divorced and 3.2% were widowed. Table I illustrates that various races visited private dental clinics in Klang Valley for the past two months. Majority of the visitors were Malay (37.80%) followed by Chinese (29.51%), Indian (27.23%) and others (5.37%).

Besides, the study also showed that higher number of patients (36.34%) were with college/vocational education level while the least percentage was found in patients with primary education level (2.44%). Another sociodemographic variable explored in the questionnaire were the frequency of the patients visiting private dental clinics in a year. 43.66% of the patients visited dental clinics for at least two times a year, followed by 32.93% patients has only visited less than once a year. The types of treatment received by the patients are mostly routine check-ups 27.80%, 24.63% for oral cleaning, 19.51% for cavity filling, 12.20% for tooth extractions, 6.83% and 6.10% respectively for dental prosthesis and aesthetic treatment, while 2.93% for other treatments. The summary of demographic analysis was listed in Table I below:

TABLE I. DEMOGRAPHIC INFORMATION OF PATIENTS

Background Information	Items	Mean	Frequency	Percent (%)
Gender	Male	1.5049	203	49.51
	Female		207	50.49
		Total	410	100
Age	<20	2.9829	37	9.02
	21-30		86	20.98
	31-40		153	37.32
	41-50		115	28.05
	>50		19	4.63
		Total	410	100
Race	Malay	2.0341	155	37.80
	Indian		112	27.32
	Chinese		121	29.51
	Christian		18	4.39
	Others		4	0.98
		Total	410	100
Education Level	Primary	3.3390	10	2.44
	Secondary		68	16.59
	College/Vocational		149	36.34
	Bachelor degree		139	33.90
	Master degree or above		44	10.73
		Total	410	100
Marital Status	Single	1.6585	183	44.63
	Married		197	48.05
	Divorced		17	4.15
	Widowed		13	3.17
		Total	410	100
Type of treatment normally taken	Routine check-up	2.7561	114	27.80
	Oral Cleaning		101	24.63
	Cavity filling		80	19.51
	Tooth extraction		50	12.20
	Dental prosthesis		28	6.83

	Aesthetic treatment		25	6.10
	Others		12	2.93
		Total	410	100
Number of dental clinic	<1	2.0171	135	32.93
	2		179	43.66
	3		61	14.88
	4		24	5.85
	>4		11	2.68
		Total	410	100

B. Patients' Agreement towards Quality of Dental Service

The patients level of agreements on each dimension relating to dental care service quality and patients satisfaction were analyzed. The result for the patients level of agreement on the 'Tangibles' dimension showed that most patients agreed that "Clinic staffs are well dressed and appear neat." (Mean=3.80). The patient's level of agreement in regards to the 'Reliability' dimension showed that most patients agreed on the statement "When clinic promises to do something by a certain time, they do so." (Mean=3.66). The third dimension studied for level of agreement was 'Responsiveness'. Results showed that most patients agreed that "Dentist shows sincere interest in solving patient problems." (Mean=3.78). The results for 'Assurance' dimension showed that most patients agreed on the statement "Dentist gives clear information about the illness suffered by patient." (Mean=3.80). The fifth dimension studied was 'Empathy'. The result for the 'Empathy' dimension showed that most patients agreed on "Dentist deal with patients in a caring fashion." (Mean=3.75).

C. Patients' Agreement towards Patients Satisfaction

The patients' satisfaction statements were also tested in this study. The most agreed upon response for patient satisfaction was "I am satisfied with the dental treatment of the clinic." (Mean=3.94) and the second most agreed upon was "I am satisfied with the facilities in this clinics." (Mean=3.88). The least agreed response for patients satisfaction was "I am satisfied with the clinics treatment charges." (Mean=3.60). Majority of patients leaned towards agreements of all the statements in regards to patient satisfaction.

D. Correlation and Simple Linear Regression Analysis

The correlation analysis between the two variables is shown in Table II. With a level of significance at $p < 0.01$, the results clearly revealed that there was a positive association between the variables of service quality and patients satisfaction. In particular, service quality and patients satisfaction had a significant positive link ($r=0.812$).

TABLE II. CORRELATION ANALYSIS: SERVICE QUALITY AND PATIENT SATISFACTION

Variables		Service Quality	Patient Satisfaction
Service Quality	Pearson Correlation	1	0.812**
	Sig. (2-tailed)		0.000
	N	410	410
Patient Satisfaction	Pearson Correlation	0.812**	1
	Sig. (2-tailed)	0.000	
	N	410	410

** Correlation is statistically significant at the 0.01 level (2-tailed).

The association between service quality and patient satisfaction, on the other hand, was also determined using linear regression analysis. The significance of regression analysis was determined to be at the 0.05 level of significance. The regression analysis model summary between service quality and patient satisfaction in Table III indicates $r=0.812$ and $r^2=0.659$, with a standard error of 0.60164. According to the r^2 value, about 65.9 percent of the independent variable (service quality) explained the variation of the dependent variable, which was patient satisfaction.

The analysis of variance (ANOVA) between service quality and patient satisfaction yielded a value of $F=787.237$, with a significance of 0.000, as stated in Table III. Service quality was shown to be substantially associated to patient satisfaction with p-value less than 0.05. This result suggested that the variables of tangibles, reliability, responsiveness, assurance and empathy in the SERVQUAL dimensions of service quality, as applied to the dental clinic in this study, may have substantial impact on the service quality.

TABLE III. REGRESSION MODEL SUMMARY AND ANOVA: SERVICE QUALITY AND PATIENT SATISFACTION

Model Summary					
Model	R	R ²	Adjusted R ²	Standard Error of the Estimate	
1	0.812	0.659	0.658	0.60164	
ANOVA					
Model	Sum of Squares	df	Mean Square	F	Significance
Regression	284.959	1	284.959	787.237	0.000
Residual	147.685	408	0.362		
Total	432.645	409			

Predictors: (Constant), Service Quality. Dependent Variable: Patient Satisfaction.

E. Multiple Linear Regression Analysis

Multiple linear regression (IBM SPSS Version 26) was utilized to examine the key assumptions for this investigation. Simple linear regression (Table IV) was expanded into multiple regressions. It is a technique used for predicting the value of a dependent variable (outcome variable) based on the values of two or more predictor variables (independent variables) (Manzoor *et al.*, 2019). The mean value of the variables was used in the analysis.

TABLE IV. CORRELATION ANALYSIS: FIVE DIMENSIONS OF SERVICE QUALITY AND PATIENT SATISFACTION.

Variables	Patient Satisfaction	
Tangibles	Pearson Correlation	0.766**
	Sig. (2-tailed)	0.000
	N	410
Reliability	Pearson Correlation	0.769**
	Sig. (2-tailed)	0.000
	N	410
Responsiveness	Pearson Correlation	0.794**
	Sig. (2-tailed)	0.000
	N	410
Assurance	Pearson Correlation	0.773**
	Sig. (2-tailed)	0.000
	N	410
Empathy	Pearson Correlation	0.784**
	Sig. (2-tailed)	0.000
	N	410

** Correlation is significant at the 0.01 level (2-tailed).

The data then was subjected to a multiple linear regression analysis in order to study the association of each SERVQUAL service quality dimension with patient satisfaction. The significance of regression analysis was determined at $p < 0.05$. The regression analysis model summary between tangibles, reliability, responsiveness, assurance and empathy with patient satisfaction (Table V) indicated that $r=0.813$ and $r^2=0.661$, with a standard error of 0.60242. According to the r^2 value, the five dimensions of SERVQUAL service quality explained the variation of patient satisfaction at about 66.1 percent. The ANOVA yielded a F value of 157.635 for patient satisfaction with a significance value of 0.000, proving that the model explained a significant amount of variance in the outcome variable. In conclusion, the results revealed that the overall regression model was significant.

TABLE V. REGRESSION MODEL SUMMARY AND ANOVA: FIVE DIMENSIONS OF SERVICE QUALITY AND PATIENT SATISFACTION.

Model Summary					
Model	R	R ²	Adjusted R ²	Standard Error of the Estimate	
1	0.813	0.661	0.657	0.60242	
ANOVA					
Model	Sum of Squares	df	Mean Square	F	Significance
Regression	286.031	5	57.206	157.635	0.000
Residual	146.613	404	0.362		
Total	432.645	409			

Predictors: (Constant), Tangibles, Reliability, Assurance, Responsiveness, Empathy.
 Dependent Variable: Patient Satisfaction.

F. Regression Coefficient Analysis

The regression coefficient of the dimensions with patient satisfaction was also observed and reported in Table VI. The

standardized coefficients or the beta value of the analysis showed that all dimensions had a positive beta value. However, the t-test assessed showed that only three out of the five beta value were statistically significant ($p < 0.05$). Reliability and assurance dimensions yielded significance level above 0.05, thus, the variables were regarded to not significantly predict patient satisfaction. Tangibles, responsiveness and empathy dimensions were statistically significant with a beta value of 0.165, 0.266 and 0.269, respectively. This indicates that for every 1-unit increase in tangibles, responsiveness and empathy, patient satisfaction will increase by 0.165, 0.266 and 0.269, respectively. Hence, the regression equation for tangibles, responsiveness and empathy dimensions can be formed as follows (Table VII) where y represents patient satisfaction, x represent service quality dimension and c is a constant.

TABLE VI. REGRESSION COEFFICIENT ANALYSIS: FIVE DIMENSIONS OF SERVICE QUALITY AND PATIENT SATISFACTION

Model	Unstandardized Coefficients		Standard Coefficients	t	Significance
	B	Standard Error	β		
(Constant)	0.593	0.120		4.926	0.000
Tangibles	0.176	0.078	0.165	2.265	0.024
Reliability	0.112	0.085	0.106	1.321	0.187
Responsiveness	0.274	0.104	0.266	2.640	0.009
Assurance	0.040	0.093	0.040	0.434	0.664
Empathy	0.271	0.084	0.269	3.208	0.001

Dependent Variable: Patient Satisfaction.

TABLE VII. REGRESSION EQUATION

Tangibles: $y = 0.165x + c$
Responsiveness: $y = 0.266x + c$
Empathy: $y = 0.269x + c$

iv. Discussion

In this study, it was found that most patients agreed on every statement in all five dimensions of service quality which were tangibility, reliability, responsiveness, assurance and empathy, as the factors contributed towards patient satisfaction when receiving dental care services at private dental clinics in Klang Valley.

From the regression analysis as reported in results section, it suggested that the variation of patient satisfaction that can be explained by service quality to be at about 65.9%. Also, the ANOVA test proved that there was a statistically significant

association between service quality and patient satisfaction. Zeithaml, Berry and Parasuraman (1996) stated that customer satisfaction needs to be highlighted as the main thought in attaining constant success of a company in the long run. Customer contentment and the relationship between the company and its customers are regarded as significant factors that needs to be considered while delivering service (Amin and Isa, 2008).

Findings from the correlation analysis also suggested that all dimensions of the SERVQUAL service quality had a significant positive link with patient satisfaction where the Pearson correlation were positive and above 0.7 in value. The dimension of responsiveness was shown to have the highest positive relationship with patient satisfaction as compared to other dimensions. The same result was also reported by Minh *et al.* (2015) stating that customer satisfaction is influenced the most by responsiveness, which refers to a willingness to serve customers, availability to answer to customer requests, and flexibility to meet customers' wants.

Despite having a positive beta value for all dimensions, not all dimensions showed a statistically significant result in predicting patient satisfaction. In this study, only the tangibles, responsiveness and empathy dimensions showed to be statistically significant at predicting patient satisfaction where an increment of 1-unit of the dimension will increase patient satisfaction by 0.165, 0.266 and 0.269, respectively. Overall, this study gives insight that the SERVQUAL service quality model provides a positive influence towards patient satisfaction on private dental clinics in Klang Valley, Malaysia.

v. Conclusion

Among the SERVQUAL dimensions, tangibles, responsiveness and empathy appeared to be the most significant dimension influencing patient satisfaction. Hence, it can be said that items such as clinic equipment, facilities, location, staff appearance, understanding of the patients' needs and staff having compassionate attitudes are the most relevant factors which all stakeholders must focus on in order to ensure patient satisfaction. In conclusion, patient satisfaction increases when the items within the dimensions of tangibles, responsiveness and empathy are satisfied.

Overall, the findings of this study can assist dental care service providers, dentists, related service providers, service industry policymakers, and private service sectors in Klang Valley by providing an insight towards improving the quality of dental care services, developing patient satisfaction and retaining loyal patients. Through this study, service providers will have a better understanding of how numerous characteristics such as service quality, patient satisfaction and loyalty associate with one another.

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