

# Service Quality, Brand Image, Perceived Value, Patient Satisfaction and Loyalty in China's Private Dental Clinics

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## Research

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# Abstract

**Background:** This study seeks to explore the relationship of service quality, brand image, perceived value, service satisfaction and loyalty in China's private dental clinics.

**Methods:** This is a cross-sectional survey study, being conducted in *Dongguan City*, Guangdong Province, China in January 2019. The participants were selected by convenience sampling method. A total of 230 residents were surveyed. Among them, 125 had received services in private dental clinics, being the valid sample of this study. A multiple regression model was run to explore factors influencing patient loyalty. Subsequently, the path analysis was used to understand the relationship of service quality, brand image, perceived value, patient satisfaction, and patient loyalty.

**Results:** After controlling for the effect of demographic and socio-economic variables, perceived value and patient satisfaction have significant influences on patient loyalty. The path analysis indicates the perceived value, perceived quality, and expected quality have direct effects on patient satisfaction, and have indirect effects on patient loyalty, with patient satisfaction as a mediator. Additionally, perceived value has a direct and indirect effect on patient satisfaction.

**Conclusion:** This study helps managers in private dental clinics to gain support from customers through building customer loyalty towards dental clinics.

## 1. Background

With the improvement of the level of oral diagnosis and treatment in China, urban and rural residents have enhanced the awareness of dental health care greatly, and their demands for dental medical services are increasing. Residents have increased their investment in dental health. At the same time, as the living standards and income levels increase, the demands for dental programs such as oral health checks, oral health treatments, and oral beauty are also growing rapidly. While service demands become more diverse, service quality also becomes more and more important. Patient loyalty, being defined as a behavior intention or an action to rebuy or repurchase a preferred product or services consistently, is regarded as a key element to business success for healthcare service providers <sup>[1]</sup>.

Additionally, in recent years, the Chinese government gradually privatizes healthcare services. Under this context, the private healthcare sector is growing rapidly. The dental service becomes a highly marketable healthcare industry. The vigorous development of private dental clinics is conducive to solving the problems of short supply of healthcare services in dental hospitals, general hospitals, and community hospitals. On the other hand, the competition of private dental clinics becomes more intensive. In this situation, building patient loyalty towards dental clinics is quite important for dental service providers.

## 2. Literature Review

Most of existing empirical studies have confirmed the relationship between customer satisfaction and loyalty in the field of healthcare service <sup>[1, 2, 3]</sup>. Some literature has discussed the impact of service quality on loyalty, for instance, Ismail, et al.<sup>[4]</sup>. Some have discussed the relationship between service quality, service satisfaction, and service loyalty such as Kondasani and Panda <sup>[5]</sup>, Fatima et al. <sup>[6]</sup>, Ahmed et al. <sup>[7]</sup>, as well as Meesala and Paul <sup>[8]</sup>. And some have analyzed the relationship between patient value, service satisfaction, and service loyalty, for example, Rahmani et al.<sup>[2]</sup> and Miao et al.<sup>[3]</sup>.

The majority of Chinese literature discussing patients' loyalty to health care institutions concentrates on public hospitals. Feng and Duan <sup>[9]</sup> conducted a study in a public hospital to explore the relationship between inpatients' perceived value, satisfaction and patients' loyalty to hospitals. This study concluded that patient satisfaction is a mediator between perceived value and patient loyalty. A study conducted by Cheng et al. <sup>[10]</sup> in a public hospital of *Sichuan* Province showed the overall image of the hospital and the individual technical service level of the doctor influence the inpatients' loyalty to doctors, while doctors' attitude, the length of consultation, and doctors' interaction with patients do not strongly influence patients' loyalty. Xiao <sup>[11]</sup> observed the positive impact of outpatients' perceived quality, perceived value, and service satisfactory on patients' loyalty. Zu et al. <sup>[12]</sup> found outpatients' loyalty in public hospitals is associated with environmental facilities, waiting time, physician services, medical technology services, service effects, cost and distance between hospitals and patients' homes. Zhang et al. <sup>[13]</sup> analyzed the relationship of service quality, service satisfaction, and loyalty among inpatients in a public hospital of *Hubei* Province and found a doctor's attitude is the key factor influencing inpatients' loyalty. Wang et al. <sup>[14]</sup> examined the influence of inpatients' satisfaction on loyalty in public hospitals in *Anhui* Province of China, finding inpatients' satisfaction with medical staff image, medical service attitude, medical quality, and medical facilities and environment do affect their loyalty to public hospitals. Another study from Zhou et al. <sup>[1]</sup> also came to a similar conclusion after analyzing data in public hospitals in *Beijing*. Song et al. <sup>[15]</sup> analyzed the impact of college students' satisfaction with doctor technology, medical expenses, time of treatment and service attitude on their loyalty to school hospitals. The result confirmed the positive relationship between service satisfaction and loyalty. Liu et al.<sup>[16]</sup>, through studying 21,532 outpatients in Guangdong public hospitals, found outpatients' satisfaction, patient privacy protection, service attitude, information disclosure, service process, security management, hospital environment, diagnosis and treatment services, service efficiency, complaint management, diagnosis, and treatment cost all affect patients' loyalty.

To summarize, the extant Chinese studies focus more on public health service institutions rather than private institutions. Even if some studies focus on the private health service institutions, for example, Kondasani and Panda <sup>[5]</sup>, Ahmed et al., <sup>[7]</sup>, and Fatima et al. <sup>[6]</sup>, these studies are not conducted in China. In China, only a few studies paid attention to private health service institutions. Huang et al. <sup>[17]</sup> studied the effect of perceived service quality on patient loyalty in private health service institutions. Results showed five perceived service quality including accessibility, service attitude, medical quality, tangibility, and cost have a positive influence on inpatients' loyalty to private hospitals. Another study collecting data

in *Chongqing* Municipality showed inpatients' satisfaction plays a positive role in explaining their loyalty to hospitals [18]. Both of the above studies have considered the impact of service quality and inpatients' satisfaction on patients' loyalty, but have ignored other influencing factors mentioned in the Chinese Customer Satisfaction Index (CCSI). The CCSI, proposed by *Tsinghua* University in 2000, is currently a highly authoritative and representative model in China [18]. The CCSI constructed an integrated conceptual model comprising five determinants of patient loyalty, including perceived value, expected value, brand image, perceived value, and patient satisfaction (see Fig. 1).

The context of public healthcare service institutions where most patients get services with medical subsidies is different from the context of private institutions where patients get services out of their pockets. Considering China is experiencing the privatization of health services, this study explores the influence of service quality, brand image, perceived value, and service satisfactory on outpatients' loyalty to private dental clinics in China.

### 3. Method

The theoretical framework of this study adopted the CCSI. Base on the theoretical framework, 11 hypotheses are constructed.

H1: Brand image has a positive effect on the expected quality

H2: Expected quality has a positive influence on perceived quality.

H3: Brand image has a positive influence on perceived quality.

H4: Brand image is positively associated with perceived value.

H5: Expected quality has a positive relationship with perceived value.

H6: Perceived quality is positively associated with perceived value.

H7: Perceived value has a positive influence on patient satisfaction.

H8: Brand image is positively associated with patient satisfaction.

H9: Expected quality has a positive relationship with patient satisfaction.

H10: Perceived quality is positively associated with patient satisfaction.

H11: Patient satisfaction has a positive influence on patient loyalty.

Of these, the brand image refers to the clinic's recognition, credibility, and reputation. Perceived quality consists of 16 items, including physician medical technology, clinic medical equipment, patient treatment effect (degree of relief), handling complaints, waiting time for treatment, waiting time for payment,

attitude of physician work, attitude of physician service, explanation of diagnosis and treatment, choice of treatment plan, health education, physician's clothing, sanitary conditions, environmental comfort, facility sign, and convenience service. Expected quality includes overall impression, satisfaction with service items before treatment, expectations of treatment outcomes, and expectations of services. The perceived value comprises the evaluations regarding service fees compared to the quality of services received and service quality compared to the service fee by patients. Patient satisfaction is measured by overall satisfaction, satisfaction about the services provided compared to the expectations, and satisfaction about the private clinics compared to other types of dental clinics. Patient loyalty includes two items: First, the willingness to choose private clinics next time; and second, the willingness to recommend private clinics to family members or friends. Each item is coded as an ordinal variable on scales ranging from 1 to 5, in which a higher score indicates a lower satisfaction level. The Cronbach's alpha for perceived quality, expected quality, clinic brand image, perceived value, patient satisfaction, and patient loyalty ranges from 0.79 to 0.97, indicating that the internal consistency of these dimensions is good.

This is a cross-sectional survey study, being conducted in *Dongguan City*, Guangdong Province, China in January 2019. The rationale for choosing China's private dental clinics as the setting for collecting data lies in the fact that dental service is the most privatized sectors in China. The participants were selected by convenience sampling method. A total of 230 residents were surveyed. Among them, 125 had received services in private dental clinics, being the valid sample of this study. This study got ethical approval from School of Public Administration, JiNan University. Verbal consent has been obtained from the participants.

Descriptive statistics were used to analyze the sample's characteristics. Then a multiple regression model was run to explore factors influencing patient loyalty. Subsequently, the path analysis was used to understand the relationship of service quality, brand image, perceived value, patient satisfaction, and patient loyalty. All data were analyzed with SPSS 24.0 and AMOS 21.0 software.

## 4. Result

Table 1 reports the characteristics of respondents. Among the 125 respondents, 44 were men, accounting for 35.20% of the total sample. 81 were women (64.80%). The proportion of respondents aging 25 years old and younger was 56.80%. The respondents aging 26 to 45 years old accounted for 21.60% of the total sample. That is, the majority of the participants in this study were under 45 years old. The number of respondents having the education qualifications with undergraduate or junior college was the highest, accounting for 64% of the total sample, followed by junior high school education sample (13%). Regarding the average monthly income, 39.20% of the participants had 1,720 RMB and below, 28.80% had a monthly income between 1,721 RMB to 4,000 RMB. 16.80% were between 4001 RMB to 6,000 RMB.

Table 1  
Characteristics of respondents (n = 125)

	Mean or percent	Standard deviation	Minimum	Maximum
Patient loyalty	7.38	1.57	2	10
Patient satisfaction	11.08	2.05	3	15
Perceived value	7.14	1.43	4	10
Clinic brand image	10.98	1.99	3	15
Expected quality	14.92	2.43	8	20
Perceived quality	60.01	10.00	16	80
Gender(male)	35.20%			
Age				
25 years old and below	56.80%			
26–45 years old	21.60%			
46–60 years old	13.60%			
61 years old and above	8.00%			
Education				
Elementary school and below	9.60%			
Middle school	13.60%			
High school or vocational school	10.40%			
College	64.80%			
Graduate school	1.60%			
Income per month				
1720 RMB and below	39.20%			
1721–4000 RMB	28.80%			
4001–6000 RMB	16.80%			
6001–8000 RMB	10.40%			
8001 RMB and above	4.80%			

Among 125 respondents, the mean of patient loyalty was 7.38 (SD = 1.57) out of 10. The average satisfaction score of all respondents was 11.08 (SD = 2.05) out of 15. The mean of perceived value was 7.14 (SD = 1.43) out of 10. The mean of the clinic brand image was 10.98 (SD = 1.99) out of 15. The

mean of expected quality was 14.92 (SD = 2.43) out of 20. The average score of perceived quality was 60.01 (SD = 10.00) out of 80.

Table 2 shows the effects of perceived quality, expected quality, clinic brand image, perceived value, and patient satisfaction on patient loyalty. After controlling for the effect of demographic and socio-economic variables, perceived value and patient satisfaction have significant influences on patient loyalty ( $p < 0.001$ ). The two variables are positively associated with patient loyalty. Perceived value has a direct effect on patient loyalty to private dental clinics ( $B = 0.274$ ). Patient satisfaction has a direct effect on patient loyalty ( $B = 0.284$ ).

Table 2  
Factors associated with patient loyalty

	<b>B</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>	<b>VIF</b>
Constant	-0.445		-0.532	0.596	
Perceived quality	0.023	0.148	1.388	0.168	4.707
Expected quality	0.006	0.009	0.108	0.914	3.059
Clinic brand image	0.126	0.160	1.741	0.084	3.484
Perceived value	0.274	0.249	3.768	0.000	1.804
Patient satisfaction	0.284	0.372	3.741	0.000	4.089
Gender	-0.120	-0.037	-0.681	0.497	1.202
Age	0.077	0.048	0.596	0.553	2.647
Education	-0.074	-0.050	-0.625	0.533	2.620
Monthly income	0.076	0.057	1.088	0.279	1.146
Durbin-Watson(DW)	2.162				
R-squared	0.721				
F-statistic	33.081( $p < 0.001$ )				

Table 3 is the path analysis to understand the relationships among perceived quality, expected quality, brand image, perceived value, patient satisfaction, and patient loyalty. Brand image, expected quality, and perceived quality have a significantly positive relationship ( $p < 0.001$ ). Perceived quality is positively associated with a perceived value ( $p < 0.001$ ). Perceived value, perceived quality, and expected quality influence patient satisfaction significantly ( $p < 0.05$ ). In the path analysis, patient satisfaction also influences patient loyalty significantly ( $p < 0.001$ ). Based on the path analysis, perceived value, perceived quality, and expected quality have direct effects on patient satisfaction, and have indirect effects on patient loyalty, with patient satisfaction as a mediator. Additionally, perceived value has a direct and indirect effect on patient satisfaction.

Table 3  
The path coefficients in SEM

			Estimate	S.E.	C.R.	P
Expected quality	←	Brand image	.933	.071	13.174	< 0.001
Perceived quality	←	Expected quality	1.675	.345	4.859	< 0.001
Perceived quality	←	Brand image	2.213	.421	5.255	< 0.001
Perceived value	←	Brand image	.053	.085	.625	.532
Perceived value	←	Expected quality	-.007	.069	-.102	.919
Perceived value	←	Perceived quality	.084	.016	5.139	< 0.001
Patient satisfaction	←	Perceived value	.196	.083	2.353	.019
Patient satisfaction	←	Brand image	.091	.079	1.156	.248
Patient satisfaction	←	Perceived quality	.113	.017	6.774	< 0.001
Patient satisfaction	←	Expected quality	.160	.064	2.510	.012
Patient loyalty	←	Patient satisfaction	.603	.042	14.287	< 0.001

## 5. Discussion

The findings have indicated that perceived service quality influences patient loyalty through the effect of patient satisfaction. In practice, several dimensions associated with perceived service quality should be improved in private clinics. The first concern is regarding the appointment service. Most private dental clinics do not have the service of online appointment so that potential patients cannot make appointments in advance, which may increase waiting time. When the waiting time is too long, the patients will be less likely to receive services.

The second concern is about the location of private dental clinics. At present, high-quality large-scale private dental clinics are usually located in urban centers and are separated from residential communities, which may reduce the convenience of residents to receive services. Popa and Daniela [19] and Crutzen et al. [20] had claimed on-line tools can provide convenient services for patients, thus can enhance patient's loyalty to hospitals. Based on this consideration, private dental clinics can make full use of WeChat public number or WeChat small program to provide a range of services, such as medical consultation, appointment registration, online diagnosis, fee inquiry, online payment, and so on.

One more concern is the service fee. When the investigators conducted the survey, most private dental clinics in *Dongguan* City do not have a clear price list and charging standards. They are generally the form of fees for doctors' oral quotations, doctors paying bills, and no billing information. This type of

charging method may easily lead to random pricing and disorder within the dental clinics, which may reduce the satisfaction of perceived value.

This study is limited to private dental clinics, so the findings may not be generalized to all dental clinics. Moreover, the sample of this study cannot represent the population in China. Further study can be conducted with a larger sample to facilitate a full understanding of the relationship of service quality, satisfaction, and loyalty. Nevertheless, this study helps managers in private dental clinics of China to gain support from customers through building customer loyalty towards dental services.

## **6. Conclusion**

To standardize the development of dental clinics, the health authority should strengthen the supervision of private dental clinics. For those clinics operating illegally, it is necessary to rectify or even impose mandatory exits to purify this industrial environment. It is also necessary to strengthen daily supervision and inspection of business qualifications, service quality, equipment safety, and price expenses. Moreover, it is necessary to strengthen the examination and determination of the qualifications of the dentists.

## **Abbreviations**

CCSI  
Chinese Customer Satisfaction Index.

## **Declarations**

## **Ethical approval:**

This study got ethical approval from the Ethics Committee of School of Public Administration, JiNan University.

### **Conflict of Interest:**

The author declares that he/she has no conflict of interest.

### **Availability of data and material**

Data are available from the authors upon reasonable request.

### **Consent for publication**

Not applicable.

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## Authors' contributions

YWX designed this study. LWY analyzed and interpreted the data. LWY was a major contributor in writing the manuscript. LWY read and approved the final manuscript.

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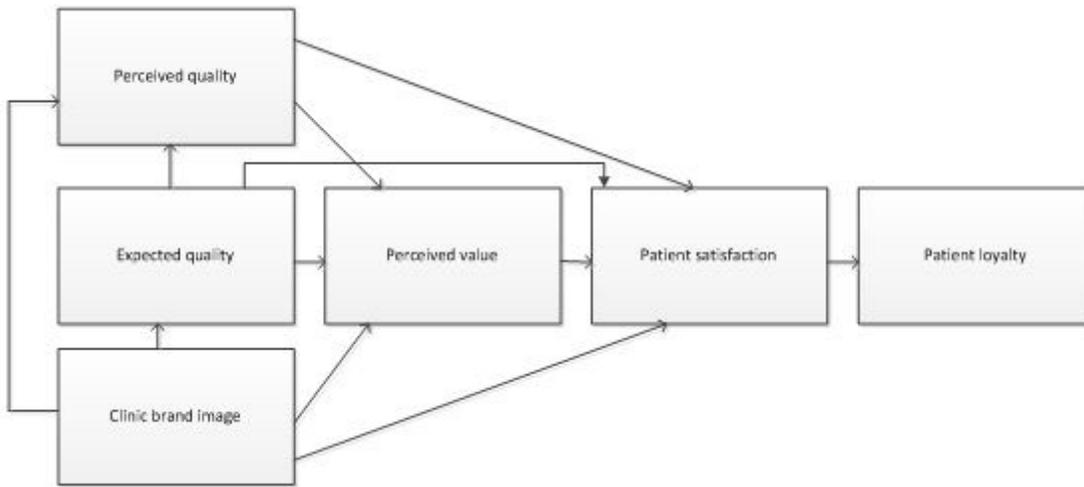
Not applicable.

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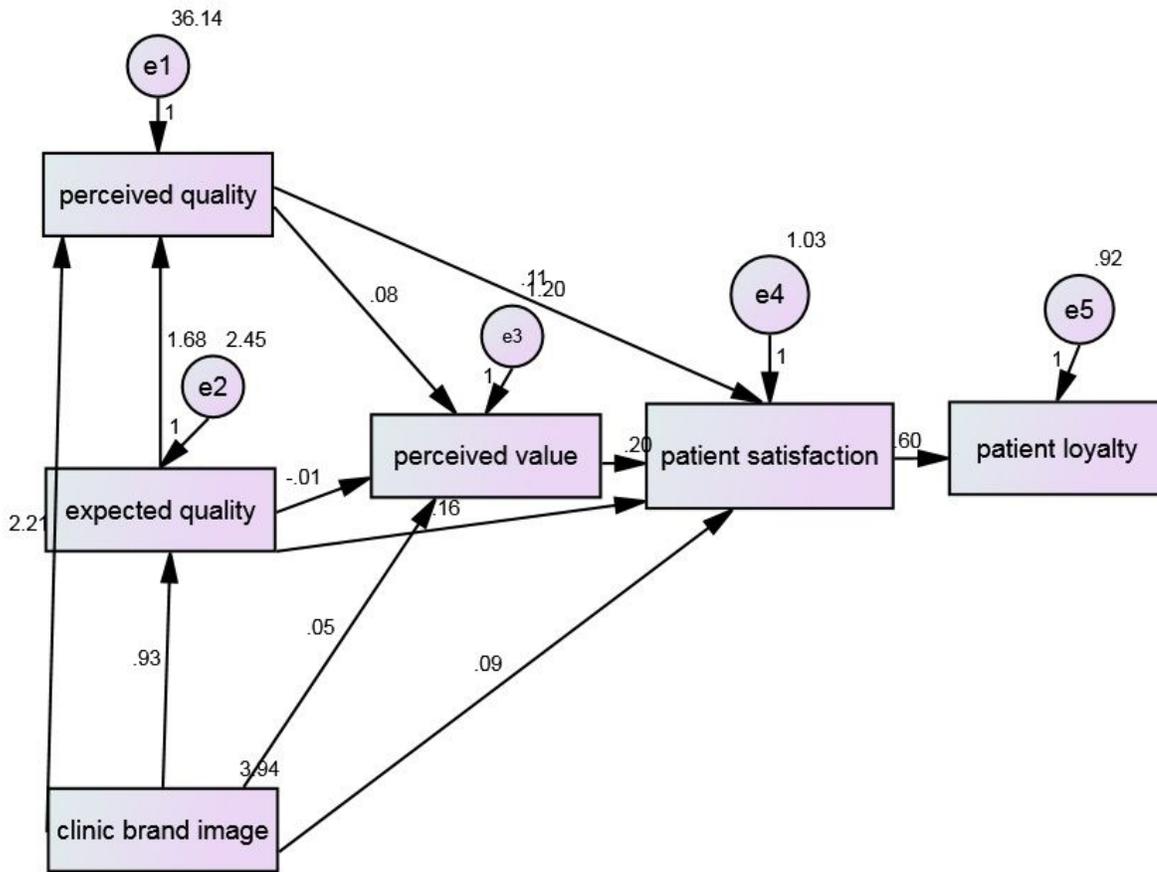
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## Figures



**Figure 1**

Theoretical framework



**Figure 2**

Model showing the relationships of service quality, brand image, perceived value, patient satisfaction, and patient loyalty