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The Impact of Patient Satisfaction on Patient Loyalty with the Mediating Effect of Patient Trust

Sha Liu, PhD[1], Genqiang Li, PhD[1], Nan Liu, Teaching Assistant[2], and Wu Hongwei, Associate Professor[1]

Abstract

This research is primarily focused on the issues of customer loyalty in the healthcare industry, particularly from the perspective of public hospitals in China. The research developed a theoretical model to test the relationship between patient satisfaction (PS), patient trust (PT), and patient loyalty (PL). The empirical data were collected from 1696 patients through the survey questionnaires from the public hospitals in Henan province. This research is an explanatory study, and adopts quantitative method. The measurement scales used in the survey were assessed and refined and the data analysis was performed using AMOS 19.0 to test the theoretical model and hypotheses developed. In addition, an exploratory factor analysis was used to identify the dimensions of PS, PT, and PL. Their reliability and validity were established through confirmatory factor analysis, and the structural equation modeling (SEM) was used in the related hypotheses. The findings indicate that PT is an important antecedent of PL, and PS has no direct relationship with PL. It is worth noting that PS can lead to PL with PT as the mediating variable. The survey results will help public hospital managers to formulate effective strategies and provide a basis for studying PL. The research will prompt hospital managers to pay attention to the factors which contribute to PS, PT, and PL, and maintain the loyalty of patients to medical institutions. This study is one of the few studies on the relationship between PS, PT, and PL in Chinese public hospitals, and it also explores the direct and indirect effects of PT on PL. The results have practical implications for the Chinese healthcare industry.

Keywords

health institution, patient loyalty, patient trust, patient satisfaction, patient perspective

What do we already know about this topic?

China's medical resources are mainly concentrated in public hospitals. However, due to China's implementation of medical and health reforms, large numbers of private hospitals have entered the medical and health market. Obtaining and maintaining PL has become a means of profit for hospitals. At present, researches on PL mainly focus on the relationship between PS and PL, between PT and PL. Few articles use PT as a mediating variable to study the relationship between the 3.

How does your research contribute to the field?

This study is one of the few studies on the relationship between PS, PT, and PL in Chinese public hospitals from the patient perspective, and it also explores the direct and indirect effects of PT on PL.

What are your research's implications toward theory, practice, or policy?

The research results provide reference for health institutions and practitioners. Hospital administrators can learn from the results of this study, formulate more scientific and reasonable service quality evaluation indicators from the perspective of patients, and conduct patient-oriented scientific quality management; hospital staff can understand the patients on the basis of service demand, and corresponding measures are taken to meet the patients' expectations and potential needs, and improve the patient's actual perception of service quality. They jointly achieve high satisfaction with the service, enhance the loyalty of patients to the hospital, attract, and retain patients, improve the competitiveness and influence of the hospital, and ultimately create good social and economic benefits.

Introduction

Under the market economy system, the core of enterprise competition is customer-orientedness, acquiring and creating customer preferences and loyalty to the company's products or service quality to achieve sustainable development of the company. The concept of customer loyalty is at the heart of marketing, and that of patient loyalty stems from customer

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loyalty in the business sector.[1] From the perspective of public economics research, medical treatment for patients is a process of exchanging the labor value among medical service providers. Therefore, patients are a kind of customers. Medical service products are incomplete public products provided to patients who come to the hospital for treatment. But, medical services are different from other industries. Patients are passively admitted to the hospital. Subjectively, there is no willingness to visit again. Thus, the customer loyalty of the medical industry is quite different from that of other industries.

The doctor-patient relationship is a kind of customer relationship, and competition for customers must be based on good customer relationships.[2] The medical treatment for patients is based on the trust relationship between the supply and demand sides of the health service, which is manifested in the patient's willingness to repeat the consumption of a hospital's attitudinal loyalty and actual behavioral loyalty. It can bring economic benefits and social effects to the hospital, reduce its development and maintenance costs for new customers, and bring health value to the patients themselves, reducing the loss of customers to the hospital. In addition, loyal customers are willing to pay more, express a higher willingness to buy, and resist conversion.[3]

There are 2 main types of service providers in healthcare institutions in developing countries, namely public and private hospitals.[4] Public hospitals are the main body that reflects public welfare, solves basic medical care, and alleviates people's difficulties in seeing a doctor. China's medical institutions are dominated by public medical institutions, which have concentrated a large amount of medical resources, especially human resources that are vital in medical services. Public hospitals occupy an absolutely dominant position in the medical service market. China has implemented medical reforms to encourage social capital to enter the medical field. According to the China Health and Family Planning Statistical Yearbook 2017, private hospitals increased from 7068 in 2010 to 16 432 in 2016, a growth rate of 232.5%.[5] This situation has had a huge impact on public hospitals. Some studies have shown that there are differences in the health care services provided by public and private hospitals.[6] The fierce competition between private and public hospitals highlights the importance of PL. Therefore, this study investigates which factors play a role in prompting patients to choose public hospitals instead of private ones, so that public hospitals can retain existing patients and attract new ones.

Literature Review

In the existing literature, there is a lack of systematic research on PL in Chinese public hospitals. Due to the particularity of the healthcare industry, the relevant theories of customer loyalty in the general service industry cannot be directly applied. Based on the characteristics of the health industry, this study will build a holistic model with PL as the core variable, and design a measurement tool with good reliability and validity, by building the model, and quantitatively describing the formation mechanism of PL. It will study PL from the perspective of patient perception, not only in concept selection and model construction, but also in the formation of measurement tools. Its conclusions will help public hospitals understand the formation mechanism of PL, establish a loyalty mechanism for PL, change business models and marketing methods, improve the quality of medical services, and enhance the competitiveness of the medical market.

Loyalty has been defined as: "*a deeply held commitment to rebuy or patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior*".[7]

The trust crisis is a common problem faced by the society. The trust problem among professional groups such as doctors, teachers, government officials, etc., is particularly concerned.[8] Patient trust is defined as the patient's belief that the doctors have the necessary skills for diagnosis and treatment, can give priority to the interests of patients, so that patients accept the medical services with confidence.[9] Using the survey questionnaire and Economic Experiment of Incentive Behavior to measure PT in healthcare providers, the study found that the continuity of care, the provider's communication ability and clinical capabilities were positively correlated with PT. A cross-sectional study found that satisfaction positively predicted patients' trust in doctors through direct or indirect means path.[10] After more than 30 years of social transformation in China, with the further deepening of the market economy and the continuous increase of medical expenses, the doctor-patient relationship has become increasingly tense, doctor-patient conflicts have occurred frequently, patients' satisfaction with seeing a doctor has decreased, a crisis of trust in doctors has appeared, and there has been increasing distrust in the medical industry. 21.78% of outpatients and 26.66% of inpatients trust doctors very much, 66.63% of outpatients and 63.85% of inpatients trust doctors,

[1]Xinxiang Medical University, Xinxiang, China
[2]Henan University Library, Henan, China

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Corresponding Author:
Sha Liu, Xinxiang Medical University, No.601, Jinsui Road, Hongqi District, Xinxiang 453003, China.
Email: 121168485@qq.com

approximately 10% of patients show distrust of outpatient and inpatient doctors to varying degrees.[11] In the retail industry, customer satisfaction has a positive impact on customer trust, maintains a long-term relationship between buyers and sellers, and is the degree of perceived emotion of consumers after purchasing products or using services.[12] Du et al[13] show that, service satisfaction was positively associated with building doctor-patient trust. Based on the above-mentioned research viewpoints, this paper divides the measurement of trust into 2 levels, namely, the health care system trust and the physician trust, and constructs the trust measurement dimension. Based on the literature, the study hypothesized that:

H1. PS is positively related with PT.

Early research on trust in healthcare focused on patients' interpersonal trust in their physicians, which refers to the belief that the physicians' words and actions are credible and trustworthy.[14] If patients believe that hospital staff are honest and trustworthy, they hope to establish a continuous relationship with the hospital and show a stronger willingness to revisit it. Patients have a higher intent to revisit the hospital when they are more willing to recommend it to their friends and relatives.[15] Trust can reduce the transaction risk between buyers and sellers, consumers may be more cooperative and loyal when they think the storeowners they are dealing with are reliable.[16] Researches on doctor-patient trust are mostly conducted from the perspective of patients. The study on the doctor-patient trust from the perspective of medical staff in different levels of medical institutions found that 40.9% and 5.3% of medical staff in tertiary hospitals believed that patients quite trust and trust themselves, lower than that of secondary hospitals (53.0% and 5.4%) and community health service centers (54.3% and 11.7%). It is believed that the number of patients in tertiary hospitals is far more than that of lower-level medical institutions. The high work intensity of medical staff, limited communication time, and insufficient doctor-patient communication in tertiary hospitals affect the trust between doctors and patients.[8]

Patients showed higher satisfaction when visiting primary healthcare institutions, and showed diametrically opposite attitudes toward primary-level outpatient and inpatient doctors. That is, they showed a significantly lower degree of distrust of primary-level outpatient doctors, and a significantly higher degree of distrust of primary-level inpatient doctors.[11] In medical environment, affect as opposed to cognition has positive influence on patient trust in high-consequence exchanges.[17] At the same time, retired people showed stronger distrust of and higher dissatisfaction with doctors. Nevertheless, the more severe the disease is, the longer the length of stay, and the patient's trust of outpatient and inpatient doctors will be significantly enhanced.[11] Private hospitals in Malaysia found that contrary to previous research, there was no significant correlation between trust and patient revisit.[15] Krishnan et al.[18] found that trust and customer loyalty were positively correlated. Based on the literature, the study hypothesized that:

H2. PT is positively related with PL.

The satisfaction theory points out that PS is an important factor in predicting PL. The higher the PS, the longer the PL.[19] PL refers to the extent to which patients are not affected by the external environment and marketing activities, hold a positive attitude toward hospital services, and are willing to continue to consume in the future. The previous research on loyalty mainly started from 2 aspects: behavioral loyalty and attitudinal loyalty.[20] Research on behavioral loyalty generally measures the number and frequency of repeated purchases of users; while attitudinal loyalty mainly measures brand preference and willingness to recommend. Behavior recognition theory and goal theory believe that perceived value belongs to high-level goals, and loyalty is a low-level goal. Low-level goals are often controlled by high-level ones, that is, when the perceived benefit is greater than the perceived cost, it can enhance user loyalty.[21]

Overall satisfaction of inpatients in county-level public hospitals is high, and there is a positive correlation between satisfaction and loyalty. Hospitals can establish a good image of medical staff and improve medical quality to improve the satisfaction of inpatients and cultivate their loyalty.[22] PS significantly indicates the organizational performance measure because a satisfied patient will eventually become loyal.[23] A quantitative study of 195 patients in 6 public and private hospitals in Bangladesh found that PS had a positive impact on PL to medical industry.[24] Satisfaction can be improved through variables such as reliability, empathy, and responsiveness, and the loyalty of patients will be strongly affected by satisfaction.[25] Abekah-Nkrumah et al[26] found that the ownership of health facility will not directly affect PS and PL.

Friendly medical environment, good communication, protection of privacy, and security can well predict PS and PL. PS helps establish PL, and has a direct relationship with PL.[4] Improving PL has potential clinical value for improving the continuity of services, effectively reduces patients' conversion behavior, and helps improve patient compliance and affect patient health outcomes. For medical institutions, the increase in PL can help establish a good hospital image and achieve word-of-mouth communication effects.[27] Hu et al[28] conducted a survey on PS and PL in Taiwan's hospitals and found that PS has little effect on PL.

Numerous studies regard customer satisfaction as an important determinant of loyalty, and believe that one of the important ways to cultivate customer loyalty is to increase customer satisfaction. However, existing research points out that PS is only a necessary but not a sufficient condition for PL, that is, high PS does not mean that patients will be loyal to the hospital. Based on the literature, the study hypothesized that:

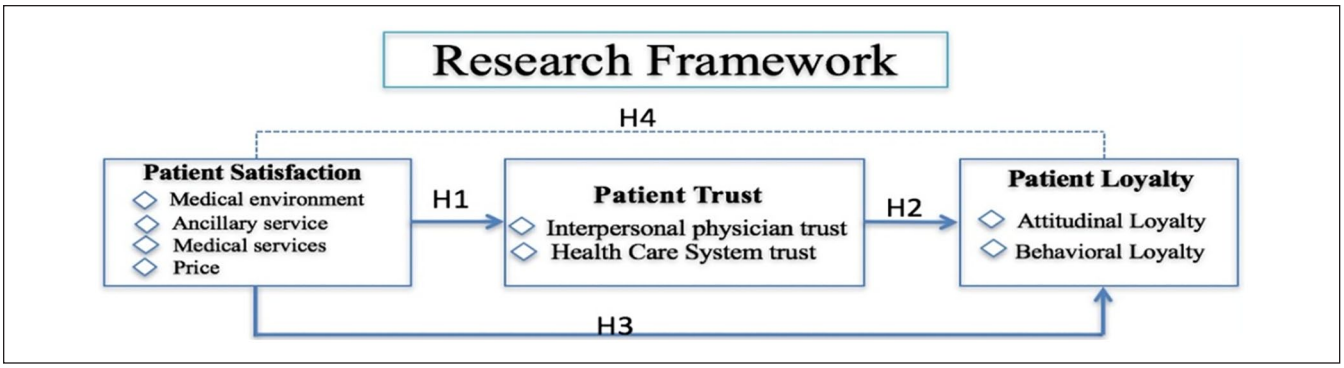

Figure 1. Research conceptual framework.

H3. PS is positively related with PL.

Trust plays a key role in the doctor-patient relationship, and the patient's trust in the doctor is the most important factor in the doctor-patient relationship.[9] Trust eliminates the psychological risks of customers, and then leads to customer loyalty. After trust is generated, there is no need to build a high-cost control mechanism, and it also increases long-term relationship benefits.[29] A survey of physical and virtual shopping groups found that accumulating pleasure from consumer experience makes it easier for consumers to trust sellers, customer satisfaction to influence trust and enhance loyalty.[30] Although trust does not have a significant mediating effect between word of mouth (WOM) and the patient's willingness to revisit, trust still has a direct relationship with WOM.[15] Trust and satisfaction play an important mediating role between perceived quality and intention to revisit the hospital.[31] Gambarov et al[32] studied the correlation between loyalty and trust in the hospital, and found that the relationship between them is significant and strongly positive, and trust plays an important role as a mediating dimension, especially in the field of healthcare. Based on the literature, the study hypothesized that:

H4. To investigate the mediator effect of PT between PS and PL in public hospitals of Henan province.

Starting from the logic behind the reform of China's medical and health system, the reform of the medical and health system from 1985 to the present is divided into 3 stages: 1985 to 1999, 2000 to 2008, and 2009 to present. China's medical institutions include public and private medical institutions, and Sino-foreign joint venture hospitals (foreign-owned hospitals). The medical service industry's investment entities are increasingly diversified, forming a situation in which multiple ownership systems and business methods coexist. At present, public hospitals still consume a large amount of medical resources, especially the vital human resources in medical services. Although the proportion of public hospitals in 2013 has dropped to 39.1%, that of bed occupancy, health technicians and business income accounted for 76.1%, 78.9%, and 86.5%, respectively.[33] Public hospitals occupy an absolute dominant position in the medical services market.

The remuneration system for doctors implemented in China since 2013 has given doctors a strong incentive to generate income, which will cause hospitals to actively admit patients. In the Chinese medical service market, the salary of doctors is composed of fixed salary and performance salary. Fixed salary is similar to basic salary and has nothing to do with the amount of services provided by doctors; performance salary is mainly reflected in the part of remuneration based on service volume, and has the most direct link with the amount of services provided by doctors. The fee for service reimbursement system provides hospitals and doctors with financial incentives to actively recruit patients. Although China implements the strategy of differential reimbursement in different levels of hospitals to guide patients to primary hospitals for treatment, the patients still enjoy the free right to actively choose hospitals.[11] Based on this, the hospital competition in the Chinese medical service market is completely real. Figure 1 shows the research conceptual framework.

Methods

Population and Research Sample

The interviewees were randomly selected using a disproportionate stratified sampling method from the patient population of public hospitals in Henan province. The respondents had access to the healthcare service at the target institutions in this survey during October to November in 2019. Within the time frame, the investigation needs to be completed within 2 months with the aim of limiting errors in retrospective reports that involve longer periods of time. This study included a simple random sample to collect the data. Therefore, the random sampling procedure obtained a representative sample of the target group. According to Kline[34] the sample size in Structural Equation Modeling (SEM) techniques should be large enough ($N > 200$) to reduce the sampling error. Therefore, this survey used a random sample of

Table 1. Measurement of Variables.

Construct	Variable	No.	α	Authors
Customer loyalty (CL)	Attitudinal loyalty	3	.87	Hu (2011)[35]
	Behavioral loyalty	4	.8	
Patient satisfaction (PS)	Medical environment	4	.832	Liu (2013)[36]
	Ancillary service	3	.835	
	Medical services	8	.854	
	Price	3	.905	
Customer trust (CT)	Interpersonal physician trust scale	12	.93	Hall et al (2002)[37]
			.68	Biedrzycki (2010)[38]
	Health care system trust scale	13	.92	Zheng et al (2002)[39]
			.93	Biedrzycki (2010)[38]
			.91	Hall et al (2002)[37]

2000 patients from 19 public hospitals in 10 cities of Henan province, covering the geographic diversity of the east, south, west, and north areas of Henan province. The returned questionnaires were screened according to completeness, rational scoring and adherence to scale, and finally 1696 valid questionnaires in an 84.8% response rate were returned for further analysis. All the paper questionnaires were distributed to obtain information.

Research Design

A quantitative, explanatory survey was used to evaluate the relationships between PS and PL with a mediating effect for healthcare industry in Henan province. The cross-section method required data to be collected from a sample of population. A self-administered structured questionnaire was used to collect the data from the respondents. Two sets of data were collected based on demographic characteristics of the respondents and structured answers from the respondents to test the research hypotheses.

The questionnaire used in this study was converted from English to Chinese by a Chinese professional translator. In order to evaluate the dependability of the translation, the Chinese questionnaire was translated back into English by another professional translator. It was found that the 2 translations are basically the same. The participants were asked to make out the research questionnaire and provide their views of the investigation with the aid of a 5-point Likert scale ranging from "(1) strongly disagree to (5) strongly agree." The investigator informed all participants about the purpose of study and assured them of anonymity before the research. All participants were given written informed consents before completing the survey. The measurement of variables used in this study is shown in Table 1.

Data Analysis Method

The data in the questionnaire were analyzed using AMOS 19.0 to test the research hypotheses. Before performing a statistical analysis of the hypothesis, the individual items were grouped, and a construct was created. Descriptive analysis was used to examine the patient's social-demographic characteristics and patient's treatment experiences in public hospitals. Then, a measurement model and a structural model were used to test the construct validity and research hypotheses.

This study used the Cronbach coefficient α to evaluate the internal consistency of the multi-item questionnaire. For convergence validity analysis, it used the 2 indicators of average variance extracted (AVE) and composite reliability (CR) for analysis. EFA was used to assess the reliability and validity of each latent variable and identify the underlying dimensions of variables. CFA was used to confirm the factor structure of the constructs and validate the EFA results. The Bootstrap method was used to detect whether there are mediation effects on the hypotheses. Preacher and Hayes argue the importance of directly testing the significance of indirect effects and provide SPSS and SAS macros that facilitate estimation of the indirect effect with a normal theory approach and a bootstrap approach to obtaining confidence intervals.[40] Finally, SEM was used to address the proposed hypotheses of this study.

Results

Respondents Data

Table 2 presents the frequency distribution of the demographic variables (gender, age, educational level, profession, income range, place of residence, treatment classification, payment method, number of hospitalizations in this hospital) of the research sample (n = 1696) of patients in China. Data collection started on October 24 and ended on November 19, 2019. The researcher conducted a total of 2,000 questionnaires, among which 1696 questionnaires were retrieved, and the return rate was high (84.8%). According to the rules followed by researcher in the last part of this survey, the sample size of 1696 was sufficient to meet the needs of the survey.

Measurement Model

This research first specified the measurement models for each of the 3 latent constructs in the theoretical model. Three

Table 2. Distribution of Respondents According to Their Background Characteristics.

Characteristics		N	%
Gender	Male	856	51.257
	Female	814	48.743
Age group	Below 21	228	13.451
	21-30	472	27.847
	31-40	358	21.121
	41-50	332	19.587
	51-60	168	9.912
	Above 60	137	8.083
Education level	Primary school	327	19.315
	Middle school	516	30.478
	Junior college	344	20.319
	Bachelor	459	27.112
	Master or above	47	2.776
Profession	Worker	253	14.944
	Farmer	437	25.812
	Intellectuals	448	26.462
	Civil servant	112	6.615
	Freelancer	229	13.526
	No work (Before the legal working age)	214	12.640
Monthly income	≤$466	862	51.279
	$467-$776	526	31.291
	$777-$1086	191	11.362
	$1087-$1397	66	3.926
	≥$1398	36	2.142
Place of residence	Town	891	52.909
	Rural	793	47.090
Treatment classification	Outpatient	634	43.936
	Inpatient	809	56.064
Your payment method	Social medical insurance	898	53.231
	Commercial medical insurance	128	7.587
	Self-pay	539	31.950
	Other	122	7.232
Number of hospitalizations in this hospital	First times	782	46.245
	Second times	427	25.251
	Above second times	482	28.504

were second-order reflective constructs: PS that causes 3 first-order reflective factors, namely, medical environment (4 items), ancillary service (3 items), and medical services (7 items); PT that causes 2 first-order reflective factors, namely, interpersonal physician trust scale (8 items), and health care system trust scale (8 items); PL that causes 2 first-order reflective factors, namely, attitudinal loyalty (3 items), and behavioral loyalty (3 items). EFA was first used to assess the validity of each variable. Moreover, 3 latent constructs were subjected to second-order CFA and reached CFA Model identification requirements.[34,41,42] The results for each structure are discussed in more detail below.

Table 3 presents the validity of latent variables, the EFA was conducted using SPSS 19.0, and the results show that some of the measurement scales need to be modified. In the initial application, the number of items is reduced from 50 to 36, 8 items measuring PS and 6 items measuring PT were deleted because of its low loadings to factor. And then, these 36 items are classified under 3 factors: PL, PS, and PT. All the main loadings are higher than 0.60 and cross-loadings are 0.40, which indicates the validity of the measurement instruments.

The cumulative variance explanation rate of PL, PS, and PT are 67.267%, 65.695%, and 64.436%, higher than 60%, showing the validity of the measuring instruments.[43] Cronbach's α value is used to evaluate the reliability of the measurement instrument. A Cronbach's α value greater or equal to 0.7 is considered acceptable.[42] The Cronbach's α values for PL, PS, and PT are .910, .957, and .910, higher than the cut-off value of 0.80. This shows the reliability and validity of the measurement instruments.

Table 4 presents the results of indicator, internal consistency, convergent and discriminant reliability. SEM using AMOS 19.0 was used to perform the CFA. The measurement

Table 3. The Result of Construct Validity Analysis.

Factors variables	Measurement items	Factor loading loadings	Cronbach's α	Cumulative % of variance
Attitudinal loyalty	PL1	0.838		
	PL 2	0.900		
	PL 3	0.878		
Behavioral loyalty	PL 4	0.863		
	PL 5	0.851		
	PL 6	0.736		
Patient loyalty	Attitudinal loyalty	0.939	.910	67.267
	Behavioral loyalty	0.942		
Medical environment	PS 53	0.795		
	PS 54	0.810		
	PS 55	0.817		
	PS 56	0.798		
Ancillary service	PS 57	0.820		
	PS 58	0.818		
	PS 59	0.730		
Medical service	PS 60	0.808		
	PS 61	0.669		
	PS 62	0.822		
	PS 64	0.785		
	PS 65	0.732		
	PS 66	0.835		
	PS67	0.809		
Patient satisfaction	Medical environment	0.929	.957	65.695
	Ancillary service	0.948		
	Medical services	0.948		
Interpersonal physician trust scale	PT71	0.750		
	PT 73	0.779		
	PT 74	0.741		
	PT 77	0.770		
	PT 79	0.776		
	PT 80	0.822		
	PT 81	0.753		
	PT 82	0.813		
Health care system trust scale	PT 83	0.727		
	PT 85	0.747		
	PT 87	0.776		
	PT 88	0.660		
	PT 92	0.792		
	PT 93	0.843		
	PT 94	0.828		
	PT 95	0.803		
Patient trust	Interpersonal	0.969	.910	64.436
	Health care	0.954		

model determines the 3-factor structure of the instrument. A second-order CFA was performed to test the relationships between PL, PS, PT, and their potential dimensions. In order to evaluate the model fit, we considered the following indicators: (χ^2=16795.830, df=6211, $P<.001$; χ^2/df=2.733, GFI=0.880; SRMR=0.040; CFI=0.910; TLI=0.922, RMSEA=0.045), and all the indicators are significantly loaded on the latent constructs. The values of the fit indices indicate a reasonable fit between the measurement model and the data.[44] In addition, the Cronbach's α, composite reliability (CR), and average variance extracted (AVE) scores for different factors were also obtained. Cronbach's α value varies between .827 and .919, which exceeds the recommend level of 0.70.[42] The results of CR for each variable were high (ie, from 0.827 to 0.920), which exceeded the minimum threshold of 0.70.[45] The AVE for all the factors is ≥0.5, which is acceptable.[46] This criterion was met in this study, ensuring the internal consistency and reliability of the model.

Table 4. Results of Measurement Model.

Construct variables	Items	Standardized estimates error	Cronbach's α	*P*-value	AVE	CR
Attitudinal loyalty	PL1	0.874		***		
	PL 2	0.889		***		
	PL 3	0.906		***		
Behavioral loyalty	PL 4	0.880		***		
	PL 5	0.813		***		
	PL 6	0.824		***		
Patient loyalty	Attitudinal loyalty		.905		0.763	0.906
	Behavioral loyalty		.850		0.656	0.851
Medical environment	PS 53	0.913		***		
	PS 54	0.929		***		
	PS 55	0.928		***		
	PS 56	0.928		***		
Ancillary service	PS 57	0.907		***		
	PS 58	0.927		***		
	PS 59	0.932		***		
Medical service	PS 60	0.825		***		
	PS 61	0.831		***		
	PS 62	0.826		***		
	PS 64	0.825		***		
	PS 65	0.930		***		
	PS 66	0.925		***		
	PS67	0.925		***		
Patient satisfaction	Medical environment		.880		0.648	0.880
	Ancillary service		.827		0.615	0.827
	Medical services		.913		0.604	0.914
Interpersonal physician trust scale	PT71	0.856		***		
	PT 73	0.832	.919	***		
	PT 74	0.834	.919	***		
	PT 77	0.833		***		
	PT 79	0.834		***		
	PT 80	0.833		***		
	PT 81	0.837		***		
	PT 82	0.835		***		
Health care system distrust scale	PT 83	0.901		***		
	PT 85	0.835		***		
	PT 87	0.935		***		
	PT 88	0.840		***		
	PT 92	0.834		***		
	PT 93	0.833		***		
	PT 94	0.833		***		
	PT 95	0.837		***		
Patient trust	Interpersonal		.876		0.561	0.920
	Health care		.852		0.592	0.920

Note. Unstd. = unstandardized; Std. = standardized; n/a = not applicable because the unstandardized factor loadings fixed to 1 to set the scale; CR = composite reliability.
***$P < .001$.

Structural model

The hypotheses stated were tested using standardized regression coefficients obtained from theoretical models. This study used the structural model in 2 stages. The first stage tested the direct effect of independent variables, namely PS on PT (H1), PT, and PS on PL (H2 and H3). The second stage tested the indirect effect of independent variables on PL with trust as a mediator (H4).

As seen in Table 5, the standardized coefficient of the path from PS to PT is in the predicted positive direction and significantly greater than zero (*H1: t*-values = 6.898,

Table 5. Summary of Hypotheses Testing Results.

Path	Hypothesis	β	S.E.	*t*-Statistics	*P*-value	Decision
Patient satisfaction → Patient trust	H1	.356	0.045	6.898	.000**	Supported
Patient trust → Patient loyalty	H2	.168	0.052	3.431	.001**	Supported
Patient satisfaction → Patient loyalty	H3	.122	0.062	−1.792	.073 ns	Not supported
Patient satisfaction → Patient trust → Patient loyalty	H4	.082	0.020	4.042	.000**	Supported

Note. **$P < .01$. *$P < .05$. ns non-significant at alpha = 0.05.

β = .356, $P = .000$), whereas PT showed significant direct positive relationship with PL (*H2: t*-values = 3.431, β = .168 $P = .001$). But there is no direct relationship found between PS and PL (*H3: t*-values = −1.792, β = .122 $P = .073$). There is significant mediating effect of PT on PS and PL (*H4: t*-values = 4.042, β = .082, $P = .000$).

Discussion

With the continuous deepening of China's medical and health system reform, the medical service market is gradually opening up, and medical institutions are facing increasingly fierce market competition. Public hospitals can enter a healthy track of sustainable development only by ensuring satisfactory medical services to patients, winning the trust of patients in the competition of many medical service institutions, and finally obtaining large numbers of loyal patients. The current study examines the research question, that is, whether PT and PS influence PL, which helps build loyalty in Chinese hospitals.

This examination gave proof of the positive effect of PS on PT (H1), the positive impact of PT on PL (H2), but PS and PL were in the negative direction as predicted (H3) yet were not measurable ($P < .05$). PS does not necessarily lead to PL. The medical service is characterized by complexity and professionalism. The absence of patient medical information and experience leads to the uncertainty of satisfactory evaluation, and the uncertainty of PS is one of the significant reasons to prompt high satisfaction and low loyalty. The study shows that the hypothesis that PS has a direct relationship with PL (H3) is not supported by the empirical data, but the hypothesis that the effects of PS on PL are mainly mediated by PT is supported by the empirical data (H4), hence the relationship between PS and PL is indirect, and PT is full mediator. It is consistent with the study that customer satisfaction alone cannot ensure customer loyalty, and trust has gotten a significant essential prerequisite for customer loyalty.[47]

Based on the results, first, we notice that PS is not positively related to PL, which means that the effect of PS on PL is statistically insignificant. Previous studies have 2 opposite conclusions, that is, one is of statistical significance while the other is of no statistical significance.[23,28] The possible explanation is that due to the high degree of specialization in the medical industry, each hospital has different specialties, so patients will compare multiple hospitals when choosing, and ultimately tend to target the hospital that is good at treating the disease, but they will not become loyal consumers of a hospital. In the information era, patients are more likely to switch to other hospitals after exposure to a large amount of information. This is consistent with the results of previous studies that, even if consumers are highly satisfied with the product, it will not necessarily increase consumer loyalty.[48] Another possible explanation is due to the non-linear relationship between customer satisfaction and customer loyalty. According to Oliva et al[49] there are 2 key thresholds between them: customer loyalty will rise rapidly only above 1 critical threshold; below a certain critical threshold, the level of customer loyalty will decline rapidly, so satisfaction alone does not necessarily lead to loyalty.

The second observation from this study is that there is significant positive relationship between PT and PL. The results provide empirical evidence that the more PL in the hospital, the stronger and deeper the relationship they have with the hospital. Once patients trust the hospital, they build strong and deep relationships with it, which is reflected in their understanding, affection and behavioral dependence on it. When patients believe that the hospital and its staff are honest and trustworthy, they hope to maintain continuous contact with the hospital, thus showing a stronger willingness to revisit.[50] These findings are consistent with previous research and found that PT has become an important prerequisite for PL,[51] Winning customer trust is the only way to increase loyalty.[52] The possible explanation is that tertiary hospitals have good medical technology, excellent medical talents, and sophisticated equipment, so they have established a good reputation among patients and made them feel at ease when visiting physicians.

The third finding shows that PS has a positive impact on PT, which provides empirical evidence that the higher PS, the higher PT. PT has a positive effect on PS, and PT is the determinant of PS in medical services.[53] The refined scale of PS in this research was reflected by the medical environment, ancillary service and medical services. It should be noted that in this research, 8 items measuring PS and 6 items measuring PT with respect to situational influences were deleted from the original scale because of their statistically insignificant or low standardized factor loadings. Any interpretation of PS should take into account the deletion of the item from the scale.

Fourthly, PT plays a vital role in PL, and there is a strong correlation between PS and PT, but PS has no significant effect on PL. Hence the relationship between PS and PL was mainly mediated by PT, and PT is full mediator. This result is

consistent with previous studies. Trust is essential for healthcare industry.[54] In the cross-border e-commerce platform, consumer satisfaction can promote the improvement of consumer loyalty through trust in the website.[55] Trust plays a key role in the doctor-patient relationship, and the patient's trust in the doctor is the most important factor in the doctor-patient relationship.[9] For public hospitals, it is very important to establish "trust" between patients, hospitals and medical staff including doctors. Doctors need to honestly provide the best service to win the trust of patients. Public hospitals should provide services as advertised on TV, magazines and the Internet, so that patients can build trust in the hospital.

Conclusion

In conclusion, this study provides a meaningful contribution to the literature on customers in healthcare industry. It provides empirical evidence supporting the pivotal role of PT in the development of PL. Trust is an important factor in determining PL. Although PS cannot directly lead to PL, trust has a significant mediating effect between PS and PL, and trust is directly related to PS and PL. Its results have practical implications for healthcare providers in China, who need to not only focus on the quality of medical care, but also learn from marketing theory to establish good customer relationships. This research also provides new ideas for future research, for instance, to compare patients between domestic and international patients to obtain deeper and broader PL.

Limitations and Future Studies

Even though some findings have been made in this research, there are still some limitations that need to be addressed. This research only conducts empirical research in public hospitals, but there are some differences in the factors affecting PL in different types of hospitals. Future studies can be replicate these results in other healthcare industry, such as private or community hospitals, to enhance the generalizability of the results. Another limitation is that the concept model used is a fairly straight forward model, and we have not considered the influence of demographic characteristics such as the difference between inpatients and outpatients. The present study incorporated the mediating role, while future studies might focus on using inpatients and outpatients as moderator variables to find the differences between the 2 in the healthcare institutions. Finally, customer loyalty is not a point-in-time variable, but a time-axis variable that requires long-term monitor to better analyze trends and causes of customer loyalty. Therefore, follow-up research hopes to select several hospitals as monitoring points to carry out regular monitor of customer loyalty, thus reflecting the dynamic changing principle of customer loyalty.

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ORCID iD

Sha Liu https://orcid.org/0000-0003-3921-8413

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