Application of SERVQUAL Model in Patient Satisfaction Survey

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Abstract. The influx of private capital into China's medical market forces the reform of public hospitals to improve service quality and patient satisfaction. However, there is no valid satisfaction survey approach. SERVQUAL model's widespread use has shown that it objectively measures customer satisfaction. This study tests the feasibility and reliability of the SERVQUAL model in evaluating patient satisfaction. According to the requirements of the SERVQUAL model, a satisfaction questionnaire was designed. 400 Shandong C People's Hospital patients were randomly selected as an example from March to December 2020, and the questionnaire was distributed. The completed questionnaire was statistically analyzed. 367 of 388 questionnaires were valid. The analysis found: that 1. Per capita household income and education may alter medical service expectations and perceptions. 2. Most patients prefer to go to tertiary hospitals. 3. Patients' expectations and impressions of service quality differ in five characteristics ($p < 0.001$), respectively -1.19 for tangibility, -1.7 for reliability, -1.49 for reactivity, -1.59 for assurance, and -1.65 for empathy. The absolute average difference is -1.53. The quantitative index of patients' overall satisfaction with hospital service quality was 73.32%. Thus, SERVQUAL may assess patient satisfaction. The model's calculations are trustworthy and can be used to compare hospital service quality over time or between hospitals.

Keywords: service quality · patient satisfaction · the public hospitals in eastern China · the SERVQUAL model · and expectation vs. perception

1 Introduction

As China's medical reform deepens, non-public hospitals have mushroomed (National Health Commission, 2019). Non-public hospitals' rapid growth will threaten their dominance in China's medical market and force them to improve medical service quality and patient satisfaction.

Medical service quality is a vague term. Patients are VIPs. Cardozo, R N stated in 1969 that customer satisfaction affects repeat purchases and product selection (Cardozo,

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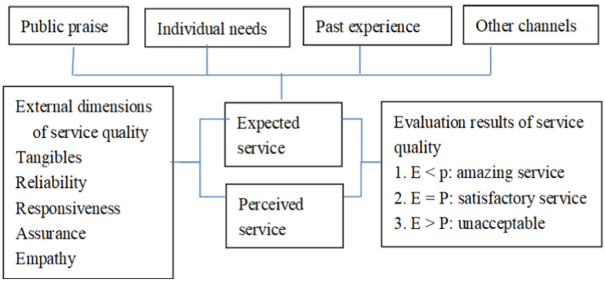

Fig. 1. Satisfaction evaluation model (Parasuraman, A. et al., 1985)

1969). It can be seen that the quality of medical service is related to the survival and development of hospitals. The key to improving service quality is to innovate a hospital management system, in which a patient satisfaction survey is an important starting point. Patients evaluate the hospital based on their health improvement, medical facilities and surroundings, medical staff service, and personal cost. It helps assess hospital medical technology and service excellence (Dornach & Meyer, 1998). Thus, patient satisfaction helps assess medical treatment quality (Hancock & Mueller, 2006). Hospital managers can better understand hospital operations, identify issues, improve service processes, and improve management by researching patient satisfaction (Enders, 2006).

However, most Chinese hospitals focus on economic benefits and ignore service quality management and patient satisfaction. To this end, the Ministry of Health of China has included patient satisfaction in the evaluation criteria for tertiary hospitals (Ministry of Health of the People's Republic of China, 2009). The hospital now uses patient satisfaction surveys to improve management. Many hospitals are trying to establish a "patient-centered" medical service quality management system (Hou & Zhang, 2012). However, The hospital now uses patient satisfaction surveys to improve management. Usually, the guidelines and policies designated by the Ministry of Health are followed (Heskett, Thomas & Gary, 1994). However, the contents and details of the survey are only customized according to each hospital's situation (Ghobadian, Speller, & Jones, 1994). Even many hospitals still submit forms using the traditional model, which causes many significant problems that cannot be found and solved, hindering hospital management ability (Pascore, 1993; Liu, 2004; Nie, Zhang & Yang, 2009).

Customer pleasure is intangible (Fatemifar, Hosseini, & Maymand, 2016). Thus, many propose quantitative models to measure consumer satisfaction. Among them, the SERVQUAL model proposed by Parasuraman and Zeithaml & Berry (hereinafter referred to as PZB) has attracted more attention. They define service quality as the difference between client expectations and actual service (Fornell, 1992). Service quality is the difference between what is expected and what is perceived. As demonstrated in Fig. 1, if the perceived service level is lower than expected, the service quality is poor, whereas if it is higher, it is high.

The model comprises 22 statements organized into five dimensions (Fig. 2). Each statement measures the customer's lowest expectation level, highest expectation level, and perceived service quality level from a particular perspective and is frequently the

Fig. 2. SERVQUAL model framework

most critical aspect in determining the customer's perception of service quality (Parasuraman, Berry, & Zeithaml, 1991). Numerous marketing specialists have acknowledged the approach commonly utilized in telecommunications, insurance, communications, banking, and other industries (The Ministries of Health, Foreign Trade, and Economic Cooperation, 2000).

The SERVQUAL calculation formula (Parasuraman, Zeithaml & Berry, 1988):

$$\mathrm{SQ} = (\mathrm{Pi} - \mathrm{Ei})$$

where SQ is perceived service quality;

Pi is the score of factor i in customer experience;
Ei is the score of factor i in customer expectation (i = 1, 2, 3,… N, n = 22).

The SQ derived from the preceding calculation represents the total perceived quality of a single consumer, assuming that the five criteria are of equal importance. Customers' opinions on each feature's real-world importance affect service excellence (Ghobadian, Speller, & Jones, 1994). Therefore, to acquire a more accurate SERVQUAL score, we need to choose each service quality attribute's weight and weighted average after the customer survey.

$$\text{Formula: } \mathrm{SQ} = \sum_{j=1}^{5} \mathrm{Wj} \sum_{i=1}^{22} (\mathrm{Pi} - \mathrm{Ei})$$

I = 1, 2, 3,…, 22, j = 1, 2, 3, 4, 5, WJ is the weight of the jth attribute.

Divide the SQ score by the factor number n (n = 22) to get the average SERVQUAL of a single customer fraction. Finally, divide the SERVQUAL scores of all customers in the survey by the number of customers m to get the average SERVQUAL score of the service product of an enterprise that is

$$\text{Servqual} = \left(\sum_{i=1}^{m} SQi \right) \Big/ m$$

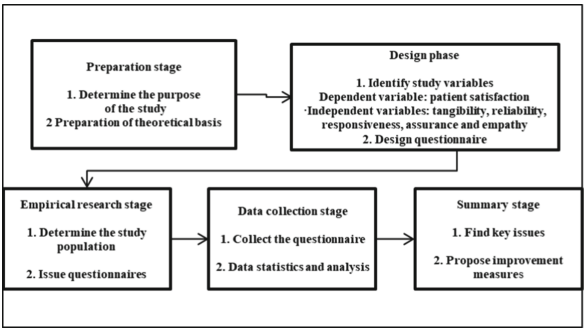

Fig. 3. Conceptual framework (by author)

2 Methodology

2.1 Research Methods

A SERVQUAL model-compliant questionnaire summarized 22 research questions. Then, we communicated extensively with the randomly selected respondents, explained the significance of the survey in depth, obtained their informed consent, distributed the questionnaire and instructed them on how to return it after completion, gathered the relevant sample data, conducted the statistical analysis and compiled the results, and proposed corresponding improvement strategies. The third-party surveyors were instructed to avoid prejudice (Grigoroudis, & Siskos, 2009). To ensure data correctness and consistency, investigation management, which includes document preparation, investigator management, process management, and post-investigation handling, is closely monitored (Grönroos, 1997). The hospital ethics committee approves the research project, questionnaire, and informed consent form (Fig. 3).

2.2 Research Population

The minimum sample size required for statistical purposes is 384. However, to accommodate interview loss, the ultimate sample size is 400. Thus, from March to December 2020, 400 patients who completed treatment at Shandong C People's Hospital (PHC) were randomly selected as research subjects without regard to age, sex, or disease type. Patients are required to sign the consent form.

Minimum sample size formula (Che, https://uxren.cn/?p=62992):

$$n \approx \frac{\left(Z_{\alpha/2}\right)^2 \sigma^2}{E^2}$$

Here: n: is the sample size
σ^2: variance is the deviation between the individual and the overall mean values. The more dispersed the sampling value distribution, the greater the conflict and the more sampling quantity required, generally 0.5;

E: The sampling error can be set according to the percentage of the mean value. The smaller the value, the larger the sample size;
$Z_{\alpha/2}$ is the reliability coefficient, i.e., confidence. When the confidence is 95% = 1.96, and when the confidence is 90% = 1.645, the higher the confidence, the more sample size is required; The 95% confidence level is 40% more than the 90% confidence level.

To save human resources and costs and obtain more reliable results, we take the variance as 0.5, the sampling error as 0.05, and the confidence as 95%. To cope with the possible loss of questionnaires or lost visits, the final sample size was determined as 400. Therefore, we can calculate that the minimum sample size is 384.

2.3 Formulation of Questionnaire

This study interviewed and demonstrated the medical service quality evaluation model, index screening, investigation content, and more with hospital leaders and experts. Following are the guidelines for designing the questionnaire:

Principle 1: Reflect on the five determinants of service quality. Hospital service has five quality attributes. Therefore, service quality indicators should reflect the five qualities and 22 components of SERVQUAL.

Principle 2: Reflect on the characteristics of hospital service quality (Li, 2007; Li, 2017; Urden, L.D. (2002). Hospital services are intangible, perishable, heterogeneous, commonweal, unified service and consumption, and doctor-patient specific.

Principle 3: Reflect the attributes of hospitals at all levels. Hospital services are divided into three levels: core services, formal services, and additional services (Lewis & Booms, 1983). Technology is the core service, subject to conditions and specifications. Formal service is externalized through technology (Liao & Zhou, 2006; Ma, 1995; Parasuraman, Zeithaml, Berry, 1994). It puts technology into a visible form so patients can judge and evaluate the value and benefits supplied and the numerous physical facilities (Tsai, Orav, & Jha, 2015). In addition, these patients are provided with specialized care, such as personal care.

Principle 4: Reflect on the factors that affect patients' perception of hospital service quality. Patients assess hospital service quality (Roemer & Monboya-Aguilar, 1988). Therefore, market research must determine public hospital service quality determinants.

Patients should decide on hospital service quality (Wang & Zhao, 2007), per principle 4. Therefore, a questionnaire was designed to determine the final determinants of hospital service quality by randomly selecting the respondents.

Table 1 lists the 22 questionnaire indicators (copyrighted by the Author). The score of each index: SERVQUAL questionnaire adopts a 7-point scale system (Expectation /Practical experience), 1 score is Not at all/No, 2 points is Not looking forward to / Very inconsistent, 3 points are: Do not expect / Inconsistent, 4 points is Fine/Unclear, 5 points is Hope /Match, 6 points is Expect / Exactly, 7 points is Looking forward to/ Exceed expectations. (Copyrighted by the Author).

Table 1. All 22 indicators of the questionnaire

Tangibles	1	The hospital has modern service facilities
	2	The hospital has a clean and tidy environment
	3	The medical staff are well dressed
	4	Matching of hospital facilities and services
Reliability	5	The hospital can provide the promised service
	6	Medical staff have a strong sense of responsibility and provide timely services
		The medical staff have excellent skills
	7	The medical staff can record the condition accurately
	8	The hospital should inform the patient of the exact time of medical treatment
	9	
Responsiveness	10	Medical staff can provide services on time
	11	The hospital can handle patients' complaints quickly
	12	The results of laboratory examination can be obtained quickly
	13	Medical staff are on call
Guarantee	14	Medical staff are trustworthy
	15	Patients feel safe when they see a doctor
	16	Hospitals attach great importance to protecting patients' privacy
	17	Doctors will keep informed of treatment plans and medications
Empathy	18	Medical staff treat patients equally
	19	Medical staff do not accept red envelopes
	20	Medical staff can accurately understand the needs of patients
	21	Be able to get along well with medical staff during hospitalization
		The hospital always adheres to the interests of patients first
	22	

2.4 Statistical Analysis Method

After collecting the questionnaire, enter it into the statistical table using the scoring criteria. The Cronbach αcoefficient is used as a method to evaluate the reliability of the questionnaire. The data was statistically analyzed using Spss20.0 statistical software. The impact of intra-population differences on expectations and perceived services is tested using ANOVA in the service quality evaluation indicators. In addition, the t-test was used to examine the difference between expectation and perception of service in each group and the difference between 22 indicators across five dimensions.

3 Research Results

Among the 400 questionnaires distributed, 388 were returned, with 367 (or 94.6%) of those returned being valid responses. The Cronbach αis 0.82, indicating that the reliability of the questionnaire is excellent. The following tables and figures display the study's subject data analysis.

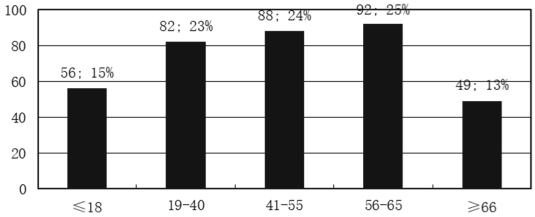

Fig. 4. Age distribution

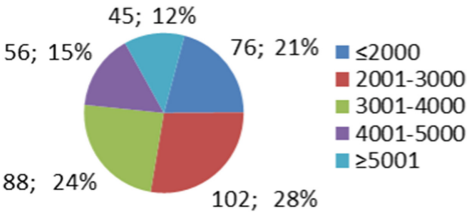

Fig. 5. Per capita monthly income of households

3.1 Statistical Results of Sample Data

3.1.1 Sex Ratio Distribution

Of the total responders, 168 were male (45.8%), and 199 were female (54.2%).

3.1.2 Age Distribution

There are primarily five different age groups represented among the respondents. Figure 4 shows the composition of the population by age.

3.1.3 Per Capita Monthly Income of Households

The monthly per capita household income distribution is divided into five grades, as shown in Fig. 5.

3.1.4 Distribution of Medical Insurance Types

The monthly per capita household income distribution is divided into five grades, as shown in Fig. 6.

3.1.5 Occupational Status

Most of the respondents' occupations are urban residents or enterprise employees, as shown in Fig. 7.

3.1.6 Education Level

Educational level is divided into four categories, of which the majority are from senior high school to an undergraduate degree, as shown in Fig. 8.

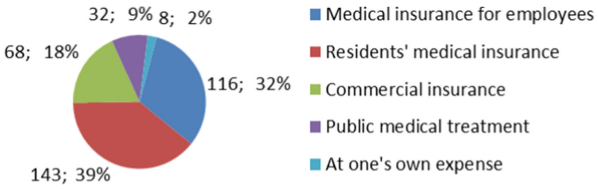

Fig. 6. Types of medical insurance

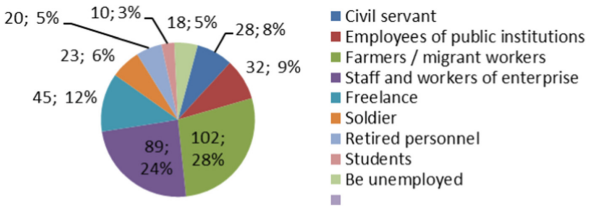

Fig. 7. Occupational status

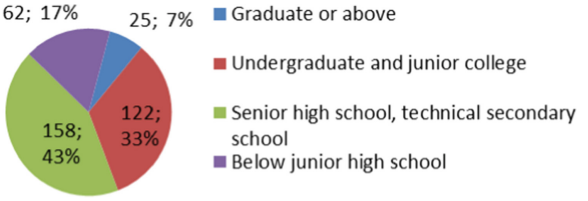

Fig. 8. Education level

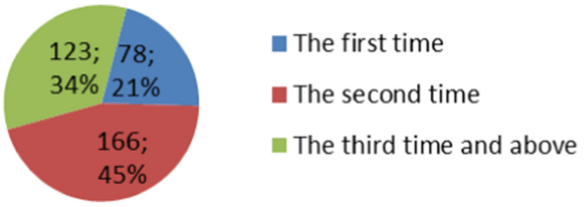

Fig. 9. Number of visits

3.1.7 Number of Visits

Most of the respondents visited the hospital more than two times (Fig. 9).

3.1.8 Choice of Intended Hospitals

The majority of the respondents will choose the third-class hospital (Fig. 10).

The above survey results show the following characteristics: (1) Young and middle-aged respondents express their wishes. (2) The knowledge level of patients in the hospital is primarily medium and high. (3) Medical insurance is mostly employee medical

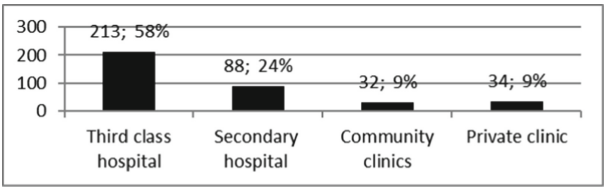

Fig. 10. Patients' selection

insurance, resident medical insurance, and commercial insurance. (4) Farmers/migrant laborers, enterprise and institution personnel, and freelancers are the majority. (5) The per capita income is mainly at the middle and lower levels. These are indicated that the hospital is a civilian hospital. (6) Most patients are " repeat customers" and trust this institution.

3.2 Data Statistics and Analysis

After sorting out the measured data, excel is used to establish a spreadsheet and carry out data statistics. The results are shown in Table 2.

It can be seen from Table 2 and Table 3 that there is no significant difference between different populations in their expectations of hospital service quality. In general, there is no significant difference in perceived services, but the difference in family per capita income and education level still affects the patients' feelings (Wasserman et al., 1984; Zhong, & Zhang, 2008). To be specific, the lowest income people have the smallest gap between their perceived services and expectations, possibly because they have low requirements or dare not have high requirements when they are at the bottom of society. Moreover, as incomes rise gradually, so do people's expectations, resulting in a widening psychological chasm (Wang & Huang, 2004). Education levels are comparable. When one's understanding grows, one's expectations grow alongside it, and the distance between them only widens. Special soldiers exist (Xu & Zhang, 2008; Yang & Liu, 2005). Their perception-expectation gap is the smallest, possibly due to their particular identity.

Remarks:

AHOE: at his own expense; CI: commercial insurance; EMI: employee medical insurance; FMT: free medical treatment; JHSAB: junior high school and below.MS: Middle school; PGA: postgraduate or above; RMI: resident medical insurance; SAWOE: staff and workers of the enterprise; SE: Self-employment; SOG: government staff.

From Table 4, we can find the following:

(1) The service perceived by patients was significantly lower than expected in 22 indicators across all five dimensions, with $p<0.001$, showing a significant difference.
(2) The majority of patients expect service that is above 6 points. The quality of public hospital services is essential to patients. Patients' perceived value is 4.5 points on average, with a score greater than 5 points being less. This indicates that hospital services do not meet the expectations of patients.

Table 2. Impact of population category on service expectation and perception (ANOVA test)

Category of population	Overall expectations			Overall perception		
	Mean	F	p	Mean	F	p
Gender	6.52	0.67	>0.05	5.56	0.92	>0.05
Age	6.34	1.24	>0.05	5.73	1.51	>0.05
Per capita household income	6.47	0.89	>0.05	5.12	1.67	<**0.05**
Medical insurance type	6.55	0.72	>0.05	5.37	1.33	>0.05
Occupation	6.28	1.31	>0.05	5.41	1.35	>0.05
Education level	6.19	1.18	>0.05	5.28	1.76	<**0.05**
Number of medical visits	6.26	1.23	>0.05	5.62	1.12	>0.05

4 Discussion

Medical service excellence is essential for hospital competitiveness and survival. Therefore, hospital administration is concerned with understanding and evaluating all aspects of hospital service to improve it. However, the most commonly used service quality evaluation systems cannot directly reflect patients' needs and potential expectations, resulting in a preliminary evaluation of medical service quality by patients. In addition, because there is no objective evaluation scale, the results may be emotional, unfair, and incomparable.

Medical services differ from other service industries in five characteristics:

(1) The particularity of medical service objects is that human life is precious and cannot be duplicated or regenerated.
(2) Medical services are highly scientific.
(3) The timeliness of medical services is crucial.
(4) Medical services are comprehensive, including medical care, logistics management, and other aspects.
(5) Medical service is social and has various social responsibilities.

These medical service characteristics require good medical skills and a meticulous, responsible, patient work style. Medical and scientific knowledge is required. Technical expertise, clinical practice experience, and dialectical thinking are required (Pink, Murray, & Mckillop, 2003). Medical professionals must also have good social, doctor-patient, and teamwork skills. Medical personnel must be on time. All departments and linkages must work together to develop unity and close cooperation, and increase understanding of mutual supervision, reminder, and supplement. Medical facility administrators must create a supervisory system to improve service quality and safety.

Table 3. Differences in overall expectations and perceptions of different populations

Category of population		Overall expectations		Overall perception		Gap	t值	p
		Mean	SD	Mean	SD			
Gender	Male	6.51	0.26	4.64	1.22	1.87	26.71	<0.001
	Female	6.43	0.32	4.62	0.87	1.81	45.25	<0.001
Age (years)	≤18	**6.02**	**0.88**	**5.57**	**0.76**	**0.45**	**22.50**	**<0.001**
	19–40	6.62	0.23	4.38	1.34	2.24	18.67	<0.001
	41–55	6.44	0.39	4.51	1.26	1.93	21.44	<0.001
	56–65	6.38	0.47	4.49	1.27	1.89	23.63	<0.001
	>66	6.35	0.41	4.82	1.02	1.53	17.00	<0.001
Per capita household income (yuan)	**≤2000**	**5.76**	**1.55**	**5.32**	**1.29**	**0.44**	14.67	<0.001
	2001–3000	5.92	0.86	5.26	1.12	0.66	22.00	<0.001
	3001–4000	6.12	0.45	4.62.	1.32	1.50	16.67	<0.001
	4001–5000	6.56	0.26	4.58	2.01	1.98	8.25	<0.001
	>5000	6.72	0.12	4.59	1.74	2.13	8.88	<0.001
Medical insurance type	EMI	6.23	0.47	4.78	1.59	1.45	14.50	<0.001
	RMI	6.27	0.34	4.65	1.77	1.62	13.50	<0.001
	CI	6.19	0.42	4.47	1.82	1.72	10.12	<0.001
	FMT	6.34	0.35	5.56	1.03	0.78	6.50	<0.001
	AHOE	6.22	0.46	4.98	0.67	1.24	5.90	<0.001
Occupation	Civil servant	6.18	0.52	5.12	1.08	1.06	9.64	<0.001
	SOG	6.29	0.49	4.37	1.86	1.92	7.68	<0.001
	Farmer	5.67	1.15	5.01	0.59	0.66	11.00	<0.001
	SAWOE	5.99	0.76	4.62	1.72	1.37	13.70	<0.001
	SE	6.24	0.37	4.49	1.92	1.75	7.61	<0.001
	Soldier	**6.05**	**0.44**	**5.88**	**0.56**	**0.17**	5.67	<0.001
	Retirement	6.36	0.32	5.34	1.12	1.02	5.67	<0.001
	Student	6.09	0.47	5.65	0.79	0.44	4.00	<0.005
	Unemployed	5.58	1.05	4.31	1.27	1.27	25.40	<0.001

(*continued*)

Table 3. (*continued*)

Category of population		**Overall expectations**		**Overall perception**		**Gap**	**t值**	**p**
		Mean	SD	Mean	SD			
Education level	PGA	6.56	0.22	4.87	0.92	1.69	12.07	<0.001
	University	6.21	0.45	4.59	1.03	1.62	32.40	<0.001
	MS	6.37	0.34	4.60	1.23	1.77	25.29	<0.001
	JHSAB	**5.69**	**0.78**	**5.35**	**1.14**	**0.34**	**6.80**	**<0.001**
Number of medical visits	1st	6.59	0.32	5.47	0.74	1.12	22.40	<0.001
	2nd	6.07	0.41	4.73	1.06	1.34	26.89	<0.001
	Third time and above	5.78	0.76	4.93	1.05	0.85	28.33	<0.001

The findings of this study are:

(1) There are different degrees of differences between patients' real feelings and expectations of hospital services. The "perception-expectation" gap theory states that the larger the gap, the poorer patient satisfaction, and hospital service quality.
(2) The concrete factors of the hospital—service facilities, environment, and staff attire—align with patients' expectations. However, it demonstrates that there is room for improvement.
(3) The hospital must improve its dependability, particularly in emergency response and accountability. Employees must be held accountable and disciplined more severely. In addition, there is a significant gap between medical staff technology, medical record writing, and patient expectations, which suggests that hospitals should boost medical staff skill training, concentrate on medical record writing, and tighten monitoring (Sweeney & Soutar, 2001; The editor of Law time, 2021).
(4) The hospital's dependability, particularly in emergency response and sense of duty, needs to be improved. In addition, discipline and employee accountability must be strengthened. In addition, there is a big gap between the medical staff's technology and medical record writing and patients' expectations, recommended that hospitals improve medical staff skill training, focus on medical record writing, and improve oversight.
(5) The average gap in prompt service is -2.22, indicating that hospital employees cannot meet patients' needs unable to meet requirements of patients due to procrastination, tardiness, and leaving early. Workplace discipline must be instilled in all employees, and late arrival and leave early must be frowned upon. We should also expedite laboratory examination results so patients can assess their condition quickly.
(6) Patients still distrust doctors. The hospital's image publicity may not be enough, or the medical staff's diagnosis, treatment, and nursing may not satisfy some patients.

Table 4. Differences between expectations and perceptions of all 22 indicators

Attribute	Sequence number	Expectation		Perception		Gap	t	p
		Average	SD	Average	SD			
Tangibles	**1**	6.02	0.54	5.07	0.87	0.95	47.50	<0.001
	2	6.18	0.78	4.81	1.55	1.37	34.25	<0.001
	3	6.55	0.37	5.50	1.14	1.05	26.25	<0.001
	4	5.98	1.04	4.60	1.39	1.38	69.00	<0.001
	Average	**6.18**	**0.68**	**4.99**	**1.24**	**1.19**	**39.67**	**<0.001**
Reliability	**5**	6.15	0.72	4.72	2.17	1.43	17.88	<0.001
	6	6.54	0.41	4.62	2.21	1.92	15.78	<0.001
	7	6.16	0,77	4.37	1.88	1.79	29.83	<0.001
	8	6.15	0.66	4.30	1.53	1.85	37.00	<0.001
	9	5.98	0.70	4.48	1.17	1.50	75.00	<0.001
	Average	**6.20**	**0.65**	**4.50**	1.79	**1.70**	**28.33**	**<0.001**
Responsive-ness	**10**	6.41	0.44	4.19	1.32	2.22	55.50	<0.001
	11	5.78	0.79	4.76	0.97	1.02	102.0	<0.001
	12	6.25	0.55	4.59	1.12	1.66	55.33	<0.001
	13	5.93	0.88	4.87	1.01	1.06	53.00	<0.001
	Average	**6.09**	**0,67**	**4.60**	**1.11**	**1.49**	**74.50**	**<0.001**
Assurance	**14**	6.27	0.52	4.63	1.02	1.64	54.67	<0.001
	15	6.07	0.72	4.84	1.31	1.23	41.00	<0.001
	16	6.10	0.65	4.59	1.22	1.51	50.33	<0.001
	17	6.45	0.37	4.47	1.04	1.98	49.50	<0.001
	Average	**6.22**	**0.57**	**4.63**	**1.15**	**1.59**	**53.00**	**<0.001**
Empathy	**18**	6.52	0.36	4.55	1.24	1.97	39.40	<0.001
	19	6.24	0.53	4. 76	1.35	1.48	37.00	<0.001
	20	6.09	0.78	4.87	1.75	1.22	24.40	<0.001
	21	6.38	0.54	4.72	1.30	1.66	41.50	<0.001
	22	6.27	0.62	4.35	1.69	1.92	32.00	<0.001
	Average	**6.30**	**0.56**	**4.65**	**1.47**	**1.65**	**33.00**	**<0.001**
	Total average	**6.20**	**0.63**	**4.67**	**1.35**	**1.53**	**38.25**	**<0.001**

This says management should work harder to improve medical personnel's professionalism. Another significant issue is patients' job satisfaction with doctors' notifications (National Health Commission, 2019), which may be related to doctors' practices and hospital management omissions (Shostack & Upah, 1983). Doctors must disclose everything to avoid medical disagreements. Hospital management should prioritize this.

(7) Finally, patients were unsatisfied that medical professionals were not treated equitably, and the empathy difference was -1.97. It could be a problem at public hospitals. Many individuals will feel awkward or perhaps furious about this critical issue. Medical professionals have a responsibility to treat patients fairly. Hospital management should strongly punish "snobbish" behavior. The margin reached -1.92,

indicating that some doctors put their own needs ahead of their patients. There is considerable disagreement between Chinese doctors and their patients. We must achieve "supremacy of patients' interests," but we have not. The hospital administration should pay attention to the problem and take strict action. This societal problem calls for a strategic move from the government.

The investigation identified the issue and suggested ways to enhance hospital administration. Overall, the average perceived value of PHC patients is 4.67, and the average expected value of customers is 6.20. Thus, the hospital's service quality difference is -1.53, and satisfaction is 75.32% based on percentages. Thus, patient satisfaction is 15.32% above the pass line (60%). Therefore, the hospital's service quality must be significantly enhanced.

Patients' high standards for hospital care might be challenging to uphold. Medical professionals, after all, are just like everyone else. Public hospitals in China have few resources, and their doctors and nurses work long hours. This makes it challenging to address the needs of patients. However, the age, gender, morality, and humanity of patients must impact their regard and comprehension of medical staff. As a result, responses to the same issue will vary in their results. This survey and statistical analysis can determine overall patient satisfaction with their hospital experience. This "perceived expectation difference quantifies patient satisfaction."

Medical service is complex, involving numerous departments and personnel. Humanistic cultivation and staff knowledge may be lacking in all links. Hospital equipment is divided into numerous categories and is quite complex. Numerous departments and medical personnel are involved in doctor visits. Thus, patients' satisfaction stems from their overall impression of the hospital, not just one department or person. Figure 11 depicts how the medical service process affects patient satisfaction.

Patients' level of satisfaction directly impacts quality improvement. Therefore, patient feedback will continue to gain significance in medical quality management in the years to come. As the medical business becomes increasingly "marketized," patient satisfaction has become a central focus of quality assurance efforts.

How much patient loyalty and satisfaction be improved? Improving the patient's personal experience is the only way for hospitals to establish loyalty. Competence, courtesy, and compassion are the usual components of care. A patient's loyalty is mainly based on the compassion exhibited by the medical staff in direct patient interaction.

The foremost concern is expertise. Medical personnel is hired based on their qualifications. The medical staff must continuously improve their abilities at work, learn to utilize new equipment, and adapt to the most recent medical norms. Ability is the sole criterion for hiring and terminating clinical personnel.

The second level of concern is politeness. Hospitals could set a new standard for politeness in the workplace if they began prioritizing patients' needs and preferences. For example, politeness is emphasized in top-notch customer service training. In addition, politeness requirements are written into several hospitals' performance reviews.

The third concern level is emotional awareness. It is beyond common courtesy; we call it compassion. Hospitals do not utilize this as a hiring criterion, as it is superfluous,

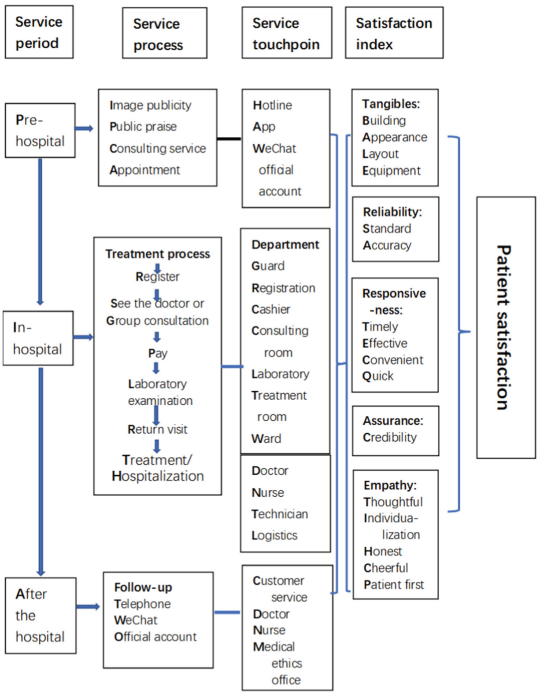

Fig. 11. Relationship model between hospital service process and patient satisfaction (*by author*)

and they do not terminate personnel who cannot demonstrate compassion. Compassion appears to emanate from the heart of an "inspired" employee.

According to SERVQUAL model survey data, the service process significantly impacts customer satisfaction more than technical assistance, implying that patients prioritize service attitude for high-quality medical outcomes. Medical staff quality influences "soft" factors such as service efficiency. As a result, hospital administration struggles to leverage advanced service facilities to serve patients better.

It is recommended to focus on the following aspects:

(1) Strengthen the system construction, use the system to restrain medical personnel's lousy behavior, enhance the sense of responsibility and active service consciousness, firmly establish the principle of "patients' interests first," and a reasonable reward and punishment system is a critical guarantee measure.
(2) Fully implement the 18 key medical and department director responsibility systems. Each department member must implement and monitor 18 critical systems, and hospital functional departments must timely supervise, inspect, and implement related penalty measures.
(3) Optimize the treatment and examination process, employ modern scientific and technological tools and Internet equipment, enhance work productivity, and allow patients to visit a doctor, check, and get reports more easily and quickly.

(4) Focus on medical staff training to increase their professional quality, image, and hospital culture of "comparison, learning, catching up, helping, and surpassing." Establish specialty models simultaneously. Consistently evaluate and reward. Finally, train many famous regional or national experts.

Patients are essential to hospitals. Hospital managers should use the patient satisfaction survey instrument to raise management levels and improve the hospital's market position and core competitiveness. The following enhancements must be made: (1) Inform department heads of the investigation findings. They need evidence to make a decision. (2) Compare results vertically and horizontally. Vertical comparison can help to understand their development and progress and inspire all departments to improve service quality consistently. Horizontal comparison can benefit from the experience of other hospitals, broadening perspectives and ideas. (3) Develop and oversee hospital spiritual civilization office programs and sanctions. (4) Return the measurements to the patients as soon as possible following the investigation. Hospitals can quickly send patient information via SMS, WeChat, or official accounts. If the needs of the patients cannot be met, face-to-face explanation and conversation can help build consensus and boost the hospital's competitiveness in the same industry.

Currently, both the government and the general public emphasize patient rights. As a result, some patients and their families desire to utilize their medical experience to improve hospital services. However, patients and their families lack sufficient information to evaluate hospital services. In addition, some hospitals lack the appropriate channels. Patients and their families can use this channel to improve the hospital. As a result, patient satisfaction and hospital loyalty will rise. The following hospital services evaluate patients and their families (Fig. 12):

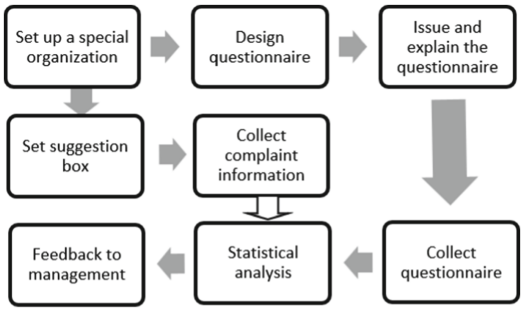

Fig. 12. Process provided to patients to assess patient satisfaction (*by author*)

5 Conclusion

A patient satisfaction survey system based on the SERVQUAL model was established after investigating the characteristics of hospital service and the determinants of quality. This system includes five dimensions that reflect hospital service quality and 22 questions that are refined and summarized into questionnaires. The statistical analysis of the questionnaire demonstrates that the model can scientifically describe the hospital's overall service quality and has high accuracy and reliability. We can learn about the specific factors that influence patient satisfaction and the extent to which these factors influence patient satisfaction through questionnaire analysis. If it is extended to each department or service field of the hospital, horizontal comparisons between departments or service posts can be made to improve departmental service levels further. As a result, the evaluation system is a scientific and feasible service quality evaluation method that will provide a solid foundation for improving hospital management. Furthermore, it has been discovered that patients' economic status and education level influence their perception of service quality, presenting a new topic for hospital management.

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