

# Why Patients Dissatisfy with Medical Care in China—Evidence from the Patient Perceived Value

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## Research article

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# Abstract

- **Background:** Enlarged financial and managerial resources spending on medical improvement had rarely to decrease the crowded waiting line or increase the patient satisfaction. Investigating patients' perceived value (PPV) gain an insight of patients' satisfaction. PPV is a valuable perspective for hospitals to strategically improve medical care quality and performance from functional and emotional sides.

- **Methods:** According to the theory of perceived value, an empirical study had been carried out by field survey and data collection in 7 well-known hospitals in Zhejiang Province China. 2586 questionnaires with valid data were analyzed according to PPV.

- **Results:** Beside of the importance of functional values (effectiveness of treatment effect, reasonable and accurate prices, standardization and normalization, convenience and accessibility), the emotional values (communication with doctors/nurses, comfortable environment and facilitates) were highlighted. The preferences of patients' perceived value were influenced by patients' background features, and then the differentiation of patients' satisfaction was proceeded. These patients, who are young, female, outpatient, light ill condition, high educational level and high income, tend to be relatively high demanding on medical care services but in high dissatisfaction level. Additionally, the findings show an advantage to pass the reasonability of waiting time to patients' thought.

- **Conclusion:** Classified convenience receiving approaches according to differentiated PPV and background features of patients, equipped up with e-enabled health care environment, can bring worthwhile patients' satisfaction in Chinese hospitals .

## 1. Background

Patient satisfaction is widely considered as a critical indicator of performance and quality improvement in hospitals<sup>[1][2]</sup>. Medical care is characterized by high difficulty, risks and cost<sup>[3]</sup>. However, even though the last decades medical quality-inspired reforms, the increased number and violence degree of medical conflicts is proposed to be a significant type of social contradictions in China<sup>[4][5]</sup>. The unbalanced medical and human resources allocation force patients flow to big hospitals in cities and thus make their experiences worse<sup>[3][6]</sup>. One survey in one Beijing hospital stated the workload of a doctor even access 200 patients per day, which leave very limited minutes for one patient who waiting for hours<sup>[7]</sup>. Thus far, previous research investigations have shown mixed reasons of patients' dissatisfaction, such as treatment effectiveness and service accessibility which are mainly from the quality of medical techniques and capacities<sup>[8][9]</sup>. A research indicated that 82% of dissatisfied responds was from the limited information they received, 67% from medical staff's unsympathetic clarity, and 63% dissatisfied with the accuracy of treatment due to no time to ask questions freely<sup>[10]</sup>. Another survey also indicated that 73% of patients totally do not trust doctors and 8% of the patients perform complete trust<sup>[11]</sup>. Untrustworthiness between patients and doctors significantly increase conflicts and medical disputes in China<sup>[12]</sup>. Inadequate time and communication between patients and doctors results in nontransparent or unclear of the treatment details or process, and consequently, any unwilling effect will amplify patients' negative judgements and untrustworthiness<sup>[11]</sup>.

It seems likely that the majority of patient dissatisfaction is concentrated on doctor-patients interaction specially in big public hospitals, besides of hospitals' medical technics<sup>[13][14]</sup>. Some researches were based on framework analysis from the evaluation of quality of service<sup>[15]</sup>, which covered the structure (hospital's physical facility and environment), process (patients' perception of interaction with hospital staffs) and outcomes (results received from interactions)<sup>[16]</sup>. Cengiz and Kirkbir (2007) demonstrated in a qualitative survey that patients struggled with the aspects of functional value, emotional value and social value<sup>[17]</sup>. Although treatment normalization and quality is the primary as functional value<sup>[18]</sup>, convenience and waiting time were found as core significant types of dissatisfaction, which are related to the added values besides from treatment quality<sup>[19]</sup>. These results lead a growth researches of managing satisfaction and relationships in hospitals to the perspective of patient' value analysis<sup>[20]</sup>.

PPV is reflected by the received service against expectations. The advantage of PPV is that it may explain why improved medical capability and technics still result in low satisfaction and loyalty level from perspectives of patients<sup>[21]</sup>. PPV was further developed into more detailed dimensions, such as service quality, facilities, convenience, price, professionalism, social reputation,

control and hedonics<sup>[22][23][24]</sup>. Importantly, a high quality of medical care communication is one important element in PPV<sup>[25]</sup>. A research from Chinese hospitals indicated that 82% dissatisfied patients were from inadequate information from doctors, 67% from unsympathetic clarity, and 44% from a low opportunity to ask questions freely<sup>[19]</sup>. Communication is expected on the foundation that doctors and patients shared a decision-making model, which mainly based on patient knowledge, clear clarify of possible benefits and harms of treatment options, and the patient's values and preferences<sup>[20]</sup>. Faster assess, communication and convenience related to environment may furthermore result in more comfortable emotion, accompanied by fairness and efficiency perceptions<sup>[26][27]</sup>. Patients will feel stressed, bored, anxious or worried during a long waiting for services, and mood would usually affect the customers' evaluation and satisfaction of the service<sup>[26]</sup>. Moreover, a well patients-doctors relationship and public reputation of the hospitals is seen as the keystone to guide patients' choice decision, which will release patients' harsh tension from high medical expenses (drugs or techniques), otherwise lead to over-prescription and over-treatment expectation<sup>[27]</sup>.

PPV gains even more importance in the near future that patient satisfaction is an overall assessment of medical skill and service quality<sup>[19][20]</sup>. The conception of PPV was mainly developed from the theory of Customer Perceived Value, and based on weighing up the utility gained from treatment effects, service, environment and expenses paid like time, money, and risks<sup>[29]</sup>. Nevertheless, there is little systematically quantitative evident in China regarding the patient perspective value' characteristics and its impact on satisfaction management<sup>[30]</sup>. This study focused on the role of PPV to better understand how to target patient-related value and thus tailor their dissatisfaction with hospitals. Specially, learn more about the characteristics of PPV, determine the impact on PPV by patients' background features, and finally determine the impact on PPV on the patient satisfaction. This study adds to the research filed by gathering wide data using control important confounding factors (actual perceived value, degree of importance, importance of aspects, importance of primary indicators) and differentiate the patients background and features (such as health conditions, gender, age, educational and economic background) on their perceived value (functional value and emotional value).

## 2. Methods

The data materials for this study are varied to the complexity by assigning surveys to the patients in the 7 dominated hospitals four main cites in Zhejiang Province of China over twelve-month periods, according to the ranking from Zhejiang Province Health Committee. 7000 questionnaires have been sent out to randomly selected impatient and outpatients' patients and received 2865 questionnaires. 2586 questionnaires had valid data (37% gross response rate).

### 2.1 PPV variables: support for patient satisfaction

The main interest of this report is in the varied impacts on patients' perceived values on satisfaction levels. Based on this, the respondents would be divided into strong, modest, and weak sensitivity degrees of their satisfaction and three categories (different types, prices, and waiting time) would be discussed according to different patients' perceived values (functional value, emotional value, social value). In the majority of cases, medical disputes arise due to an enlarged gap between the level of medical effect and patients' expectation<sup>[31]</sup>. China government had made a series of laws and regulations to standardize the treatment normalization of doctors and nurses. But when doctors are dissatisfied with their overtime work or underpaid awards, the negative emotion would pass to patients and make a rush or unqualified impression, consequently leading to a prejudice of poor treatment performance<sup>[28]</sup>. Timing enlarged the tensions and conflicts after a long waiting lists or delayed appointment<sup>[4]</sup>. In this case, wide use of IT systems did adopt in Chinese hospitals now to improve the workflow efficiency and convenience of hospital service, such as online appointment system, electronic registering machine, electronic payment machine, electronic health records (EHRs). Nevertheless, these e-programs seem not significantly link to positive doctor-patient relationships, patient satisfaction still were varied in different hospitals<sup>[13]</sup>. It gave a high value of communication<sup>[10]</sup>. Interestingly, the dissatisfaction rate would be fluctuated after concerning the medical expenses<sup>[28]</sup>. Low price means lower patients' expectation as well as financial stress, but an opposite effect was they may think low consultation fee lead to over-investigation (high drugs and techniques charging). Thus there would be critically to consider the issue of patient-doctor relationship as the keystone of patient retention in the medical institution<sup>[32]</sup>. Media reports of medical disputes and medical incidents broke public belief and damage

hospital reputation. According to the above, intensified patient dissatisfaction and medical disputes in China should capture these unbalanced expected value comparing with the paid time and financial costs.

## **2.2 The survey instrument**

The questionnaire firstly consisted of 7 dimensions 57 items from the Perceived Value Theory to measure patients' satisfaction with medical care. It covered the standardization and normalization of treatment service, self-assessment of illness states, communication and relationship between doctor-patients, trust and reputation of hospitals and doctors, comfort and convenient environment during medical services, as well as the costs of time, money, and even risks. Then, general information was sent to gain patients' expectation indicators from pilot 50 interviews (from medical disputes claimers) in 7 well-known hospitals in Zhejiang Province in China. It included past negative experiences, revisit rate, prepared time in hospitals and if searched hospital acquaintance before seeing doctors. Seven variables and 35 indication items were finally concluded into the constructs of treatment effect, medical normalization, convenience, communication, comfort, price and hospital reputation.

Next, accordingly modified surveys were conducted via online-based and on-site methods to analyze the comprehension of different PPV. The questionnaire consists of three parts: basic demographic information of patients, items requiring patients to differentially weight according to individual medical experience, and open questions about other experiences assessment in treatment. Respondents will scaled these items on a 1–5 scale (1 = not important; 5 = extremely important). These variables were finally summarized into 35 indication items in the survey. The age, living area, education level, family income, occupation, payment methods would be accessed to obtain a sample of a certain size for comparisons with various population statistics. 2685 questionnaires showed about 53% of them were received from inpatients, and the rest 47% of them were collected from outpatients; 2658 samples of the valid feedbacks showed that 43% of them were male patients and 57% of them were female patients. According to the received questionnaires from patients, the results would be further studied by patients' different sensitivities of perceived value, degrees of their satisfaction, importance to the recent medical services.

## **3. Results**

The data give Chinese hospitals a deep understanding why dissatisfaction is a common phenomenon in China. From the data as shown Table 1, these high ratios of dissatisfaction reasons tend to support earlier findings that the functional values (such as effectiveness of medical treatment and diagnosis, reasonability and accurate prices, standardization and transparent of process, convenience and accessibility), emotional value (such as doctors or nurses' attitudes, comfortable environment and facilitates) and social value (hospital reputation) got extra attentions from patients. Specifically, the attitudes from doctors and nurses were highly valued in patients' emotion, otherwise, diagnosis and treatment effects were the main focus in functional value.

Table 1  
Results of patients' perceived value

Aspects	Indicators		Numerical value			
	Primary indicators	Secondary indicators	Actual perceived value	Degree of importance	Importance of Primary indicators	Importance of Aspects
Functional Value	Treatment effects	Effect	3.76	4.16	4.14	3.91
		Diagnosis	3.98	4.54		
	Prices	Reasonability of prices	3.52	4.06	3.96	
		Accuracy of bills	3.89	4.07		
	Normalization	Standardization	3.95	4.18	3.92	
		Transparency	4.00	3.83		
	Convenience and accessibility	Reasonability of layout	3.65	3.82	3.61	
		convenience of medical service	3.79	3.75		
Emotional Value	Communication	Doctors' attitude	4.03	4.21	3.97	3.92
		Nurses' attitude	4.06	4.05		
	Comfort	Environmental hygiene	3.78	3.94	3.87	
		Completion of supporting facilities	3.84	3.93		
Social Value	Hospital reputation	Advanced medical equipment	4.18	3.84	3.86	3.86
		Influence of medical skills	4.40	4.13		

Notice: 1. The secondary indicators only showed the most important two; 2. "Importance of aspects" were average values of "Importance of Primary indicators", and "Importance of Primary indicators" were average values of "Importance of secondary indicators".

When considering the background features of patients (gender, ages, education level, household income) and patients' emotional value and functional value, the descriptive statistics for the variables showed significant deviation with patients' backgrounds in affecting their perceived value, as presented Table 2. The preferences of patients' perceived value were influenced by patients' background features, and then the differentiation of patients' satisfaction was proceeded. The research about patient perceived value's relation with medical service convenience and waiting time has been analyzed. The findings reflect that there is no correlation between individual patient's time adequacy and perceived convenience. But there is a positive correlation between perceived convenience and perceived value. In addition, the difference in gender, age and educational level have small differentiation on the sensitivity on functional value.

Table 2  
Patients' different perceived values by varied features

Patients background features	Differentiation features		Relationship with features		Degree of perceived value (high or low) and patients' features	
	emotional value	functional value	emotional value	functional value	emotional value	functional value
Outpatients /inpatients	sig	sig	+	+	High for inpatients Low for outpatients	High for inpatients Low for outpatients
Illness condition	sig	sig	-	-	Negative relationship with illness condition	Negative relationship with illness condition
Gender	sig	sig	+	-	High for men Low for women	High for men Low for women
Age	sig	sig	+	+	Positive relationship with age	Positive relationship with age
Educational level	sig	sig	-	-	Negative relationship with education degree	Negative relationship with education degree
Monthly income	sig	none	-	None	Negative relationship with income	None
Note: the relationship is: +:relatively high;-: relatively low;+: significantly high;-: significantly low;0:no difference						

For the overall satisfaction assessment, inpatients provided more favorite feedback than outpatients ( $F = 147.8, P < 0.01$ ) and male patients held better attitude to hospitals than females ( $F = 5.523, P < 0.01$ ). Additionally, younger patients indicated lower overall assessment scores than elder patients ( $F = 13.757, P < 0.01$ ). The education level ( $F = 7.314, P < 0.05$ ), income level ( $F = 2.597, P < 0.05$ ) and occupation ( $F = 2.367, P < 0.05$ ) also showed significant difference. As for households income, the group of "3001–5000" RMB per month showed lowest grades and the rest groups offered similar grades on overall valuation. Officers reflected best valuation while patients from business and service gave the worse comments. The residence place (urban, town or rural) did not offer any significant impact on overall satisfaction assessment.

For more detailed analysis, the diverse types of patients ( $F = 197.7, P < 0.01$ ), gender ( $F = 3.388, P < 0.05$ ), ages ( $F = 12.195, P < 0.01$ ) and education level ( $F = 3.168, P < 0.01$ ) have significant difference in relationship with the perceived value of treatment effect. Inpatients, male, the group of "60 age and above" and higher education level showed a higher value from perspective of treatment effect than others. The patients in the age of 19–29 have the lowest focus on treatment effect. These different features of resident place, income level and occupation did not display significant difference in evaluating treatment effect.

Grouping the sample by the time adequacy, neither the patients' overall satisfaction assessment of hospital ( $P = 0.203 > 0.05$ ) nor the perception of treatment effect of different groups is relevant to the adequate time for doctors ( $P = 0.943 > 0.05$ ). At another side, the degree of convenience is a significant positive factor in patient perceived value but weak relevance with overall satisfaction assessment. Specifically, the main attributes of convenience were the reasonable degrees of waiting time ( $F = 0.371, P < 0.01$ ) and convenience of medical seeking ( $F = 0.487, P < 0.01$ ). Waiting time has significant positive relationship with overall medical satisfaction assessment, ( $F = 0.397, P < 0.01$ ), while the convenience of medical seeking does not have relevant significance ( $P = 0.482$ ). Additionally, patients were grouped according to their different feature, there were no statistical significance of the perceived value of less waiting time between genders, but has significant different in inpatients and outpatients ( $F = 87.25, P < 0.01$ ), different ages ( $F = 13.914, P < 0.01$ ), living place ( $F = 3.18, P < 0.05$ ), education levels ( $F = 7.472, P < 0.01$ ) and occupations ( $F = 2.675, P < 0.01$ ). By relating waiting time to satisfaction, outpatients got a lower mark on waiting time than inpatients, urban patients felt worse than suburban patients, young groups (aged from 19–39) showed significant lower grades but "60-year-old and older" patients ranked higher. It indicated those patients with more prepared free time have less emphasis on waiting time. Moreover, there were still significant discrepancies of the convenience of medical seeking between different inpatients and outpatients ( $F = 96.18, P < 0.01$ ), gender ( $F = 5.374, P < 0.01$ ), age ( $F = 10.677, P < 0.01$ ), education levels( $F$

= 10.472,  $P < 0.01$ ), income ( $F = 2.639$ ,  $P < 0.05$ ) and occupation ( $F = 2.418$ ,  $P < 0.01$ ). People from different living areas do not show significant difference in evaluating the convenience of medical seeking, but male patients and senior groups of "50–59 age" and "60 age and above" displayed a higher importance. On the other side, the higher education level, upper monthly income level and these busy technic and business occupation gave significant lower satisfaction at waiting time, as well as the convenience of medical seeking.

Table 3

Patients' diversified perceptions of waiting time, perception of convenience, perception of treatment effect and overall satisfaction assessment

Feature	Groups	Proportion of patients	Overall assessment		Perception of waiting time		Perception of convenience		Perception of treatment effect	
			$\bar{x}$ $\pm s$	F	$\bar{x}$ $\pm s$	F	$\bar{x}$ $\pm s$	F	$\bar{x}$ $\pm s$	F
Source	Inpatients	53%	4.08 $\pm$ 0.70	147.8**	3.55 $\pm$ 0.96	87.25**	3.79 $\pm$ 0.82	96.18**	3.99 $\pm$ 0.78	197.7**
	Outpatients	47%	3.76 $\pm$ 0.70		3.20 $\pm$ 1.0		3.48 $\pm$ 0.83		3.56 $\pm$ 0.79	
Gender	male	43%	3.99 $\pm$ 0.71	5.523**	3.40 $\pm$ 1.0	0.36	3.72 $\pm$ 0.82	5.374**	3.84 $\pm$ 0.82	3.388*
	female	57%	3.89 $\pm$ 0.72		3.37 $\pm$ 0.99		3.59 $\pm$ 0.84		3.75 $\pm$ 0.80	
Age	19–29	33%	3.80 $\pm$ 0.69	13.757**	3.20 $\pm$ 1.03	13.914**	3.63 $\pm$ 0.81	10.677**	3.63 $\pm$ 0.80	12.195**
	30–39	22%	3.89 $\pm$ 0.73		3.29 $\pm$ 1.01		3.79 $\pm$ 0.79		3.79 $\pm$ 0.79	
	40–49	14%	4.01 $\pm$ 0.70		3.52 $\pm$ 0.92		3.87 $\pm$ 0.80		3.87 $\pm$ 0.80	
	50–59	10%	4.10 $\pm$ 0.66		3.58 $\pm$ 0.90		3.97 $\pm$ 0.77		3.97 $\pm$ 0.77	
	60 and older	13%	4.13 $\pm$ 0.68		3.65 $\pm$ 0.93		3.98 $\pm$ 0.80		3.98 $\pm$ 0.80	
Residence place	Urban area	35%	3.93 $\pm$ 0.72	0.081	3.32 $\pm$ 0.97	3.18*	3.63 $\pm$ 0.81	0.472	3.81 $\pm$ 0.81	0.869
	town	26%	3.94 $\pm$ 0.70		3.43 $\pm$ 0.98		3.65 $\pm$ 0.84		3.75 $\pm$ 0.81	
	Rural area	39%	3.92 $\pm$ 0.72		3.41 $\pm$ 1.02		3.66 $\pm$ 0.86		3.79 $\pm$ 0.80	
Education level	Primary school	16%	4.00 $\pm$ 0.70		3.56 $\pm$ 1.02		3.77 $\pm$ 0.8		3.86 $\pm$ 0.81	
	High school	34%	4.00 $\pm$ 0.72		3.54 $\pm$ 0.96		3.73 $\pm$ 0.84		3.83 $\pm$ 0.83	
	College school	25%	3.85 $\pm$ 0.72		3.31 $\pm$ 0.95		3.58 $\pm$ 0.81		3.74 $\pm$ 0.80	

Notice: 1. The secondary indicators only showed the majority of investigated patients; 2. \*P < 0.05,\*\*P < 0.01.

	undergraduate	24%	3.85 ± 0.69		3.12 ± 1.02		3.52 ± 0.83		3.72 ± 0.77	
Income per month (RMB)	500–1500	22%	3.98 ± 0.68	2.597*	3.49 ± 0.98	7.472**	3.72 ± 0.87	2.639*	3.78 ± 0.83	1.395
	1501–3000	34%	3.93 ± 0.70		3.37 ± 0.95		3.63 ± 0.80		3.76 ± 0.78	
	3001–5000				3.32 ± 1.02		3.61 ± 0.84		3.76 ± 0.79	
	5001 and above	22%	3.86 ± 0.71		3.22 ± 1.03		3.59 ± 0.86		3.86 ± 0.84	
Occupation	Officer	12%	3.90 ± 0.70	2.367*	3.36 ± 0.97	2.675**	3.64 ± 0.77	2.418**	3.78 ± 0.80	1.564
	Self-employed	14%	3.94 ± 0.66		3.37 ± 0.98		3.62 ± 0.86		3.78 ± 0.80	
	Student	10%	3.89 ± 0.73		3.27 ± 1.11		3.61 ± 0.89		3.75 ± 0.82	
	Technician	8%	3.93 ± 0.71		3.22 ± 0.9		3.54 ± 0.84		3.72 ± 0.83	
	Farmer	17%	3.98 ± 0.71		3.53 ± 1.02		3.79 ± 0.88		3.85 ± 0.82	

Notice: 1. The secondary indicators only showed the majority of investigated patients; 2. \*P < 0.05,\*\*P < 0.01.

## 4. Discussion

From the above analysis, it was found that dissatisfaction of patients in China was affected mostly by the patients' different background characteristics. Acknowledging the weight from differentiated features of patients' backgrounds on satisfaction and accordingly build classified managing modes are primary in medical care improvement projects. Medical institutions need to collect and categorize patients' information in a supporting database, and then establish an effective information transfer mechanism to revise medical care process. By analyzing the PPV attributes, a perceived value concentrated system should be formalized to build a sound convenience and communication environment to improve the doctor-and-patient matching degree. The highlight of personalized services can be achieved by effectively tracking patient's background information and their different expectation of the medical values. Moreover, through wide communication methods and reinforced doctors' and nurses' communication skills, patients can be effectively guided to seek suitable medical treatment according to their characteristic groups. After that, corresponding medical service and interaction experiences would be enhanced according to their different perceived value.

An interesting finding in this research was the most dissatisfied reasons were from adequacy of treatment time, waiting time and convenience. However, patient perceived convenience and the reasonable waiting time (adequacy of personal time) are the main factors related to patients' satisfaction, while there was no significant relevance from adequacy of treatment time. When consider the degree of perceived value, male would be higher than female, female patients tend to rely more on emotional value; young patients would be more sensitive on emotional value; the high level of education did weigh social value but have more negative

perceived value; for functional value, the income level did not affect PPV. Their patient perceived value showed relatively low and significant difference emerged in emotional values from other type of patients.

The result indicated that inpatients were easier to perceive negative impressions from medical convenience, waiting time and treatment effect than outpatients. It is an unexpected finding that patients think little of the adequacy of treatment time from doctors and not significantly affect their satisfaction. It means even patients have sufficient treatment time from doctors after a long wait, they are still in the negative mood. One reason would be that patients believe well-known hospitals have more advanced equipments and professional for particular medical issues. So that the time adequacy is less considered since patients trusted the high quality of these hospitals. Another reason is related to predicted outpatient number and understanding of heavy workloads in big hospitals which make patients have more endurable to the limited treatment time.

This study implied patients' personal time pressure and service requirements demand higher efficacy without time waste. Younger patients contained low satisfaction than elders due to their tight work schedule, particularly in the age of "18-29" and "30-39" groups as shown in Table 3. A reason would be there are more transfers in outpatients' treatment processes, including waiting for register, different tests appointment and payment, report preparing, medicine payment and get and so on. Especially for the first time visiting, unfamiliarity with a hospital's environment could bring more troubles in outpatients. This finding showed an advantage to pass the reasonability of waiting time to patients' thought. Hospitals should redesign the outpatient processes and set up an upside down revolution to reduce the total time patients spend, not only doctors' treatment efficacy but also the psychology management to shorten patients' time perception. Explicit signs, qualified guide service, automatic payment system, EMR, friendly waiting rooms environment and so on. It means even patients have sufficient treatment time from doctors after a long wait, they are still in the negative mood.

Patients with higher educational degree and income level were observed to have more dissatisfaction than others. Most patients with higher education live in big cities and may have upper social level with greater incomes but less free time. They may measure the medical values of various dimensions, whereas professional or personalized express service to different type of patients could be welcomed by educated or young patient, who are used to e-technologies and able to adopt online medical self-assistant intelligent facilitates. Especially in waiting time, they can experience AI pre-diagnose to better waiting time, convenience and perceived value of medical service. Education determine the patient's way of thinking and value judgment, and also cause significant differences in satisfaction.

Additionally, the perceived value of communication between inpatients and outpatients is dissimilar found in this research. Inpatients thought they received more care and effective communication with doctors and nurses than outpatients, because they could understand their condition more comprehensively in variety of ways. The illness conditions affect patients' satisfaction level, where light ill conditions usually have better mood and more time to communicate in medical treatments advises. Communication made much influence on emotional value like attitudes of doctors and nurses, but little influence on functional value like effectiveness of treatments.

## 5. Conclusion

The distinguished Chinese medic care circumstances make the perceived patient value would be different from that in other countries. The medical recourses in China are insufficient to satisfy its huge number of patients. Therefore, redundant waiting time, inconvenience, little communication and uncomfortable crows in visiting hospital would cause patients' significant dissatisfaction. Moreover, the relationship management level and communication skills are relatively low because they pay more attention to medical devices and techniques, but less to patients' emotion experiences. Nevertheless, the rapid development of economy and living standards make patients have an increasing expectation on the service quality of the health care. Then the gap enlarged between their expectation and the perceived value from the realistic experiences. It is meaningful to figure out dissatisfaction of Chinese patients and to analyze the reasons for improving future medical care service quality. From the above analysis, PPV can significantly affect the satisfaction, specially from functional value, emotional value and social value. Dissatisfaction and changes into the perceived value of patients in China were mostly affected by patients' different background features. Corresponding patients satisfaction management strategies can be adopted to improve current medical service and enhance the patient's overall medical value perception. This study work has tried to find a new direction as a researching map to

suit the matured patients and fast development of Chinese hospitals. Hospitals should manage the circumstances of receiving medical treatments and bring background features of patients into categorized satisfaction management. The findings of patients' perceived value would be worth in explaining the problems and ease the doctor-patient relationship tension in the special Chinese hospitals context.

## Abbreviations

PPV  
Patient Perceived Value  
EMR  
Electronic Medical Record

## Declarations

### 6.1 Ethics approval and consent to participate

All survey procedures were performed in accordance with the ethic guidelines and approved by the Ethics Committee from Zhejiang University City College and Quality and Ethics Management Institute from Enze Hospital, China. Written informed consents were obtained from individual survey participants.

### 6.2 Consent for publication

Not applicable.

### 6.3 Availability of data and materials

The data about the findings of this study are available from the corresponding author upon reasonable request. The manuscript does not contain any individual persons data. The questionnaire developed for this study and dataset are provided as Additional File.

### 6.4 Competing interests

This paper was concluded from original researches and no conflict of interest existed in the submission of this paper.

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### 6.6 Authors' contributions

HQ analyzed the theories regarding the patients' perceived value, research constructs and interpreted the data. WL performed the data collection, analysis and manuscript writing. ZL was a major contributor in data analysis and result discussion. All authors have read and approved the publication.

### 6.6 Acknowledgements

Not applicable.

## References

[1] Glasgow RE, Vogt TM, and SM Boles. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. American Journal of Public Health September 1999; 89 (9): 1322-1327.

- [2] Nabbuye-Sekandi, Juliet, et al. Patient satisfaction with services in outpatient clinics at Mulago hospital, Uganda. *International Journal for Quality in Health Care* 2011; 23 (5): 516-523.
- [3] Xin Liu. *Medical Interest Disputes-Status, Cases and Countermeasures*. Chinese People's Public Security University Press; 2012.
- [4] Zhang X and Sleeboom-Faulkner M. Tensions between medical professionals and patients in mainland China. *Cambridge Quarterly of Healthcare Ethics* 2011; 20(03): 458-465.
- [5] Ran Zhang . Seven people died of doctor-patient dispute last year. *Beijing Times*, 2013-10-23.
- [6] Yongqi Wu, Yixiao Tan. Analysis of patient factors in the contradiction between doctors and patients in China. *Medicine and Society* 2014;9 (27): 55-57.
- [7] Li Zhu, Yuanying Yuan. Types, characteristics and countermeasures of doctor-patient contradictions in China at this stage *Social science research* 2014; 6: 104-111.
- [8] Nabbuye-Sekandi, Juliet, et al. Patient satisfaction with services in outpatient clinics at Mulago hospital, Uganda. *International Journal for Quality in Health Care* 2011; 23 (5): 516-523.
- [9] Baoping Diao. Current Situation and Cause Analysis of Medical Disputes. *China Continuing Medical Education* 2015; 7(25): 24-25.
- [10] Mazor KM, Simon SR and J H Gurwitz. Communicating With Patients About Medical Errors A Review of the Literature. *Arch Intern Med* 2004; 164(15): 1690-1697.
- [11] Long Li, Xiaoyan Wang, Chen Wang, et al. Impact of doctor-patient distrust on medical behaviors and countermeasures [J]. *China Hospital Management* 2012; 32 (1): 56-58.
- [12] Zi Mai. The pain of doctors and patients alike. *Procuratorial Daily*, 2014-08-27.
- [13] Yun Xia, Zongfen Zou , Xiaojing Zeng , et al. Cognition and attitude of medical staff to doctor-patient conflicts [J]. *China Health Care Management* 2013; 6: 413-415.
- [14] Jinyu Zhang. Investigation and analysis of medical disputes affecting doctors' understanding of doctor-patient relationship. *Medicine and Philosophy: Humanities and Social Medicine Edition* 2010; 31 (11): 41-42.
- [15] Cleary, P D and McNeil B J. Patient satisfaction as an indicator of quality care. *Inquiry A Journal of Medical Care Organization, Provision and Financing* 1988; 25: 25–36.
- [16] Zifko-Baliga G M, Krampf RR. Managing Perceptions of Hospital Quality. *Marketing Health Services* 1997; Spring: 29-35.
- [17] Cengiz E and F Kirkbir. Customer Perceived Value: The Development of a Multiple Item Scale in Hospitals. *Problems and Perspectives in Management* 2007; 5(3): 252-268.
- [18] Wang Hongyun, Wang Hufeng. The Factors Influencing Insured People Seeking Remote Medical Treatment – the Suggestion for Orderly Seeking Medical Treatment. *China Health Insurance* 2014;7: 122-27.
- [19] Ishino Yoko. Analysis and Modeling of Customer-Perceived Value of Medical Insurance Products. *Agent-Based Approaches in Economic and Social Complex Systems VII, The series Agent-Based Social System* 2013;10:115-127.
- [20] Ganasegeran K, Perianayagam W, Manaf RA, Jadoo SA and Al-Dubai, SAR. Patient Satisfaction in Malaysia's Busiest Outpatient Medical Care. *The Scientific World Journal* volume 2015.

- [21] Caruana A, Fenech N. The effect of perceived value and overall satisfaction on loyalty: A study among dental patients. *Journal of Medical Marketing* 2005; 5(3): 245–255.
- [22] Pan Feng-Chuan, Chen Chi-Shan. Enhancing Competitive Advantage of Hospitals through Linguistics Evaluation on Customer Perceived Value. *The Journal of American Academy of Business* 2004; 5(1/2):481-485.
- [23] O'Connor S, Shewchuk R. The Influence of Perceived Hospital Service Quality on Patient Satisfaction and Intentions to Return. *Academy of Management BestPapers: 49th Annual Meeting of the Academy of Management, Washington Aug. 1989*; 95-99.
- [24] Leea, MA, Yom, Y-H. A comparative study of patients' and nurses' perceptions of the quality of nursing services, satisfaction and intent to revisit the hospital: A questionnaire survey. *International Journal of Nursing Studies* 2007; 3 (44): 545–555.
- [25] Jou J, Kozhimannil KB, Johnson P J, and C Sakala. Patient-Perceived Pressure from Clinicians for Labor Induction and Cesarean Delivery. *Health Service Research* 2015;50 (4): 961-981.
- [26] Gallarza M G and Saura I G. Value dimensions perceived value, satisfaction and loyalty: an investigation of university students' travel behavior [J]. *Tourism Management* 2006; 27(3): 437-452.
- [27] Hongyun Wang, Hufeng Wang. The Factors Influencing Insured People Seeking Remote Medical Treatment – the Suggestion for Orderly Seeking Medical Treatment. *China Health Insurance* 2014; 7: 122-27.
- [28] Hesketh T, Wu D, Mao L and Ma N. Violence against doctors in China. *Bmj* 2012; 345: e5730.
- [29] Glasgow R E, Vogt TM and SM Boles. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health* September 1999; 89 (9): 1322-1327.
- [30] Cleary P D, and McNeil B J. Patient satisfaction as an indicator of quality care. *Inquiry A Journal of Medical Care Organization, Provision and Financing* 1988; 25: 25–36.
- [31] Caruana A, Fenech N. The effect of perceived value and overall satisfaction on loyalty: A study among dental patients. *Journal of Medical Marketing* 2005; 5(3): 245–255.
- [32] Goold SD and Lipkin M. The doctor–patient relationship. *Journal of general internal medicine* 1999; 14(S1): 26-33.

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