Correlation between patient satisfaction and experience in primary care facilities: A cross-sectional study in China

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Abstract: *In China, promote the utilization of primary care is a significant way to relieve the shortage of medical resources, and to enhance the overall health-seeking efficiency. Patients' satisfaction with services provided in primary care facilities highly decided whether they choose them again. To identify the key patient experience domains driving overall satisfaction with primary care from patients' perspectives, we conducted a cross-sectional questionnaire survey for data collection, using a convenience sampling from July to August, 2021. The primary independent variable was scores measured by Chinese Primary Care Assessment Tool (PCAT-C) to quantify patient experience at primary healthcare clinics (PHCs). And the Patient Satisfaction Questionnaire Short Form (PSQ-18) was adopted to measure patient satisfaction, the dependent variable, to show patients attitude towards service in PHCs. Covariates were main socio-demographic factors. Multi-variable linear regression analysis was employed to evaluate the correlation between patients' experience and their satisfaction. Finally, a total of 1989 qualified questionnaires were reserved. The continuity dimension showed the strongest relationship with overall satisfaction (coef. 0.014 [95% CI 0.012 to 0.016], P=0.000), followed by the Coordination and Community orientation dimension. The Comprehensiveness and Family-centered dimension also made a statistically significant difference. Besides, age, region, working status, and annual family income all played a role in influencing patient satisfaction. In Conclusion, In China, satisfaction with primary healthcare may be improved by upgrading patient experience. Build up longitudinal relationship and enhance service quality of primary care to strengthen the service continuity may be the most effective way to promote patient experience. Moreover, positive correlation between patient overall satisfaction and primary care coordination, comprehensive, family centered, as well as community orientation indicate continuous efforts on these aspects to achieve a higher level of satisfaction, and further to promote the utilization of primary care.*

Keywords: *China, Satisfaction, Patient experience, Primary care, Continuity*

1. Introduction

In China, primary care institutions account for 94.7% of the total number of medical facilities, which provide basic medical services directly to patients, and play a vital role as "gatekeepers" in healthcare system. In the past decade, efforts had been put in to strengthen primary care, and patients are encouraged to visit primary care providers (PCPs) firstly when facing non-critical diseases[1]. This reform had been proved to be a significant way to facilitate the rational utilization of medical resources, and to enhance the overall health-seeking efficiency[2].

Patients' satisfaction with medical services is highly related to treatment adherence[3]. Substantial research had proved that patient satisfaction is positively correlated with the quality of service provided in primary care clinics (PHCs). And patient experience, an outstanding indicator to assess the quality of primary care had been widely adopted among these articles[4-7].

Measurement of the relationship between patient experience and satisfaction helped to identify those important drivers for satisfaction, including owning a usual source of care[8, 9], communication with the doctor[10-12], the helpfulness of receptionists[13], patients' trust in their physicians[10] and physicians know important information about patient's backgrounds[14]. Besides, accessibility, continuity of care, consultation time[15] and the doctor–patient relationship[3] were all associated with patients' satisfaction. Most studies were on the continuity of primary care, and concluded that the higher the continuity of

primary care, the more likely of patients to feel satisfied[16, 15, 17, 18].

However, despite an on-going emphasis on the contribution of patient experience, few studies have systematically analyzed the relationship between patient satisfaction and patient experience from all dimensions. Consequently, we have a limited understanding of which aspects of their experiences in PHCs may matter most to patients. Thus, a nationwide cross-sectional survey was conducted respectively using a widely established Chinese Primary care Assessment Tool (PCAT-C), to assess patient experience from six dimensions and Patient Satisfaction Questionnaire Short Form (PSQ-18) to measure patient attitude. We aimed to identify the key patient experience domains driving patients' overall satisfaction, so prior attention and improvement can be put in to enhance primary care quality and patient satisfaction, and to further promote the utilization of primary care.

2. Methods

2.1 Research Design

Based on informed consent and voluntary participation, a nationwide cross-sectional study was conducted for data collection from July to August, 2021.

2.2 Variables and Instruments

Questionnaire consisted of 3 sections. Patients' satisfaction, Patient experience, and Control variables.

Section 1: Socio-demographic factors, including age, gender, region, the level of education, marital status, employment status, annual family income, basic and commercial medical insurance participation.

Section 2: Dependent variable – patient satisfaction. This study adopted Patient Satisfaction Questionnaire Short Form (PSQ-18), which was developed through rigorous research and abbreviated from much larger questionnaires, maintaining internal consistency and reliability[19]. This Likert scale questionnaire proposed seven dimensions of patient satisfaction directed toward their doctors. These are general satisfaction, technical quality, interpersonal manner, communication, financial aspects, time spent with doctor, and accessibility and convenience.

Section 3: Independent variable – Patient experience. Chinese Primary Care Assessment Tool (PCAT-C, 36 items) was used to measure six core primary care attributes: First contact, Continuity, Coordination, Comprehensiveness, Family-centeredness, and Community orientation. It has been adapted and validated in several countries with different health systems[20], and is widely used in different cities across China[21], indicating cross-cultural reliability for assessing Primary care.

Each dimension score is the mean of all item scores within that dimension. The total score is the mean scores of all dimensions, with higher scores indicating better performance.

Questionnaire was translated and pre-tested among patients from 3 PHCs in Nanjing, Jiangsu Province, China. The overall Cronbach's alpha coefficient of PCAT-C was 0.903, KMO 0.913. Cronbach's α 0.895, KMO 0.920 for PSQ-18, demonstrating good reliability and validity of the two scales.

2.3 Sampling and Data Collection

Patients treated by PHCs including community health service centers/stations and rural clinics were our target population.

A convenience sampling strategy was adopted. First, one-hundred undergraduates who had medical backgrounds were recruited as investigators. Their address covered 32 provinces in mainland China. Then, each investigator chose four primary care facilities that were in regular operation and with high reception volume. Last, in each PHC, at least five patients should be invited to participate in and complete the questionnaire in convenience. All above aimed to ensure that at least 2000 samples can be acquired in total. Facilities were not evenly distributed in each province, depending on the geographically neighboring to investigators' address.

Inclusion criteria were as follows: (1) over 18 years old; (2) willing and able to complete the questionnaire; and (3) owning a usual PCP. Two questions were developed to identify a patient's usual PCP:

1) Is there a doctor that you usually visit if you are sick or need advice about your health?

2) Is there a doctor who knows you best as a person?

An interviewee was considered to have a usual PCP at the clinic if s/he positively answered both questions and both two doctors were the same primary physician.

Content of this study was examined by the Ethics Review Committee of China Pharmaceutical University. Two researchers were responsible of reviewing the uploaded data. Once errors or damage were found, investigators were immediately informed to correct by return visits if necessary.

2.4 Data Analysis

Multi-variable linear regression model was used to assess association between patient experience and patient satisfaction. Stata 15.0 was used for data analysis, with 0.05 as the level of significance. Variance inflation factor (VIF) was used to evaluate the multicollinearity. An independent variable would be removed until all the VIF values dropped under 10.

Using respectively the PCAT-C total score and scores of six dimensions as main independent variables, two kinds of models were established.

3. Results

3.1 Descriptive Analysis

Finally, 1989 questionnaires passed the screening process. Among all participants, 56.90% were women, 66.70% were married, and 63.80% were from cities. Age ranged from 18 to 90, with an average of 41. Respondents had a degree of university or above account for 30.10%, and most of them were employed (56.50%). In addition, 95.3% were covered by the national basic medical insurance, but only 28.1% had participated in commercial medical insurance.

The total score for patients' satisfaction was 3.6. The total mean score of patient experience was 72.4 (SD = 10.3). For each dimension, the comprehensive got the highest score of 78.0 (SD = 15.7), followed by continuity 75.8 (SD = 10.7), family-centered 75.5 (SD = 17.7), and coordination 69.5 (SD = 16.8). The last two dimensions were first contact and community orientation, with only scored 69.4 (SD = 10.4) and 59.8 (SD = 17.0) respectively, see Table 1.

Table 1 Sociodemographic and Descriptive Statistics of the Participants(N=1989)

Item	Value	
Gender, n(%)		
male	858	43.1
female	1131	56.9
Age, mean(SD)	41	16.0
Region, n(%)		
urban	1268	63.8
rural	721	36.2
Education, n(%)		
lower than primary school	88	4.4
Primary school	233	11.7
Junior high school	364	18.3
Senior high school	449	22.6
Junior college	257	12.9
University and above	598	30.1
Marital status, n (%)		
Unmarried	538	27.0
Married	1327	66.7
Other (divorced, widowed, etc.)	124	6.2
Employment status, n(%)		
Employed	1124	56.5
Retired	255	12.8
Students	337	16.9
other	273	13.7
Annual family income, mean(SD)	138949	153318
Basic medical insurance participation		
Yes	1895	95.3
No	94	4.7
Commercial medical insurance participation		
Yes	558	28.1

Item	Value	
No	1431	71.9
PCAT-C total score (mean, SD)	72.4	10.3
Scores for each dimension of PCAT-C (mean, SD)		
First-contact	69.4	10.4
Continuity	75.8	10.7
Coordination	69.5	16.8
Comprehensiveness	78.0	15.7
Family-centeredness	75.5	17.7
Community orientation	59.8	17.0
Score for Satisfaction, mean(SD)	3.6	0.5

Abbreviations: PCAT-C, Chinese Primary Care Assessment Tool; SD, standard deviation;
Source, Primary Data, 2021.

3.2 Regression Analysis

Table 2 shows the relationships between overall satisfaction with the total and six dimensions of PCAT-C scores of patient experience. No independent variables were removed for suspected multicollinearity.

Table 2 Regression Analysis of Factors Associated with Patient Satisfaction(N=1989)

Items	Model1				Model2			
Model P value	< 0.000				< 0.000			
R^2	0.370				0.315			
Adjusted R^2	0.368				0.309			
	Coef.	P value	95% CI		Coef.	P value	95% CI	
Constant term	1.873	0.000	1.680	2.065	1.798	0.000	1.590	2.005
PCAT-C total score	0.026	0.000	0.024	0.028				
Scores for each dimension of PCAT-C								
First contact					0.001	0.404	-0.001	0.003
Continuity					0.014	0.000	0.012	0.016
Coordination					0.004	0.000	0.003	0.005
Comprehensive					0.003	0.000	0.001	0.004
Family-centered					0.002	0.008	0.000	0.003
Community orientation					0.004	0.000	0.002	0.005
Gender(ref=male)	-0.013	0.478	-0.050	0.023	-0.012	0.506	-0.048	0.024
Age	-0.003	0.019	-0.005	0.000	-0.003	0.036	-0.005	0.000
Region (ref=urban)	-0.052	0.015	-0.095	-0.010	-0.053	0.012	-0.095	-0.012
Education (ref=lower than primary school)								
Primary school	-0.002	0.972	-0.101	0.098	0.003	0.950	-0.095	0.101
Junior high school	-0.021	0.675	-0.119	0.077	-0.023	0.645	-0.119	0.074
Senior high school	-0.008	0.879	-0.109	0.093	-0.001	0.986	-0.100	0.098
Junior college	-0.005	0.924	-0.114	0.104	-0.005	0.933	-0.112	0.103
University and above	-0.017	0.764	-0.127	0.093	-0.016	0.767	-0.124	0.092
Marital status (ref=unmarried)								
Married	0.006	0.863	-0.066	0.079	0.011	0.753	-0.060	0.083
Other (divorced, widowed, etc.)	0.032	0.563	-0.076	0.140	0.026	0.627	-0.080	0.132
Employment status (ref=employed)								
Retired	0.101	0.010	0.024	0.179	0.100	0.010	0.024	0.176
Students	-0.080	0.033	-0.154	-0.006	-0.077	0.038	-0.149	-0.004
other	-0.025	0.454	-0.089	0.040	-0.022	0.494	-0.085	0.041
Annual family income	0.000	0.001	0.000	0.000	0.000	0.002	0.000	0.000
Basic medical insurance participation(ref=Yes)								
No	0.015	0.741	-0.072	0.101	0.026	0.547	-0.059	0.111
Commercial medical insurance participation (ref=Yes)								
No	-0.001	0.958	-0.043	0.041	-0.006	0.764	-0.048	0.035

Abbreviations: PCAT-C, Chinese Primary Care Assessment Tool; PCP, primary care physician; CI, credible interval; ref, reference; Source, Primary Data, 2021.

3.3 Patient Experience

In model 1, PCAT-C total score was positively correlated with patient satisfaction (coef. 0.026 [95% CI 0.024 to 0.028], P=0.000).

In model 2, among five significant dimensions, Continuity showed the strongest relationship with overall satisfaction (coef. 0.014 [95% CI 0.012 to 0.016], P=0.000), followed by the Coordination (coef. 0.004 [95% CI 0.003 to 0.005], P=0.000) and Community orientation (coef. 0.004 [95% CI 0.002 to 0.005], P=0.000), with a same influencing magnitude. The Comprehensiveness (coef. 0.003 [95% CI 0.001 to 0.004], P=0.000) and Family-centered dimension showed the weakest relationship with patients' overall satisfaction (coef. 0.002 [95% CI 0.000 to 0.003], P=0.008).

3.4 Other factors

Among control variables, first, elder patients had a lower satisfaction level (coef. -0.003 [95% CI -0.005 to 0.000], P=0.036). Compared with urban, rural patients were more likely to be satisfied (-0.053, [95% CI -0.095–-0.012], P = 0.012). Besides, retired patients were more satisfied with the service provided by PHCs (coef. 0.100 [95% CI 0.024 to 0.176], P=0.010), while students were less satisfied (coef. -0.077 [95% CI -0.149 to -0.004], P=0.038). Last, with the increasement of annual family income, patients' satisfaction increases accordingly (coef. 0.000 [95% CI 0.000 to 0.000], P=0.002).

4. Discussion

4.1 Influence Mechanism

Our study revealed that patients were generally satisfied with the service provided in PHCs. From the regression results we can see that almost all dimensions were positively related to patient satisfaction, except for the first-contact dimension. This was consistent with one previous finding: proximity of the practice to a patient's house or, a short waiting time when contacting the practice is not likely to increase patient satisfaction.

Patient satisfaction was most sensitive to the continuity of primary care (coef. 0.014 [95% CI 0.012 to 0.016], P=0.000), which is consistent with a prior study saying personal continuity with providers as well as the length of doctor-patient relationship were associated with general satisfaction after a specific outpatient encounter.

In accordance to "structure-process-outcome" framework, the process quality of medical services comprises two aspects, i.e. interpersonal relationship and healthcare service quality, by which patients' satisfaction could be affected. On the one hand, patients with chronic disease are more likely to visit primary healthcare facilities than healthy persons. The increased frequency of primary care visits would improve the continuity of treatment. Such continuity may help patients to form a long and tight interpersonal relationship with their PCPs, and enhance their probability of being satisfied [22, 23].

On the other hand, higher score of the continuity dimension indicates primary care providers have more patience and know more about their patients' condition, treatment plans or even treatment burden. As health care providers gain more familiarity with a patient's history, they may better manage disease conditions. As a result, it may be easier for patients to detect the positive effects and benefits of continuity of care.

4.2 Implications for health policy and practice

Satisfaction with primary healthcare could be improved by upgrading patient experience. Policy makers should consider strengthening care continuity, as well as other significant dimensions of primary care service.

For the continuity dimension, on the one hand, promoting a favorable interpersonal relationship by encouraging residents to sign up with family physicians and making them their regular source of care. Physicians can also fully communicate with their patients and follow-up to better understand their patients' overall health status, needs and preferences. On the other hand, the healthcare quality of primary care should be more valued. First, exert more efforts in general practitioners training and guarantee their salaries to provide human capital support for PHCs. Second and most critically, primary care providers should always equip themselves with the latest knowledge, which is the key for the improvement of their

diagnosis and treatment ability. In addition, PHCs can develop its advantages in specific fields, such as first-aid for pesticide poisoning, Chinese medicine services, to attract more patients.

For coordination, primary care providers should facilitate and support patients to refer to other levels of healthcare based on specific conditions. For community orientation primary care providers can consider using wechat groups to deepen mutual understanding, and to identify and address priority health problems in their community timely. Comprehensiveness service requires general practitioners not only the role of clinical diagnosis and treatment, but also to provide integrated care including consultation, social support, mental health, and chronic disease management to better meet patients' needs[24, 25].

To improve Family-centered dimension, primary care providers need to respect opinions of patients and their family members, to call on family members to actively support patients' treatment in daily life. Meanwhile, strengthen the function of primary care in hereditary disease prevention and screening is also an important aspect.

4.3 Strengths and limitations

Strengths of this study include the fact that patients were sampled from PHCs across the whole nation, and patient experience questionnaire was completed shortly after their consultation to furthest minimize recall bias. These make our study can well represent the current patients' attitude as well as their perceived quality of primary care, and further provided sound support for the subsequent analysis and conclusion.

There are also several potential limitations to this study. First, the results may not reflect the views of those who do not attend primary care. Second, satisfaction may also be influenced by patients' previous experiences of primary care. Third, the survey was conducted from July to August 2021, and only convenience sampling was adopted. These may bring us sampling errors.

5. Conclusion

Our research proved that, in China, satisfaction with primary healthcare may be improved by upgrading patient experience at PHCs from five aspects including continuity, coordination, comprehensive, family centered, as well as community orientation.

Among them, strengthen the service continuity may be the most effective way to improve patient satisfaction with primary care. For this, we can build up longitudinal relationship and enhance service quality of primary care to enable patients detect the positive effects and benefits of primary care, thus to promote a good continuity of care.

Moreover, primary care coordination, comprehensive, family centered, as well as community orientation all showed positive correlation with patient overall satisfaction, indicating that policy makers should put continuous efforts on these aspects to achieve a higher level of satisfaction, and further to promote the utilization of primary care.

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