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ORIGINAL RESEARCH

Unveiling Patient Trust in Physicians Across China: Insights from a Nationwide Cross-Sectional Study

Jiarun Mi, Xinyu Du, Yilixiati Aili, Mingkun Li, Yuanli Liu

School of Health Policy and Management, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100730, People's Republic of China

Correspondence: Yuanli Liu, School of Health Policy and Management, Chinese Academy of Medical Sciences and Peking Union Medical College, Dongdansantiao, Dongcheng District, Beijing, 100730, People's Republic of China, Tel +86-13522592907, Email liuyuanli_pumc@163.com

Background: Trust is a major factor affecting patient-physician relationship and healthcare quality. However, there has been a lack of comprehensive study on the extent of and major factors affecting patient trust in healthcare providers of China, the world's largest developing country. The objective of this study is to elucidate the current status of outpatient trust in physicians in China and its influencing factors, providing empirical evidence to enhance doctor-patient trust and improve doctor-patient relationships.

Methods: Between December 2017 and January 2018, 28,760 patients seeking care at the outpatient departments of 136 tertiary hospitals were interviewed, where they were asked to rate their trust in physicians. We applied a multilevel logistic regression model to explore the association between patients trust and characteristics of hospitals, physicians and patient characteristics. We conducted a series of sensitivity analysis to check the robustness of our findings.

Results: Among 28,760 participants included in this study, 91.54% expressed trust in their physicians, while 7.52% showed moderate trust. Only 0.94% expressly distrusted or strongly distrusted their physicians. Outpatients of hospitals with convenient payment, volunteer guidance and enough seats available in the rest and waiting area showed higher levels of trust. Physicians who had a senior title, showed patience and protection of the patient's privacy were more likely to be trusted by their patients in the outpatient setting. Compared to their female counterparts, male outpatients showed a higher degree of trust.

Conclusion: While this study highlights an overall high level of Trust in physicians (TIP) among patients in China's tertiary hospitals, it is found to vary with patient demographic factors as well as provider's attributes. Hospitals with a more keen sense of protecting patients privacy and better meeting patients' need for efficient and caring service provision process appeared to yield a higher level of trust.

Keywords: trust in physicians, national survey, outpatients

Introduction

Trust in physicians (TIP) has long been recognized as the core in patient-physician relationships and quality health care,[1,2] which is generally defined as the patients' belief that their physicians will provide medical care, suggestions and treatment in their best interest.[3] TIP has been proved to be associated with better adherence to treatment,[4] the decrease of patient fear and anxiety,[5] less delayed care and fewer miss visits[6] and better self-reported health,[7] often leading to successful patient care. Due to the inequality of medical knowledge and power in patient-physician relationships,[5] patients are often in a vulnerable position in healthcare services, resulting in possible preconceived mistrust in physicians. Therefore, TIP is often difficult to establish. In spite of the strong TIP shown in some early studies,[1] there is growing concern that the solid trust is eroding because of the changes in health care systems.[8] Compared to high-income countries, the crisis in TIP is more severe in low- and middle-income countries.[9] In China, a recent report showed that the proportion of adult patients who did trust their physicians have decreased from 83.4% to 64.2% over a five year period.[10]

Acknowledging this trend, the literature on TIP and its determinants is expanding. This body of work suggests that the extent of TIP is related to both the supply and demand sides' characteristics of healthcare. In terms of intrinsic

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patients characteristics, their age, mental health, sex, race and education and income levels all affect TIP.[11–14] Several studies also suggested that patient participation in treatment decisions is an important antecedent variable for building TIP.[15,16] For physicians, the technical competence assessed by patients based on qualifications and status (eg, professor or researcher of a medical school and specialist) is of primary importance for TIP.[17] Patients are also more likely to trust physicians with whom they spend longer time of consultation[18] or have long continuous relationships.[19] In addition, quantities of research have shown that physicians' verbal and non-verbal communication skills such as assurance of treatment, giving more information and showing caring behaviors (eg, displaying empathy and intent listening) are beneficial in establishing TIP.[12,20,21] However, studies using nationally representative data about TIP in China are still lacking. Most of the previous studies in China about TIP were based on some specific provinces, cities or even hospitals and their findings were mixed.[22,23] With the increasing pressure on the healthcare systems in China, characterizing TIP and its influencing factors in China is helpful to improve the physician-patient relationship and provide higher quality healthcare services. In addition, considering the nearly half of the clinical work undertaken by tertiary hospitals in China,[24] how to improve TIP in them should be given more attention by researchers.

Recognizing this, in this study, we used a nationally representative survey data, aiming to investigate the outpatients' trust in physicians and its influencing factors in tertiary hospitals in China.

Materials and Methods

Study Design

Our study employed a national cross-sectional patient survey design aiming to assess the level of trust in physicians among outpatient patients in China and its influencing factors. The survey was conducted from December 2017 to January 2018 across 136 tertiary hospitals in all 31 provinces of mainland China by the Peking Union Medical College (PUMC) School of Public Health. Briefly, this survey applied a two-stage sampling design to select participants. In the first stage of sampling (hospital level), we selected one general hospital, one traditional Chinese medicine hospital (TCM hospital) and one maternal and child hospital (MC hospital) based on convenience. And we also included 43 National Health and Family Planning Commission (NHFPC)-affiliated hospitals (including 28 general hospitals and 15 specialist hospitals). The second stage of sampling targeted outpatients were conducted in the pharmacy area of each hospital, where they usually complete the process of outpatient consultation and payment and await receiving their drugs. Each participant's information was collected face-to-face by a well-trained medical student via mobile devices. The validity and reliability of the questionnaire utilized in our study have been previously verified.[25] Firstly, all items in the questionnaire were subjected to expert review to ensure their content validity. The construct validity of the questionnaire was assessed using Exploratory Factor Analysis, with all item factor loadings exceeding 0.50, indicating that the construct validity is acceptable. Furthermore, the Cronbach's alpha coefficients for each dimension exceeded 0.75, demonstrating that our questionnaire possesses good reliability.

Sample Size and Population

In the design of our study, we assumed an 85% satisfaction rate among outpatient services and set the significance level at 0.05. To ensure statistical significance and adequate precision of our results, we employed the following formula to calculate the minimum required sample size for each hospital:

$$n = \frac{Z^2_{\alpha/2} \times p(1-p)}{E^2}$$

Here, $Z_{\alpha/2}$ represents the critical value from the normal distribution for α=0.05, equating to 1.96. p is the anticipated proportion of satisfaction, set at 0.85, and E is the permissible error margin we established, at 0.05. Applying this formula, we calculated a minimum sample size of 196 for each hospital. To account for potential non-response and the necessity of data cleansing, we rounded up the sample size to at least 200 per hospital. This sample size ensures that our findings are statistically significant and meaningful. We initially approached a total of 39,379 outpatients and successfully collected 28,822 completed questionnaires, culminating in a response rate of 73%. Before the statistical analyses, we

performed data cleaning and removed questionnaires with variable outliers. Finally, we obtained a sample of 28,760 effective questionnaires and the effective rate was 99.78%.

Outcome

The outcome of this study was the extent of TIP, which was measured by a 5-point entry in the questionnaire. Each participant was invited to consider the following statement – "I have full trust in physicians who received me for patient this time" and choose their answer from "strongly disagree", "disagree", "moderate", "agree" and "strongly agree".

Covariates

The covariates were selected from hospital level, physician level and patient level. The covariates of hospital level included the hospital type (ie, general hospital, traditional Chinese medicine hospital, maternal and child hospital and other specialty hospital), the hospital region (ie, eastern, central and western), the payment convenience, the volunteer guidance and the enough seat availability in the rest and waiting area. The covariates of physician level included the physician's title, the patience of physicians during consultations and the protection of patient privacy. The covariates of patient level included the patient's age, sex, education level, occupation, the total cost of this outpatient visit, the patient's annual household income, household registration and medical insurance. Among them, participants with a senior high school diploma or higher were defined as better educated.

Statistical Analysis

In the descriptive analysis, we calculated the distribution of TIP over each covariate and used chi-square test to compare the differences in the distribution. Covariates with p-values of < 0.1 were considered statistically significant and were included in the further analysis.

Since the participants were nested in 136 hospitals, we then applied the multilevel logistic regression model to explore the association between TIP and the covariates, which allows for the association across participants within hospitals.[26] We also calculated the intraclass correlation coefficient (ICC) in our data, which denoted the proportion of which the total variation of TIP could be attributed to the hospital level effect.[27] The ICC was 11.2% in our data, further confirming the necessity for the multilevel regression modelling. We defined "strongly disagree", "disagree" and "moderate" as a negative answer to TIP (0=no) and defined "strongly agree" and "agree" as a positive answer to TIP (1=yes). The association between each covariate and TIP was expressed as an odds ratio (OR) and a 95% confidence interval (CI). In addition, given that the bias in the association estimating caused by defining the response "moderate" as "do not trust physicians", we excluded these participants for sensitivity analyses. We also added results from the ordinary logistic regression that do not account for multiple levels to test the robustness of our findings. A two-tailed p value of < 0.05 was considered to indicate statistical significance. All statistical analyses were conducted using R software (version 4.2.0).

Results

Descriptive Analysis

The results of the descriptive analysis were shown in Table 1. Of the 28,760 outpatients sampled in 36 tertiary public hospitals, 12,197 (42.4%) were from general hospitals, 6516 (22.7%) were from TCM hospitals, 6254 (21.7%) were from MC hospitals and 3793 (13.2%) were from other specialty hospitals. 12,235 (42.5%) participants were from eastern China, 7258 (25.2%) were from central China and 9267 (32.2%) were from western China. Female participants accounted for 64.6% and 84.6% participants had at least a high school education. As is shown in Table 2, among all participants, 54.24% answered with "strongly agree" to the TIP entry, 37.30% answered with "agree", 7.52% answered with "moderate" and only 0.94% answered with "disagree" or "strongly disagree". In Table 3, since the results of chi-square test suggested that the differences in the distributions of all covariates were statistically significant, they were all included in the multilevel regression analysis.

Table 1 Sample Characteristics of 28,760 Participants Included in Our Study

Characteristics \ Extent of TIP	Strongly disagree	Disagree	Moderate	Agree	Strongly agree	Overall
Hospital type						
General hospital	15 (22.4%)	80 (39.0%)	925 (42.8%)	4509 (42.0%)	6668 (42.7%)	12,197 (42.4%)
TCM hospital	12 (17.9%)	51 (24.9%)	499 (23.1%)	2526 (23.5%)	3428 (22.0%)	6516 (22.7%)
MC hospital	22 (32.8%)	56 (27.3%)	531 (24.5%)	2539 (23.7%)	3106 (19.9%)	6254 (21.7%)
Other specialty hospital	18 (26.9%)	18 (8.8%)	208 (9.6%)	1153 (10.7%)	2396 (15.4%)	3793 (13.2%)
Hospital region						
Eastern	35 (52.2%)	81 (39.5%)	825 (38.1%)	4208 (39.2%)	7086 (45.4%)	12,235 (42.5%)
Central	5 (7.5%)	43 (21.0%)	521 (24.1%)	2512 (23.4%)	4177 (26.8%)	7258 (25.2%)
Western	27 (40.3%)	81 (39.5%)	817 (37.8%)	4007 (37.4%)	4335 (27.8%)	9267 (32.2%)
Convenient payment						
No	34 (50.7%)	76 (37.1%)	738 (34.1%)	2220 (20.7%)	1966 (12.6%)	5034 (17.5%)
Yes	33 (49.3%)	129 (62.9%)	1425 (65.9%)	8507 (79.3%)	13,632 (87.4%)	23,726 (82.5%)
Volunteer guidance						
No	43 (64.2%)	117 (57.1%)	1126 (52.1%)	1725 (16.1%)	827 (5.3%)	3838 (13.3%)
Yes	24 (35.8%)	88 (42.9%)	1037 (47.9%)	9002 (83.9%)	14,771 (94.7%)	24,922 (86.7%)
Enough seats available						
No	47 (70.1%)	125 (61.0%)	1227 (56.7%)	3021 (28.2%)	2067 (13.3%)	6487 (22.6%)
Yes	20 (29.9%)	80 (39.0%)	936 (43.3%)	7706 (71.8%)	13,531 (86.7%)	22,273 (77.4%)
Title of physician						
Without a senior title	22 (32.8%)	56 (27.3%)	611 (28.2%)	2775 (25.9%)	3879 (24.9%)	7343 (25.5%)
With a senior title	45 (67.2%)	149 (72.7%)	1552 (71.8%)	7951 (74.1%)	11,719 (75.1%)	21,416 (74.5%)
Missing	0 (0%)	0 (0%)	0 (0%)	1 (0.0%)	0 (0%)	1 (0.0%)
Physicians's patience						
No	50 (74.6%)	138 (67.3%)	1109 (51.3%)	1329 (12.4%)	489 (3.1%)	3115 (10.8%)
Yes	17 (25.4%)	67 (32.7%)	1054 (48.7%)	9398 (87.6%)	15,109 (96.9%)	25,645 (89.2%)
Privacy protection						
No	34 (50.7%)	92 (44.9%)	847 (39.2%)	979 (9.1%)	402 (2.6%)	2354 (8.2%)
Yes	33 (49.3%)	113 (55.1%)	1316 (60.8%)	9748 (90.9%)	15,196 (97.4%)	26,406 (91.8%)
Age						
<=17	1 (1.5%)	1 (0.5%)	23 (1.1%)	108 (1.0%)	165 (1.1%)	298 (1.0%)
[18,35]	35 (52.2%)	115 (56.1%)	1171 (54.1%)	5563 (51.9%)	7747 (49.7%)	14,631 (50.9%)
[36,59]	19 (28.4%)	59 (28.8%)	744 (34.4%)	3876 (36.1%)	5585 (35.8%)	10,283 (35.8%)
≥60	12 (17.9%)	30 (14.6%)	225 (10.4%)	1180 (11.0%)	2101 (13.5%)	3548 (12.3%)
Sex						
Female	42 (62.7%)	138 (67.3%)	1432 (66.2%)	6703 (62.5%)	10,256 (65.8%)	18,571 (64.6%)
Male	25 (37.3%)	67 (32.7%)	731 (33.8%)	4024 (37.5%)	5342 (34.2%)	10,189 (35.4%)
Better educated						
No	11 (16.4%)	31 (15.1%)	301 (13.9%)	1717 (16.0%)	2357 (15.1%)	4417 (15.4%)
Yes	56 (83.6%)	174 (84.9%)	1862 (86.1%)	9009 (84.0%)	13,241 (84.9%)	24,342 (84.6%)
Missing	0 (0%)	0 (0%)	0 (0%)	1 (0.0%)	0 (0%)	1 (0.0%)
Occupation						
Unemployed/retired	20 (29.9%)	56 (27.3%)	471 (21.8%)	2295 (21.4%)	3589 (23.0%)	6431 (22.4%)
Public sector	10 (14.9%)	53 (25.9%)	568 (26.3%)	2834 (26.4%)	4724 (30.3%)	8189 (28.5%)
Non-public sector	37 (55.2%)	96 (46.8%)	1122 (51.9%)	5580 (52.0%)	7258 (46.5%)	14,093 (49.0%)
Missing	0 (0%)	0 (0%)	2 (0.1%)	18 (0.2%)	27 (0.2%)	47 (0.2%)
Total cost						
<=150	13 (19.4%)	51 (24.9%)	535 (24.7%)	2797 (26.1%)	4469 (28.7%)	7865 (27.3%)
(150,400]	19 (28.4%)	66 (32.2%)	750 (34.7%)	3937 (36.7%)	5463 (35.0%)	10,235 (35.6%)
>400	35 (52.2%)	88 (42.9%)	878 (40.6%)	3992 (37.2%)	5665 (36.3%)	10,658 (37.1%)
Missing	0 (0%)	0 (0%)	0 (0%)	1 (0.0%)	1 (0.0%)	2 (0.0%)

(*Continued*)

Table 1 (Continued).

Characteristics \ Extent of TIP	Strongly disagree	Disagree	Moderate	Agree	Strongly agree	Overall
Annual household income						
<=60,000	39 (58.2%)	114 (55.6%)	1168 (54.0%)	6078 (56.7%)	8287 (53.1%)	15,686 (54.5%)
(60,000,120,000)	15 (22.4%)	42 (20.5%)	482 (22.3%)	2498 (23.3%)	3917 (25.1%)	6954 (24.2%)
≥120,000	13 (19.4%)	49 (23.9%)	513 (23.7%)	2151 (20.1%)	3394 (21.8%)	6120 (21.3%)
Insurance						
Uninsured	7 (10.4%)	30 (14.6%)	227 (10.5%)	1009 (9.4%)	1441 (9.2%)	2714 (9.4%)
Government Insurance Scheme (GIS)	13 (19.4%)	26 (12.7%)	248 (11.5%)	1117 (10.4%)	2204 (14.1%)	3608 (12.5%)
Urban Employees Basic Medical Insurance (UEBMI)	18 (26.9%)	58 (28.3%)	645 (29.8%)	3343 (31.2%)	4942 (31.7%)	9006 (31.3%)
Urban and Rural Residents Basic Medical Insurance (RBMI)	19 (28.4%)	50 (24.4%)	690 (31.9%)	3424 (31.9%)	4632 (29.7%)	8815 (30.7%)
New Rural Cooperative Medical Insurance (NRCMI)	9 (13.4%)	25 (12.2%)	269 (12.4%)	1554 (14.5%)	1917 (12.3%)	3774 (13.1%)
Commercial insurance	1 (1.5%)	12 (5.9%)	53 (2.5%)	183 (1.7%)	289 (1.9%)	538 (1.9%)
Medical aid	0 (0%)	3 (1.5%)	10 (0.5%)	26 (0.2%)	38 (0.2%)	77 (0.3%)
Missing	0 (0%)	1 (0.5%)	21 (1.0%)	71 (0.7%)	135 (0.9%)	228 (0.8%)
Household registration						
Rural	23 (34.3%)	71 (34.6%)	660 (30.5%)	3161 (29.5%)	4013 (25.7%)	7928 (27.6%)
Urban	44 (65.7%)	134 (65.4%)	1503 (69.5%)	7566 (70.5%)	11,585 (74.3%)	20,832 (72.4%)

Table 2 Distribution of Responses and Percentages for TIP Outcome

Extent of TIP	Number of participants	Percentage
Strongly disagree	67	0.23%
Disagree	205	0.71%
Moderate	2163	7.52%
Agree	10,727	37.30%
Strongly agree	15,598	54.24%

Table 3 The Results of the Univariate Analysis

Characteristics	P-value
Hospital type	<0.001
General hospital	
TCM hospital	
MC hospital	
Other specialty hospital	
Hospital region	<0.001
Eastern	
Central	
Western	
Convenient payment	<0.001
No	
Yes	

(*Continued*)

Table 3 (Continued).

Characteristics	P-value
Volunteer guidance	<0.001
No	
Yes	
Enough seats available	<0.001
No	
Yes	
Title of physician	<0.05
Without a senior title	
With a senior title	
Missing	
Physicians's patience	<0.001
No	
Yes	
Privacy protection	<0.001
No	
Yes	
Age	<0.001
<=17	
[18,35]	
[36,59]	
≥60	
Sex	<0.001
Female	
Male	
Better educated	<0.05
No	
Yes	
Missing	
Occupation	<0.001
Unemployed/retired	
Public sector	
Non-public sector	
Missing	
Total cost	<0.001
<=150	
(150,400]	
>400	
Missing	
Annual household income	<0.001
<=60,000	
(60,000,120,000)	
≥120,000	
Insurance	<0.001
Uninsured	
Government Insurance Scheme (GIS)	
Urban Employees Basic Medical Insurance (UEBMI)	
Urban and Rural Residents Basic Medical Insurance (RBMI)	
New Rural Cooperative Medical Insurance (NRCMI)	

(*Continued*)

Table 3 (Continued).

Characteristics	P-value
Commercial insurance	
Medical aid	
Missing	
Household registration	<0.001
Rural	
Urban	

Multilevel Regression Analysis

The results of the multilevel regression analysis were shown in Table 4. In the hospital level, compared to general hospitals, outpatients of other specialty hospitals were more likely to trust their physicians (OR: 1.37, 95% CI: 1.08,

Table 4 Multilevel Regression Analysis About the Association Between TIP and Different Covariates

Characteristic	OR[a]	95% CI[a]	p-value
Hospital type			
General hospital	—	—	
TCM hospital	0.90	0.76, 1.08	0.3
MC hospital	1.00	0.84, 1.21	>0.9
Other specialty hospital	1.37	1.08, 1.73	0.010
Hospital region			
Eastern	—	—	
Central	0.93	0.77, 1.12	0.4
Western	0.94	0.80, 1.11	0.5
Convenient payment			
No	—	—	
Yes	1.40	1.25, 1.58	<0.001
Volunteer guidance			
No	—	—	
Yes	3.20	2.86, 3.59	<0.001
Enough seats available			
No	—	—	
Yes	2.83	2.55, 3.15	<0.001
Title of physician			
Without a senior title	—	—	
With a senior title	1.16	1.03, 1.31	0.012
Physicians's patience			
No	—	—	
Yes	5.71	5.10, 6.38	<0.001
Privacy protection			
No	—	—	
Yes	3.03	2.67, 3.43	<0.001
Age			
<=17	—	—	
[18,35]	1.16	0.69, 1.93	0.6
[36,59]	1.22	0.73, 2.03	0.5
≥60	1.18	0.70, 1.98	0.5

(*Continued*)

Table 4 (Continued).

Characteristic	OR[a]	95% CI[a]	p-value
Sex			
Female	—	—	
Male	1.16	1.03, 1.29	0.010
Better educated			
No	—	—	
Yes	0.97	0.85, 1.11	0.6
Occupation			
Unemployed/retired	—	—	
Public sector	1.07	0.90, 1.28	0.4
Non-public sector	1.00	0.86, 1.15	>0.9
Total cost			
<=150	—	—	
(150,400]	0.90	0.79, 1.02	0.11
>400	0.91	0.79, 1.03	0.14
Annual household income			
<=60,000	—	—	
(60,000,120,000)	1.05	0.92, 1.19	0.5
≥120,000	0.86	0.75, 0.98	0.025
Insurance			
Uninsured	—	—	
Government Insurance Scheme (GIS)	0.93	0.73, 1.19	0.6
Urban Employees Basic Medical Insurance (UEBMI)	1.08	0.88, 1.32	0.4
Urban and Rural Residents Basic Medical Insurance (RBMI)	1.04	0.86, 1.25	0.7
New Rural Cooperative Medical Insurance (NRCMI)	1.25	1.01, 1.56	0.043
Commercial insurance	0.80	0.56, 1.16	0.2
Medical aid	0.66	0.31, 1.37	0.3
Household registration			
Rural	—	—	
Urban	1.16	1.01, 1.33	0.038

Abbreviations: [a]OR, Odds Ratio; CI, Confidence Interval.

1.73). The effect of hospital regions on TIP was not statistically significant. Outpatients of hospitals with convenient payment (OR: 1.40, 95% CI: 1.25, 1.58), volunteer guidance (OR: 3.2, 95% CI: 2.86, 3.59) and enough seats available in the rest and waiting area (OR: 2.83, 95% CI: 2.55, 3.15) showed higher TIP. In the physician level, physicians who had a senior title (OR: 1.16, 95% CI: 1.06, 1.31), showed patience (OR: 5.71, 95% CI: 5.10, 6.38) and protection of the patient's privacy (OR: 3.02, 95% CI: 2.67, 3.43) were more likely to be trusted by their outpatients. In the patient level, male outpatients showed higher TIP (OR: 1.16, 95% CI: 1.03, 1.29) compared to female outpatients. Patients with annual household incomes over 120,000¥ (OR: 0.86, 95% CI: 0.75, 0.98) were more likely to distrust their physicians. Compared to uninsured outpatients, patients with New Rural Cooperative Medical Insurance (OR: 1.25, 95% CI: 1.00, 1.55) tend to have greater trust in their physicians. Patients with urban household registration (OR: 1.16, 95% CI: 1.01, 1.33) demonstrate a higher tendency to trust their physicians.

Sensitive Analysis

The results of the sensitive analysis were shown in Figures 1 and 2. Although there were some differences ORs compared to the results of the main analysis, the direction of the associations remain unchanged. For instance, as is shown in Figure 1,

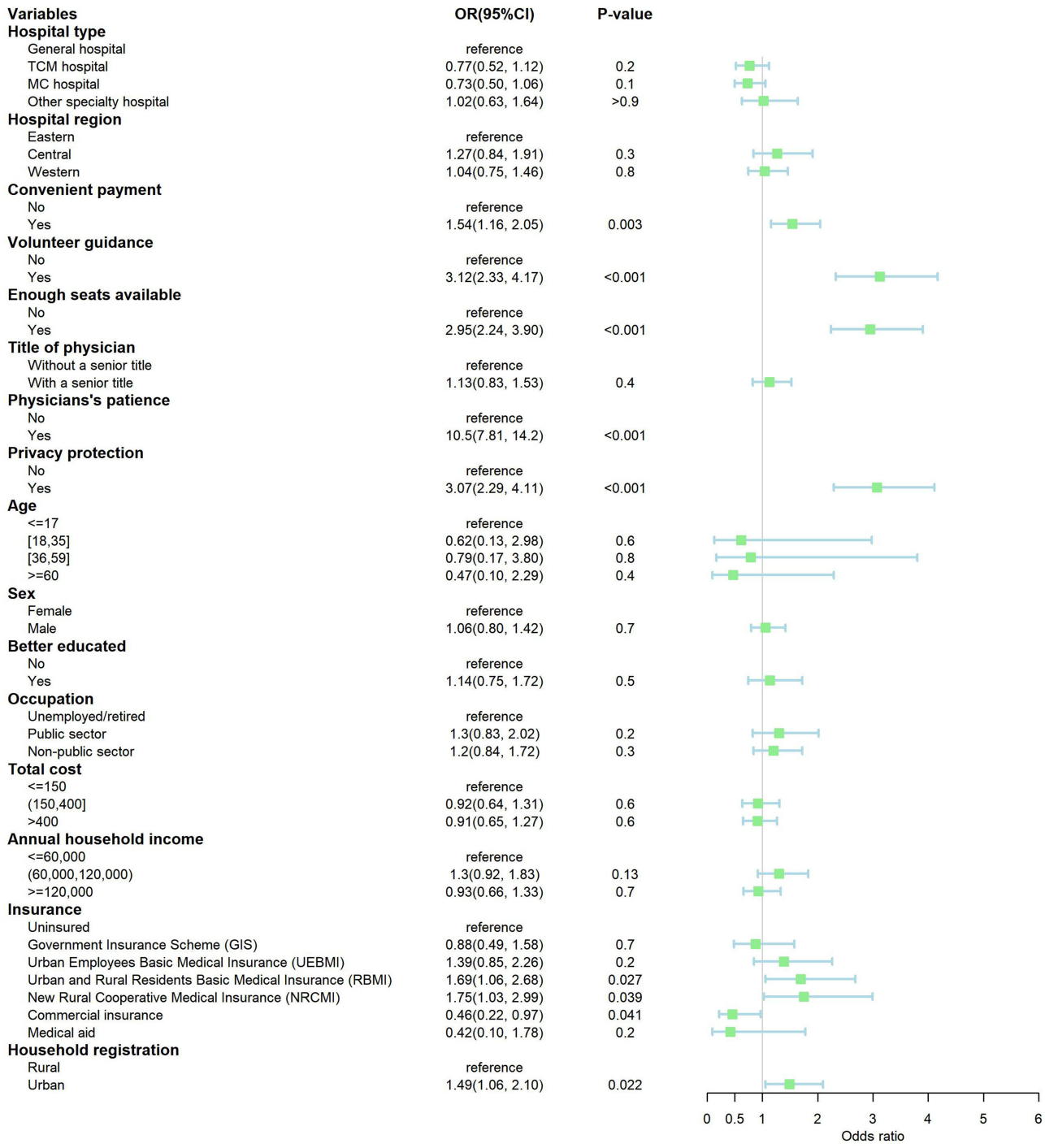

Figure 1 Sensitive analysis using multilevel regression model by removing participants answering with "moderate".

when removing participants answering with "moderate" to TIP, the OR of the sensitive analysis was larger in participants who experienced the convenient payment (OR: 1.54, 95% CI: 1.16, 2.05) compared to the main analysis (OR: 1.40, 95% CI: 1.25, 1.58), but the direction of the ORs were identical. Similarly, as is shown in Figure 2, even if multiple levels are not considered, the direction of the association based on the ordinary logistic regression is the same as the main result. Therefore, the robustness of our results was confirmed.

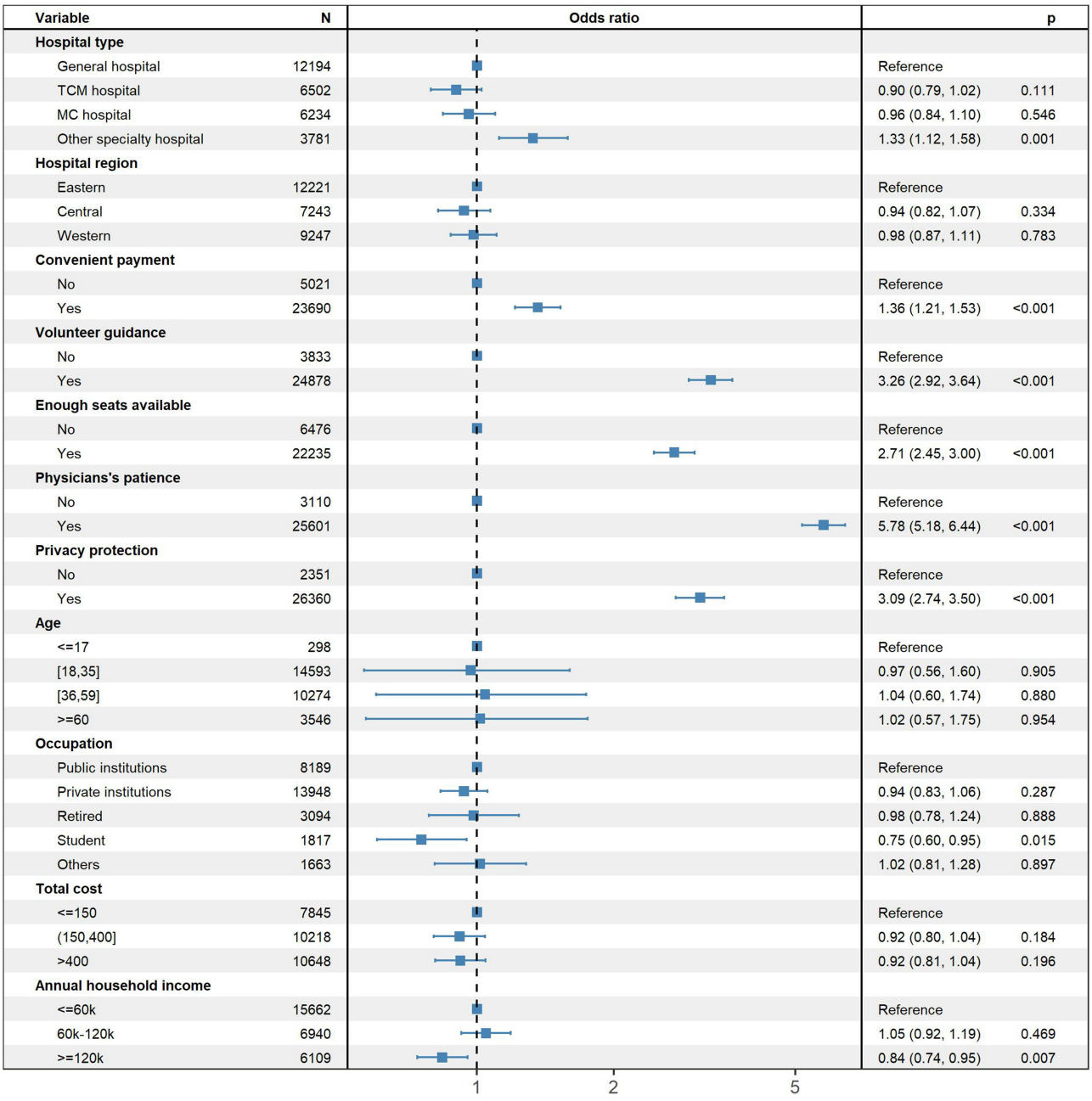

Figure 2 The results of the association between TIP and covariates based on ordinary logistic regression model without including multiple levels.

Discussion

In this extensive nationwide cross-sectional study, we meticulously investigated the status and determinants of TIP within tertiary public hospitals in China, focusing on variables at the hospital, physician, and patient levels. Our findings revealed that a notable 91.54% of the respondents exhibited a positive trust in physicians, highlighting a generally favorable TIP status in these healthcare settings. At the hospital level, factors such as payment convenience, the presence of volunteer guidance, and the availability of adequate seating in rest and waiting areas proved pivotal in shaping this trust. The demeanor and professional conduct of physicians were also found to be critical elements. Additionally, patient-level backgrounds, encompassing their sex, medical insurance condition and household registration, also significantly contribute to the formation of trust in their physicians. Despite the straightforward nature of our methodological

approach, these findings provide profound insights into the specific dynamics of TIP within China's tertiary public hospitals, offering crucial guidance for future improvements in medical services and policy formulation.

In an international comparison, our study found that patients' trust in doctors in tertiary public hospitals in China was 91.54%, a percentage that stands out globally. Compared with related studies in other countries, this percentage is higher in China. For instance, research in Croatia showed a trust level of only 78.3%,[28] while another study in Saudi Arabia reported a trust level of 90.4%.[29] This discrepancy may stem from differences in the structure of the healthcare system, cultural background, doctor-patient communication styles, and healthcare policies in different countries. The higher level of trust among Chinese patients may reflect the interaction patterns and social trust mechanisms specific to the domestic healthcare system. However, it also raises an important question: does high trust always represent quality healthcare services and patient satisfaction? This finding prompts future research to further explore the complex relationship between trust and healthcare service quality.

At the hospital level, our findings reveal that several key factors, such as ease of payment, the presence of volunteer guides, and the availability of adequate seating in resting and waiting areas, have a significant impact on patient trust in physicians. The importance of these factors has also been demonstrated in previous studies, some of which have shown that the quality of the hospital's physical environment and services has a significant impact on patient trust.[30,31] For example, a semi-structured telephone interview indicated that a welcoming physical environment was associated with higher TIP.[31] At the physician level, our data show that a physician's title level, demonstrated patience, and protection of patient privacy are key factors in gaining patient trust. Consistent with the results of other studies that have found that physicians' professional skills and interpersonal communication skills are critical to building and maintaining patient trust.[32,33] In particular, physicians' respect for patient privacy have been shown to be key factors influencing patient trust.[34] These findings emphasize the dual role of the hospital environment and the individual physician's skills in improving the quality of healthcare delivery and patient satisfaction. Future research and healthcare policy development needs to focus more on how to enhance patient trust by improving the hospital environment and enhancing physicians' professional skills, thereby improving the overall quality and effectiveness of healthcare services.

At the patient level, our study reveals the significant role of gender in shaping TIP. Specifically, we found that female patients generally had lower TIP than male patients, which was similar to several studies.[35,36] This may be due to the fact that women may face more communication barriers and perceived unequal treatment in healthcare settings, which may lead to lower trust in their healthcare providers. In addition, female patients may have higher concerns about the quality and safety of healthcare services, which may also affect their trust.

Similar to several previous studies,[34,37] our study also showed that economic status had a significant impact on patients' TIP. Specifically, patients with higher annual incomes tended to hold lower levels of trust in their physicians. This may reflect the different expectations of patients from different economic backgrounds regarding the quality and accessibility of healthcare services. Insurance status is also a key factor; for example, patients with the new rural cooperative health insurance showed higher levels of trust compared to uninsured patients, highlighting the importance of health insurance in enhancing patients' trust in the healthcare system. Taken together, our findings emphasize the need to consider factors such as a patient's gender, economic status, and insurance coverage when enhancing doctor-patient trust. Understanding and addressing these influencing factors will help improve the quality of healthcare services, promote patient satisfaction, and improve the doctor-patient relationship.

This study has the following limitations. First, given that the research was conducted exclusively in tertiary hospitals in China, the high patient trust level observed might not accurately reflect the broader Chinese healthcare landscape, as these institutions represent the pinnacle of available resources and services. Second, the cross-sectional design of our study limits the ability to trace the evolution of patient trust over time or to establish causal relationships. Third, the study potentially underrepresents the influence of cultural and social factors that are pivotal in shaping patient trust, particularly in a diverse and complex society like China. These limitations suggest caution in generalizing the findings across different healthcare settings within the country.

Conclusions

This study highlights that TIP is generally high among patients in China's tertiary public hospitals, yet it fluctuates significantly due to patient demographic characteristics and the attributes of healthcare providers. We discovered that TIP is influenced by a multitude of factors across different dimensions—patients, physicians, and medical institutions—reflecting the complex, multifactorial process of trust formation. This understanding underscores the necessity of considering the behavior of healthcare providers, the background characteristics of patients, and the policies and service environment of medical institutions to improve patient trust. Our research provides empirical insights into the elements constituting patient trust within the current Chinese healthcare system and emphasizes the potential of enhancing this trust through specific hospital management and policy adjustments in the context of medical reform. Notably, hospitals that meet patients' demands for high-quality medical services and offer better patient healthcare experiences appear to achieve higher TIP. Thus, by standardizing diagnostic and treatment processes to protect patient privacy, providing patient-centered medical care, and maintaining open communication channels to improve the patient healthcare experience, medical institutions can effectively enhance trust. Considering the current focus of China's medical reform on prioritizing patient-centered improvements in the quality and accessibility of healthcare services, our study's recommendations for concrete measures to elevate patient trust align with the reform's core objectives.

Ethics Approval and Informed Consent

The study protocol was approved by the Ethics Committee of Peking Union Medical College (SPH201712CHII206). This study was conducted in accordance with the principles of the Declaration of Helsinki, and all participants have signed informed consent forms.

Consent for Publication

Informed consent for publication was obtained from all participants.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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